education meets the world
UNIVERSITY OF MIAMI

An announcement with information on administration, organization, admission and graduation requirements, and the courses of instruction in

UNDERGRADUATE and GRADUATE STUDIES, 2006-2007
A private, independent, international university
An equal opportunity/affirmative action employer

It is the policy of the University of Miami that no person within the jurisdiction thereof shall, on the basis of race, religion, color, sex, age, disability, sexual orientation, veterans status, or national origin, be excluded from, participation in, be denied the benefits of, or be subjected to discrimination or harassment (including sexual harassment) under any program or activity of the University. The University does not intend by this commitment to require compliance with this policy by governmental or external organizations that associate with but are not controlled by the University, except as required by law. The Director of Equality Administration is responsible for coordinating the University’s effort to implement the nondiscrimination policy and Affirmative Action Programs for employees and students. The Director may be contacted at the following address or telephone number: Equality Administration Office 1507 Levante Avenue; P.O. Box 248106; Coral Gables, Florida 33124-1411; 305-284-3064.

The University of Miami is authorized under Federal law to enroll non-immigrant alien students.

The University reserves the right to change any provision or requirement, including, but not limited to fees and tuition, at any time without notice. Degrees, courses, programs, activities, and like academic or non-academic offerings of the University may also be changed from time to time without notice. The University further reserves the right to require a student to withdraw at any time under University policies, as may be promulgated from time to time. Further, admission of a student to the University of Miami for any semester does not imply that such student will be enrolled in any succeeding academic semesters. It also reserves the right to impose sanctions on any student whose conduct is unsatisfactory. Any admission on the basis of false statements or documents is void when the misconduct is discovered, and the student is not entitled to any credit for work which the student may have done at the University prior to any discipline that may be taken as a result of such misconduct. When a student is dismissed or suspended from the University for cause, there will be no refund of tuition or fees paid. If a dismissed student has paid only a part of his tuition and fees, the balance due the University will be considered a receivable and will be collected.

There will be no refund of tuition, fees, charges or any other payments made to the University in the event the operation of the University is suspended at any time as a result of any act of God, strike, riot, disruption, or for any other reason beyond the control of the University.

The University of Miami is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30333-4097; Telephone number 404-679-4501) to award the baccalaureate, masters and doctoral degrees.

All graduate programs of the University of Miami are fully accredited by the Southern Association of Colleges and Schools.
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THE UNIVERSITY OF MIAMI MISSION STATEMENT

The University of Miami’s mission is to educate and nurture students, to create knowledge, and to provide service to our community and beyond. Committed to excellence and proud of the diversity of our University family, we strive to develop future leaders of our nation and the world.
ACADEMIC PROCEDURES AND INFORMATION - UNDERGRADUATE

While the University makes every effort to provide academic counseling to its students, its basic policy places the responsibility for planning an academic program upon the student.

Students are expected to familiarize themselves with the requirements of:
- the University,
- the schools in which they are enrolled, and
- their major department.
Requirements means those stated in the Bulletin in force at the time of admission to degree status, unless a student has not been continuously enrolled. In such cases, the Bulletin in effect at the time of re-admission is the one to be used. However, a student granted a leave of absence may re-enroll either under the requirements of the Bulletin in effect at the time originally entered, or the Bulletin in effect at the time of re-admission.

Academic core requirements will not be waived for students under any circumstances.

The work of each student is under the supervision of an academic Dean and of the appropriate Scholarship Committee. A student who fails to maintain an adequate academic record may be dismissed from the University.

Admission of a student to the University of Miami for any semester does not imply that such student will be re-enrolled in any succeeding academic semesters. If a student whose record is unsatisfactory is for some reason permitted to continue in attendance, the appropriate scholarship committee or Dean may specify the standard which must be attained, and any other conditions to be met.

A student who graduates and plans to enter a graduate school or professional school at the University of Miami must apply for admission to the appropriate school of the University in accordance with application deadlines of respective schools.

Not all the regulations and procedures described below pertain to the Graduate School, the Law School, and the School of Medicine. The specific regulations of these schools are stated in their Bulletins.

STUDENT-RIGHT-TO-KNOW AND CAMPUS SECURITY ACT

The Student-Right-to-Know and Campus Security Act requires institutions to disclose information about graduation rates to current and prospective students. Students interested in obtaining graduation rate information should contact the Office of Admission, (305) 284-4323 or go to www.miami.edu/hep.

FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA) (BUCKLEY AMENDMENT)

The purpose of this policy is to assure that students have access to their educational records and to assure the privacy of students by restricting the disclosure of information from education records to those persons authorized under the Act.

The policy is provided to all students in the Student Life Handbook and Daily Planner. Copies can also be printed from the website www.miami.edu/hep.
COURSE INFORMATION

ACADEMIC CREDITS

The University operates on the semester system and, for its measure of academic course work, uses academic credits (referred to as semester credits, semester hours, credit hours, hours, or credits).

An academic credit is given for one 50-minute period a week throughout an academic semester. Two or three laboratory hours each week throughout a semester are considered the equivalent of one lecture hour in counting credits earned in an undergraduate laboratory or studio course.

No grades or credits are given for audit students.

CHANGE OR DROP OF COURSE

Course changes after the completion of registration must be approved by the student’s academic dean. Forms must be fully processed to make any approved changes official.

Dropping of any course for which the student has registered is official only when the academic dean has signed the proper form and the form has been processed by the Office of the Registrar. Failure to attend classes or merely giving notice to instructors of one’s absence will not be considered as an official withdrawal and may result in failure in the course.

No student will be permitted to drop a course after the 45th day of classes during a regular semester, or after the second week of classes in a summer session. Students enrolled in a course after the withdrawal date must receive a final grade in the course.

During the academic year, a student may drop a course without having a W placed on his/her record. The paperwork must be processed by the day following the fifth meeting of Tuesday-Thursday classes.

During a summer session, a student may drop a course within the first five (5) class days following registration without having a W placed on his/her record.

Changes in the credit-only option may be made for two weeks following the last day of registration.

CLASS ATTENDANCE AND ABSENCES

Regular and punctual class attendance is vital for all students. Instructors will distribute course syllabi which include policies regarding class attendance and missed or late work. Any student may be dropped from a course or receive a lowered grade for unauthorized absences in excess of those permitted by the instructor. It is each student’s responsibility to know and understand the instructor’s policies. It is also the student’s responsibility to give the instructor notice one week prior to any anticipated absence and to contact the instructor within one week after any unanticipated absence.

All students are responsible for material covered during their absence. However, the instructor must allow each student who is absent for a University-approved reason either
the opportunity to make up, or to be excused from, work missed, without any reduction in the student's final course grade as a direct result of such absence.

The following constitute University-approved reasons for absences:

1. Participation in an activity approved by the Academic Deans Policy Council, such as musical and debate activity, R.O.T.C. function, or varsity athletic trip; participation in a special academic activity such as a field trip or other special event connected with academic coursework. Verification of a student's participation shall be issued by the sponsor when authorized by the Office of the Executive Vice President and Provost.
2. Observance of a major religious holy day. The University annually publishes a list of those dates it has designated as major religious holy days. Instructors and administrators shall endeavor not to schedule any examination or other graded class event, nor any major University activity, on a major religious holy day.

Other than absences for a University-approved reason, the instructor determines whether or not an absence is for an acceptable reason and whether or not students shall have the opportunity to make up missed work. If the instructor does not recognize the reason as acceptable, the student may appeal to the chair of the department in which the course is offered.

COURSE-NUMBERING SYSTEM

The following course-numbering system is used:

Courses in the 100 series are primarily for freshmen.
Courses in the 200 series are primarily for sophomores.
Courses in the 300 series are primarily for juniors.
Courses in the 400 series are primarily for seniors.
Courses in the 500 series are open only to qualified undergraduates and graduate students.
Courses in the 600 and 700 series are open only to graduate students.

Courses in some departments, with the specific numbers 100, 200, 300, 400 are offered, in most instances, on an experimental or trial basis. When listed in myUM's Course Offerings, a more descriptive title will normally be attached.

CREDIT FOR SERVICE EXPERIENCE

Veterans of the military services may make application for academic credit for schooling received while in the armed forces. Credit may be awarded for work that the American Council on Education Guide regards as college level. Students must have credits approved by their departmental chairperson.

Credit for military service and experience is usually in the elective area and may not take the place of subjects required for graduation. Such work is not assigned quality points and is not included in quality point computations.

CREDIT ONLY OPTION

The credit only option has been established to encourage students to explore academic areas outside their major and minor fields of concentration. Students may use this option with free electives and receive a CR (Credit Received) or NC (No Credit). These courses
become part of a student’s record, but they do not count in the grade point average as computed by the University of Miami.

**Eligibility**

To be eligible to enroll for courses under the CR/NC option, a student must:

1. hold the standing of Sophomore or above, and, if a transfer, must have completed one semester of residency at the University of Miami;
2. at the time of registration have a minimum cumulative grade point average of at least 3.00;
3. elect the CR/NC option within two weeks following the last day of registration for Fall and Spring semesters. Election of CR/NC options for Summer Sessions must occur no later than the fifth class day following the last day of registration. No changes except withdrawals from the course are permitted after this time.

**Regulations and Restrictions**

1. Eligible students may take one course per semester for credit only, to a maximum of 9 credits.
2. Only free electives may be taken under this option. Free electives are defined as courses not taken to fulfill the requirements for the major, minor, or general distribution requirements (including prerequisite course work) of the University and the individual schools.
3. ENGLISH 105 and ENGLISH 106 cannot be taken for credit only.
4. Grading standards for the credit only option are the same as for students who register for the course under the regular grading system. Letter grades will be submitted by instructors to the Office of the Registrar that will change all grades A through C to CR (Credit Received) for those enrolled under the CR/NC option.
5. A grade of NC (No Credit) will be recorded by the Office of the Registrar for all grades of D and F. The student will not receive credit hours or quality points for the grade of NC.
6. Should a student subsequently change his/her major, free electives taken for credit only prior to the declaration of this major may be counted toward fulfilling major, minor, or general distribution requirements at the discretion of the department chairman and the academic dean.

**FINAL EXAMINATION POLICY**

Final examinations may not be given during a regularly scheduled class period. No examinations shall be permitted during the reading period.

Final Examinations may be rescheduled only with the permission of the dean.

No student shall be required to take more than two final examinations on one day. A student having three or more final examinations scheduled during one day may request the instructor of the course with the smallest enrollment to reschedule the examination for that individual. The request shall be made no later than two weeks before the last class day.

A student who has a conflict between a final examination and a religious observance may request that the instructor reschedule that student’s examination. The request shall be made no later than two weeks before the last class day.
For the resolution of any problem pertaining to the scheduling of final examinations, students should first consult their instructor.

REGISTRATION

Registration dates are shown in the University Academic Calendar, and all students are expected to register on these days. If a student is permitted to register late, a fee is charged.

REPEAT RULES

A student may repeat a course, but the repetition will not eliminate the previous grade from the record. A course may be repeated only once unless written authorization is provided by the chair of the department in which the course is offered or, in the case of an undepartmentalized school, by the dean.

GENERAL REPEAT RULE

- If the initial grade is D+ or lower (or a C- in cases where an academic unit requires a C or higher), both the initial grade and the repeat grade are included in the computation of the student’s cumulative grade-point average (CGPA).

- If the initial grade is a D or D+ (or a C- in cases where an academic unit requires a C or higher) and the repeat grade is passing, the number of credits required for graduation will be increased by the number of credits repeated.

- Registrations which involve repeating a course in which a grade of C or higher (or C- in cases where an academic unit does not require a C or higher) has already been earned do not earn quality points or credit hours, nor count as credits attempted.

- Courses repeated after graduation will be posted to the transcript showing the grade received; however, the CGPA and credits earned will not be modified based on the grade received for the repeated course.

FRESHMAN REPEAT RULE

- A student may elect to repeat up to two courses that were taken at the University of Miami within that student’s first two semesters of college work and in which the student earned a grade of D or F. Each repeated course must be taken at the University of Miami, must be the same course as the course initially taken, and must be completed within 12 months after the end of the semester (or summer session) in which the initial course was first taken.

- No course may be repeated more than once under this rule. A course repeated more than once under the University’s General Repeat Rule will not qualify under the Freshman Repeat Rule.

- Enrollment for a second time in a course constitutes a repeat of that course for the purposes of this rule, unless the student withdraws from the course on or before the University’s published Last Day to Drop a Course date.
• For each repeated course, only the second grade (whether higher, or lower, or the same as the first grade) will be used in the computation of the student’s CGPA. The initial course will not count as credits attempted or earned, although the initial course grade will remain on the student’s permanent record.

• Students who plan to apply to graduate and/or professional school should be aware that such institutions may recalculate the CGPA to include the initial grade earned before the repeat.

SCHEDULES

Fifteen or sixteen semester hours constitutes a normal schedule at the University. Academic deans and advisors will determine the appropriate credit load for their students. (A schedule of charges for credits is found in the Financial Information section of this Bulletin.) The schedule of any student whose outside interests cause unsatisfactory scholastic attainment may be reduced by the dean.

Veterans and children of deceased or totally disabled veterans receive training allowance in proportion to the schedule carried. The full load required to receive full training allowance is 12 in undergraduate school (nine in Graduate School).

TEMPORARY/PERMANENT WITHDRAWAL FROM THE UNIVERSITY

In order to withdraw officially from the University, a student must notify the Office of the Registrar and complete the withdrawal process. This includes obtaining a signed Change of Course form from his/her academic dean and completing the Withdrawing Student Responsibility Form. These documents must be submitted to the Office of the Registrar. Veterans and children of deceased or totally disabled veterans attending the University as students under the government’s educational benefit bills must also be cleared by the Veterans Affairs Certifying Official.

During the academic year, students who withdraw within five weeks after classes begin may receive a partial refund of tuition; during summer sessions, those who withdraw within two weeks may receive a partial refund of tuition.

Dropping courses in a summer session, thereby reducing a student credit-hour load to zero, is not construed as a formal withdrawal from the University.

Title IV financial aid and tuition will be refunded on a pro rata daily basis through 60 percent of the semester. This date is determined based on the student notifying the Office of the Registrar of his/her intent to withdraw. If the student fails to notify the Office of the Registrar, federal guidelines for determining refunds will be followed. Please see the Refund Policy under the Financial Payment Policies section of this Bulletin.

MILITARY WITHDRAWAL

a. On the recommendation of the Dean of the school, students who withdraw after the 12th week of the semester because of official orders to active duty with the Armed Forces of the United States may either be awarded credit (CR) or an academic grade for any course in which they have achieved a C or better up to the time of withdrawal. Instructors must certify that the student had achieved satisfactory accomplishment on the basis of previous work in the course by awarding an
appropriate grade. Accomplishment of less than C should be entered on the permanent record as a withdrawal without prejudice (W).

b. Credit granted for courses under this policy should count toward graduation.

c. There should be no refund of tuition for courses for which credit has been awarded. Refunds for courses not awarded credit should be on the same basis as complete withdrawals for military service.

d. The above recommendations are procedures for determining the awarding of credit and do not release the student from the usual withdrawal procedures.

GENERAL EDUCATIONAL REQUIREMENTS

The University’s General Education Requirements are designed to assure that graduates of the University will have acquired essential intellectual skills and will have been introduced to several of the main areas of intellectual achievement. Whereas the requirements of majors specified by Schools and Colleges within the University emphasize depth of learning, the General Education Requirements stress breadth of knowledge and the cultivation of intellectual abilities essential for the acquisition of knowledge.

Some schools and colleges may designate specific coursework to fulfill the areas of knowledge requirements listed below; students should consult the specific GER requirements for their school or college in the appropriate section of this Bulletin.

These requirements may be satisfied by courses taken for a letter grade, or by credits earned through Advanced Placement (AP) or International Baccalaureate (IB) examinations taken in high school. These credits may be applied to the 120 credits required for graduation.

A. AREAS OF PROFICIENCY

Proficiency requirements are intended to ensure that students either already possess, or will develop at the University, the ability to express themselves effectively, to use mathematics with facility, and to reason cogently.

1. English Composition

Students fulfill this requirement by satisfactorily completing English 105 and English 106 or its equivalent. Appropriate Advanced Placement (AP) or International Baccalaureate (IB) scores in English composition may be used to satisfy the English 105/106 requirement. An appropriate score on the SAT or ACT verbal examination may earn a student exemption from, but not credit in, ENG 105.

2. Writing Across the Curriculum (W)

In addition to English 105/106, students must complete five (5) courses designated as Writing Across the Curriculum (W) courses. “W” courses require a substantial amount of writing and the preparation of papers that are corrected for diction, syntax, style, and content. Some courses satisfying this Writing Across the Curriculum requirement will simultaneously fulfill Areas of Knowledge requirements (described below).

3. Mathematics

Students fulfill this requirement by satisfactorily completing a course in mathematics numbered above MTH 101 (excluding MTH 107), or MAS 110, or an approved course in
statistics. Exemption from the mathematics requirement or placement in prerequisite courses is based on any of the following tests: AP, IB, or an examination administered by the Department of Mathematics during Orientation.

**B. AREAS OF KNOWLEDGE**

These requirements are designed to help students understand and appreciate the intellectual achievements in major areas of human inquiry and creative endeavor. In satisfying these requirements students will explore the natural world, examine human development and behavior, and appreciate creative expression in the arts, literature, and philosophy. Courses satisfying these requirements are identified in the Bulletin under the Requirements for Graduation sections for each school or college.

1. Natural World (formerly Natural Sciences) **6 credits**
2. People and Society (formerly Social Sciences) **6 credits**
3. Arts and Humanities **12 credits**

Schools and colleges that do not have a language requirement may allow their students to satisfy the humanities requirement by taking a modern language course numbered 101-212 or Latin or Greek, so long as the language selected differs from the student’s native language, and if, when beginning with a 101-level course, they also take the 102-level course in the same language.

No more than six credit hours may be taken in any one department to satisfy the areas of knowledge requirement. Most courses above the 100-level require pre-requisites.

The following list is designed for general reference only. Please check with your advisor or the advising office in your school or college for specific requirements.

**Natural World**

Courses in Biology, Chemistry, Ecosystems Science and Policy, Geological Sciences, Marine Science, Physics, and Physical Science may be used to fulfill this requirement, as well as Anthropology 203, Geography 120, and First Year Seminars in the Natural Sciences (FNS 190-199).

**People and Society**

Courses in the following areas may be used to fulfill this requirement: Africana Studies; American Studies (AMS); Anthropology (except APY 203); Economics; Education and Psychological Studies; Geography and Regional Studies (except GEG 120); International Studies; Judaic Studies (JUS); History; Political Sciences; Psychology; Sociology; Teaching and Learning; Women’s and Gender Studies (WGS), and the following courses: Broadcasting and Broadcast Journalism (CBR 102); Mass Media Communication in Society (COM 101); Communication Theory (COM 110); Interpersonal Communication (COS 112); Nonverbal Communication (COS 118); Political Communication (COS 336); Persuasion (COS 472); First Year Seminars in the Social Sciences (FSS 190-199).

**Arts and Humanities**
Courses in the following areas may be used to fulfill this requirement: Architecture; Music; Art and Art History; Theatre Arts; Motion Pictures and Photography; English (200-level or above); Modern Languages and Literature (300-level or above); Philosophy; Religious Studies; and the following courses: Public Speaking (COS 211); World History of the Dance (DAN 250); First Year Seminars in the Arts and Humanities (FFA 190-199).

GRADES

ACADEMIC ALERT REPORT

Academic Alert Reports are sent to students who are doing D or F work in any course prior to the last day to drop a course. Faculty also have the option of providing students with constructive feedback relating to their attendance and the quality of their work. Academic Alert Reports are due on the 30th class day.

ACADEMIC STANDING, PROBATION, AND DISMISSAL

At the end of each semester the University shall determine whether a student is in Good Academic Standing, on Academic Probation, or subject to Academic Dismissal. Some schools and colleges may have exceptions to the Good Academic Standing, Academic Warning, Academic Probation and Academic Dismissal policies listed below.

Good Academic Standing

To be in Good Academic Standing a student must not be on Academic Probation or subject to Academic Dismissal.

Academic Warning

A student whose semester grade-point average (SGPA) falls below 2.0 shall receive a Warning. All students who receive a Warning must meet with their academic advisor before they may enroll for the following semester. The advisor may require a reduced course load.

Freshmen who receive a mid-term grade of D or F in any course shall receive a Mid-term Warning and must meet with their academic advisor within two weeks of the distribution of mid-term grade reports.

Academic Probation

Students other than first-semester freshmen whose UM cumulative grade-point average (CGPA) in University of Miami courses is below the following levels shall be placed on Academic Probation.

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<th>CGPA</th>
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<td>Fewer than 33 credits</td>
<td>1.7</td>
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<tr>
<td>33-64 credits</td>
<td>1.8</td>
</tr>
<tr>
<td>65-96 credits</td>
<td>1.9</td>
</tr>
<tr>
<td>More than 96 credits</td>
<td>2.0</td>
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</table>

* Total credits earned including work taken elsewhere and accepted by the University of Miami.
First-semester freshmen who have a semester grade-point average below 1.3 shall be placed on Academic Probation. In addition, students who fail to make satisfactory progress toward meeting the degree requirements specified by their School or College may be put on Probation by the Academic Standards Committee of the School/College. Students on Academic Probation must meet with their academic advisor before enrolling for the following semester and shall be restricted to a 13-credit load.

**Academic Dismissal**

A student who remains on probationary status after two consecutive semesters on Academic Probation shall be subject to Academic Dismissal. A student who has been on Academic Probation for one semester and has a CGPA below 1.0 shall also be subject to Academic Dismissal. The decision to dismiss shall be made by the Academic Standards Committee of the School or College in which the student is enrolled. If a decision is made not to dismiss, the student shall be on Academic Probation.

**APPEALS AND READMISSION**

Students who wish to appeal their Academic probation or dismissal for academic reasons, must do so in writing to the School or College Academic Standards Committee within thirty days of the notice of dismissal. Those who have been dismissed for academic reasons shall not be considered for readmission to any school or college at the University until at least two regular semesters have elapsed since their dismissal.

**Student Academic Appeals Process**

Appeals must be filed within a year of the occurrence of the academic action resulting in the appeal and prior to the completion of all degree requirements or withdrawal from the University. Exceptions to this deadline may be permitted by the Committee for good cause shown.

I. A student complaint regarding a faculty or administrative academic action must be addressed to the following entities or persons in this order:

a. The faculty member or administrator responsible for the course, program, or activity.

b. The department/program chair/director or administrative superior of the faculty member or administrator.

c. The Dean or designee of the school or college offering the course, program, or activity.

1. If the school, college or administrative unit has a committee constituted to hear student appeals, the student must avail him/herself to that process.

d. The University Ombudsperson. The Ombudsperson will review the merits of the appeal, and attempt to resolve the matter. The Ombudsperson, as part of his/her review should give the student a preliminary assessment as to whether the matter, as presented by the student at that time, is reviewable by the Committee. If the matter is the appeal of a final grade, and only after all the other steps are taken, the Ombudsperson may refer the matter to the Office of the Provost and forward the
materials submitted by the student as indicated in Section II, below.

e. The Executive Vice-President and Provost may request the Committee to review an appeal. If, but only if, s/he does so, the Committee shall have jurisdiction to review a grade-related appeal. As part of the request, the Executive Vice-President and Provost shall forward to the Committee, via the Faculty Senate office, the materials submitted by the student as indicated in Section II, below.

II. When bringing a matter before the Committee, the student must state in writing issues s/he wishes to have considered.

a. The appeal must include:

(i) An appeal letter clearly stating the conditions as seen by the student, and offering reasons for granting the appeal.

(ii) The appeal letter must indicate if the student wishes to make a personal appearance before the Committee and, if so, the reasons.

(iii) Documents of support (e.g., examinations, term papers, syllabi, or medical documentation of illness) that the student wishes the Committee to examine.

(iv) All written decisions of individual faculty/administrators, departments/programs/administrative units, college or school committees, and deans which are available to the student or in the student's possession.

b. If the appeal is based on or related to a charge made by the student of discrimination on the basis of race, color, national origin, religion, sex, sexual orientation, age, or handicap, a representative of the appropriate University office will be contacted and, as appropriate, consulted by the Committee in the appeal process.

c. If the appeal is based on or related to a disability:

(i) The ADA Coordinating Committee shall serve in an advisory capacity to the Committee.

(ii) The student is to include in the materials provided, the appropriate forms from the Offices of Disability Services documenting:

(1) an evaluation of the disability

(2) recommendations related to the disability

(iii) The Committee does not consider appeals based upon the grant or denial of an accommodation by the Office of Accessibility Resources. Instead, any such appeal is as prescribed by the Accessibility Resources Internal Appeals Procedure only.

d. The student is to provide all the information and documentation noted above to the Ombudsperson.

III. The Committee will consider appeals, absent unavoidable delays, at the first scheduled meeting that occurs after a date three weeks following the date on which it receives the
appeal from the Ombudsperson. The student may obtain the schedule of the meeting dates of the Committee from the Ombudsperson.

IV. The Committee will review the student’s written appeal, confer with the appropriate faculty, administrators, and others as it deems necessary in making its recommendation to the Executive Vice President and Provost. In the process of making its recommendation, the Committee may request:

a. The student to be interviewed, provide additional information or access to records, or appear before the Committee;

b. Relevant faculty or administrators to be interviewed, provide additional information or access to records, or appear before the Committee;

V. The Committee will communicate its findings and recommendations to the Executive Vice President and Provost. The final decision with respect to the appeal will be made by the Executive Vice President and Provost and communicated to the student in writing. Copies shall be provided to the Faculty Senate office and to the Chair of the Committee.
THE GRADING SYSTEM

The following symbols are used:*

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent attainment</td>
</tr>
<tr>
<td>B</td>
<td>Good attainment</td>
</tr>
<tr>
<td>C</td>
<td>Fair attainment</td>
</tr>
<tr>
<td>D</td>
<td>Poor attainment (earns credit but may not fulfill requirement for a major)</td>
</tr>
<tr>
<td>E</td>
<td>Failure (prior to Fall 1995)</td>
</tr>
<tr>
<td>F</td>
<td>Failure (effective Fall 1995)</td>
</tr>
<tr>
<td>W</td>
<td>Course dropped on or before the last day for withdrawing from classes as published in the official calendar of the University. Credit can be earned only by successful repetition of the course.</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete work in passing status with the instructor’s permission to complete the course. An “I” will be assigned only if the instructor is satisfied that there are reasonable non-academic grounds for the student’s incomplete work.** An “I” is not intended to be assigned in order to permit a student to repeat a course without registration or to permit a student to do additional work in order to improve upon grades earned during the semester. The student who receives an “I” must complete the course with a passing grade within the time frame specified by the professor of the course but not longer than the end of one calendar year, or prior to graduation, whichever occurs first. An Academic Dean may approve an extension initiated by the course instructor. An “I” not completed prior to the student’s graduation shall be changed to an “IE” or “IF” by action of the student’s Academic Dean.*</td>
</tr>
<tr>
<td>IP</td>
<td>Denotes in progress grade assigned upon satisfactory completion of the first-semester of a two-semester sequence, with the final grade for both courses to be submitted at the end of the second semester of the sequence. Please note that all “IP”s must be converted to a letter grade or “IF” at graduation. “IP” will also be converted to “IF” upon any departure from the University for a period in excess of one year.*****</td>
</tr>
<tr>
<td>IE</td>
<td>Symbol indicating that an “I” grade was not appropriately completed for credit under the preceding description. The symbol “IE” is equivalent to an “E” when computing a student’s average.***</td>
</tr>
<tr>
<td>IF</td>
<td>Symbol indicating that an “I” grade was not appropriately completed.**** The symbol “IF” is equivalent to an “F” when computing a student’s average.</td>
</tr>
<tr>
<td>CR</td>
<td>Grade signifying that credit only is awarded based on a “C” average or better.</td>
</tr>
<tr>
<td>NC</td>
<td>Grade signifying that no credit is awarded based on a course average below a grade of “C”.</td>
</tr>
<tr>
<td>NG</td>
<td>Symbol assigned by the Office of the Registrar indicating that the instructor has not reported the student’s grade. For a student to receive credit for the course, the instructor must report a passing grade prior to the student’s graduation, or by the end of one regular academic semester, whichever comes first. An Academic Dean may approve an extension initiated by the course instructor. An “NG” not replaced by a passing grade, or by a “W”, prior to the student’s graduation shall be changed to an “E” or “F” by action of the student’s Academic Dean.***</td>
</tr>
</tbody>
</table>

GRADE POINT AVERAGE

The grade point average is used to determine:

- class rank
Your official grade point average is based only on the work you have completed at the University of Miami. The only exception to this policy is for determining whether a student qualifies for honors or has met the minimum grade point requirement at the time of graduation. For graduation purposes, cumulative grade point average is defined as either the average of all grades earned at the University of Miami or the combined average of all graded work taken at the University of Miami and elsewhere whether or not the transfer work is accepted toward a degree at the University of Miami, whichever is lower.

Quality points per credit are awarded as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Quality Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.00</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>A-</td>
<td>3.70</td>
</tr>
<tr>
<td>B+</td>
<td>3.30</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>B-</td>
<td>2.70</td>
</tr>
<tr>
<td>C+</td>
<td>2.30</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>C-</td>
<td>1.70</td>
</tr>
<tr>
<td>D+</td>
<td>1.30</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>E (Prior to Fall 1995)</td>
<td>0.00</td>
</tr>
<tr>
<td>IE**</td>
<td>0.00</td>
</tr>
<tr>
<td>F (Effective Fall 1995)</td>
<td>0.00</td>
</tr>
<tr>
<td>IF</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Courses marked with an “IE” or “IF” count as credit attempted but are not counted in credits earned and do not carry quality points.*** Credits marked CR are counted as credits earned but are not counted in credits attempted and do not carry quality points. Courses marked with the symbols I, IP, W, NC, and NG do not carry credits attempted, credits earned, or quality points.

The grade point average is determined by dividing the total quality points earned by the total credits attempted.

Military service credit, some foreign university credit, correspondence course credit, credit by examination, etc., are not awarded quality points and do not enter the computation of the grade point average.

* Faculty Senate legislation #2000-24(B)
**Faculty Senate legislation #83032(B)
***Faculty Senate legislation #85001(B)
****Faculty Senate legislation #85005(B) and #97001(B)
*****Faculty Senate legislation #2001-29(B)
HONOR CODE

The Honor Code, initiated at the request of the Undergraduate Student Body Government, ratified by student referendum, approved by the Faculty Senate, by the President of the University, and administered by students, protects the academic integrity of the University of Miami by encouraging consistent ethical behavior among its undergraduate students. The Code provides standards that prohibit all forms of scholastic dishonesty, including cheating, plagiarism, collusion, and falsification or misrepresentation of experimental data. The Code covers all written and oral examinations, term papers, creative works, assigned computer related work, and any other academic work done at the University by an undergraduate student.

All undergraduate students are responsible for reading, understanding, and upholding the Honor Code. Signed pledges are required for written work submitted for evaluation, but the absence of a signed pledge does not free a student from the ethical standards required by the Code. Procedures for dealing with infractions of the Code, including provisions for appeals, are printed in the text of the Honor Code. Copies may be obtained from the Office of the Dean of Students or from the office of the Undergraduate Student Body Government, or on-line at www.miami.edu/honor-council.

In keeping with the traditional prerogatives of university faculties, nothing in the Code infringes on the faculty’s assignment of grades undertaken in a class. Instructors are informed when students have been found guilty of infractions involving their classes. Courses in which students have been failed for academic dishonesty may neither be dropped nor repeated under the terms of the freshman repeat rule.

The Dean’s List

The Dean’s List is composed of those undergraduate students who are enrolled in a degree-seeking program and have attained high scholastic achievement for the semester. To attain the Dean’s List, a student must, for the semester:

1. have registered for and have completed 12 or more graded credits (excluding the credits earned in courses taken for credit only);
2. have attained a quality point average of 3.50 or higher for the semester;
3. have no courses with pending grades (I or NG).

The Dean’s List will be announced by each college and school at the end of the semester. The Office of the Registrar will post this achievement to the student’s permanent record.

The Provost’s Honor Roll

The Provost’s Honor Roll is composed of those undergraduate students who are enrolled in a degree-seeking program and have attained a high scholastic achievement for the semester. To attain the Provost’s Honor Roll, a student must, for the semester:

1. have registered for and have completed 12 or more graded credits (excluding the credits earned in courses taken for credit only);
2. have attained a quality point average of 3.75 or higher for the semester;
3. have no courses with pending grades (I or NG).
The Provost’s Honor Roll will be announced by the Provost’s Office. The Office of the Registrar will post the achievement to the student's permanent record, and distribute the Provost's Honor Roll Certificate.

**The President’s Honor Roll**

The President’s Honor Roll is composed of those undergraduate students who are enrolled in a degree-seeking program and have attained the highest possible scholastic achievement for the semester. To attain the President’s Honor Roll a student must, for the semester:

1. have registered for and completed 12 or more graded credits (excluding credits earned in courses taken for credit only);
2. have attained a quality point average of 4.0 for the semester;
3. have no courses with pending grades (I or NG).

The President’s Honor Roll will be announced by the Office of the Registrar who will post the achievement to the student’s permanent record, and distribute the President’s Honor Roll Certificate.

**GRADUATION**

**DIPLOMAS AND TRANSCRIPTS**

No diplomas or official transcripts are released from the Office of the Registrar without the approval of the Office of Student Account Services.

Official transcripts are issued only upon receipt of a written request from the student and upon payment of the appropriate transcript fee of $6 each for mailed transcripts and $7 each for pick-up and immediate service transcripts.

Unofficial transcripts are available free of charge on myUM or for $3 each if ordered in the Office of the Registrar, 121 UC. Those ordered in the Office of the Registrar will be available for pick-up within one week after the request is submitted.

**GRADUATION AND DEGREES**

It is the responsibility of the student to be sure he/she makes satisfactory progress toward, and fulfills requirements for, the degree he/she seeks. He/she may obtain help in the office of his/her Academic Dean.

To receive a Bachelor’s degree from the University, the student must earn at least 120 semester hours of credit (more in some schools), with a C average (2.0) or better as well as a C average for all work done at the University of Miami.

Students must also meet all of the degree requirements of their respective schools and should not expect requirements in composition, mathematics, foreign languages, or other subject areas to be waived for any reason.

- Each student must complete the final 45 credits that are applied to his or her baccalaureate degree in residence at the University of Miami.
- In addition, each student must complete at least half of the credits specified for his or her major in residence at the University of Miami.
• Not more than 30 hours of correspondence work and extension work combined will be accepted toward a degree, and neither correspondence nor extension work may be credited as a part of the last 45 hours of the student’s program.

• Not more than 30 hours of credit based on military experience will be awarded toward the degree.

• Credits earned in a manner other than by course registration, i.e. proficiency examination, CLEP, placement tests, etc., may not be used to meet the final 45 credit hour residency requirement, however such credit by examination may be earned while the student is enrolled in the courses needed to meet the final 45 credit-hour residency requirement.

• To obtain two different undergraduate degrees, a student must complete all the requirements for each degree.

• A second undergraduate degree on the same level requires a different major and a different minor.

• If the degrees are in two different schools, a student must meet the requirements with distinctly different majors and minors, wherever applicable, in each school.

As a general rule, college credits more than 12 years old are not recognized for degree purposes. Students in this category should consult their academic deans.

A student must apply on myUM during the semester in which they expect to graduate.

A diploma must be issued in the name on the student’s academic record. Addition or omission of a middle name is acceptable. The addition of a middle name will be acceptable only as it appears on the student’s application for admission. If the middle name is not on the application or if the student wants another version, written proof such as a birth certificate or legal name change must be presented to the Office of the Registrar located in the University Center, Room 121. If requested, the addition of the mother’s maiden name is acceptable.

The last date on which application may be made for each graduation period is published in the Academic Calendar. The academic deans are the only officers authorized to approve placing the student’s name on the candidate degree list.

GRADUATION HONORS

For the determination of honors, cumulative grade point average means either the average of all grades earned at the University of Miami or the combined average of all graded work taken at the University of Miami and elsewhere whether or not the transfer work is accepted toward a degree at the University of Miami, whichever is lower. All students who, at the time of graduation, have earned a cumulative grade point average of 3.600 will be awarded degrees cum laude.

To graduate magna cum laude, a student must:

1. attain a cumulative grade point average of at least 3.750;
2. earn not less than six credit hours in independent study, senior thesis, or other courses specifically designated by the department or school;
3. complete, as a result of such courses, a thesis or project judged by a departmental or school committee to be worthy of high honors;
4. fulfill any additional requirements that may be established by the student’s school or department;
5. apply at least one semester prior to graduation for admission to candidacy in the Honors Program Office; and
6. submit an honors thesis or project recommended by the student’s department or school and judged worthy of special distinction by a University committee.

To graduate *summa cum laude*, a student must:

1. attain a cumulative grade point average of at least 3.900;
2. in addition, meet all the preceding requirements for *magna cum laude*.

For further information about qualification for honors, students should consult their departmental advisor.

**STUDENT STATUS**

**ACADEMIC BANKRUPTCY**

Students entering college sometimes perform at an unacceptable academic level. They either drop out or are dismissed. Some individuals with this experience re-evaluate their educational goals and desire to return to college. Their academic record, however, may present an insurmountable obstacle. In order to be considered for academic bankruptcy, a student’s combined college grade point average must be below 2.00 as calculated by the Office of Admission.

Undergraduate students in this category who want the opportunity for a fresh start at the University without this handicap may apply for admission or readmission with the request that their prior academic record be disregarded.

**Application for Initial Admission to the University with Academic Bankruptcy**

The applicant must apply to the Office of Admission and:

1. must have been admissible to the University as a senior in high school,
2. must have attended an accredited institution for at least one year and must not have attended any college or university for the preceding six months, and,
3. must not be admissible to the University based on his or her college-level work.

**Application for Readmission to the University with Academic Bankruptcy**

A University of Miami student who has dropped out or who has been dismissed may request Academic Bankruptcy on meeting these conditions:

1. The student must apply to the Office of the Registrar.
2. At least six months must have elapsed since the end of the semester in which the student was last in attendance at the University of Miami.
3. Detailed written evidence must be presented to the school in which reacceptance is sought, showing that the conditions or factors that caused the poor performance have changed sufficiently, so that there is a reasonable expectation of future satisfactory performance.

**Conditions of Approval**
1. If Academic Bankruptcy is approved, no course credits earned previously will be displayed on the transcript for credits attempted, credits earned, or quality points earned; however, all grades earned previously will remain on the transcript.

2. Readmission applicants with approval from the dean of the accepting school, may have Academic Bankruptcy apply only to those credits taken by the student when last in attendance at the University of Miami, so that credits earned at another institution subsequent to the date the student last attended the University are not affected.

Academic Bankruptcy can be granted only once for any student.

**CERTIFICATION OF ENROLLMENT**

Students who require certification of enrollment for insurance or financial lender purposes must submit a request in writing to the Office of the Registrar. Students will be certified as currently enrolled once they have met their financial obligations. Students who require enrollment certification for scholarship purposes only, will be certified as course selected, until financial obligations are met.

**CLASSIFICATION OF STUDENTS**

Students are classified in three ways:

- a. by course load (full- or part-time);
- b. by objective (degree sought, non-degree, transient, audit, etc.);
- c. by year.

**By Course Load**

A student is a full-time student if he/she carries not less than the minimum normal load, 12 semester hours per semester in most schools, nine semester hours in the Graduate School (please refer to the Graduate section for exceptions). The minimum semester hour credit loads in a summer session will vary for each category, according to the length of the sessions. (A typical full-time class schedule not requiring override approval from an advisor consists of 15 semester hours. In some cases, students are recommended to enroll in fewer than 15 credits.) For spring semester, Intersession courses can be included when evaluating full-time status. It is important to note that tuition charges for Intersession courses typically are separate from and in addition to charges for the spring semester. Full-time status may vary from one college or school to another. Students should consult with the dean of his/her college or school for details.

**By Objective**

A degree student is one whose immediate educational objective consists wholly or principally of work normally creditable toward a University of Miami bachelor’s or higher degree. To qualify for this status, a student must meet the standards for admission.

A non-degree student is one who is not pursuing a degree program. Such students are those who, although eligible for degree candidacy, have requested permission to take a limited or special selection of credit courses without regard to requirements for a degree. This classification includes high school graduates and students with previous college credit
a. who do not want degree status;
b. whose applications for degree status are incomplete;
c. who are taking work toward teacher certification;
d. who are workshop applicants;
e. who are visiting summer school students.

(Students under 21 years of age who have not completed high school will not be admitted to this status.) Non-degree students are sub-classified as transient, special, etc.

An undergraduate non-degree student may petition the Director of Admissions to have his/her status changed to that of degree student. Up to 30 credits earned in non-degree status may be applied towards a degree, but only to the extent approved by the appropriate academic dean. It is therefore important that the degree student identify himself/herself as such, early in his/her program.

Senior-Graduate
University of Miami undergraduates within 30 credits of meeting the requirements for the Baccalaureate Degree may be considered for concurrent admission to graduate study in non-degree senior-graduate status, and in this status may take and receive credit for graduate courses while completing the requirement for the baccalaureate.

Admission to Senior-Graduate Status requires:

1. an academic record strong enough to justify regular admission to the department concerned on the basis of the academic record alone (at least 3.0 GPA);
2. the written approval of the Chairman of the Department, the Dean of the Undergraduate School or College, Financial Aid and of the Graduate Dean prior to registration;
3. the submission of a special form (which can be obtained at the Graduate School) that will not require the thirty-five dollar ($35.00) application fee.

The graduate credits earned may NOT be used to meet undergraduate graduation requirements or be used to meet the 120 credit hour requirements at the University of Miami. (Refer to the Graduate section for more information.)

No more than six (6) hours credit may be taken in one semester, and no more than a total of twelve (12) hours credit may be taken while in Senior-Graduate Status. Students may take no more than 13 credits of combined graduate and undergraduate courses per semester.

Admission to Senior-Graduate status does not automatically admit the student, upon graduation, to status as an applicant for a graduate degree at the University of Miami.

NOTE: Senior Graduate registration can only be executed at the Office of the Registrar, 121 University Center.

A graduate student is one who has been admitted to the Graduate School.

Transient Student
A transient student is one who is enrolled at the University of Miami with the sole intention of using credits earned toward graduation elsewhere.
Audit Student

An audit student is one who enrolls as an observer or listener only. Auditing is allowed only when there is space available in the class. Audit status may be restricted by the Dean in the case of laboratory, studio or performance courses where audit status is not appropriate. Audit students receive no credit, do not prepare written assignments or take examinations, are not eligible for residence in campus residence halls, and do not receive student privileges except for the use of the library. No entries are made on the permanent academic record for audited courses.

Students wishing to change from audit status to credit status must obtain all necessary approvals within two weeks following the last day of registration for Fall and Spring semesters and no later than the fifth class day following the last day of registration for Summer Sessions. No changes except withdrawals from the course are permitted after this time.

Note: Fee for auditing a course is non-refundable. Please refer to financial information section of the bulletin.

By Year

A freshman is a degree student who has earned 0 to 29 credits.
A sophomore is a degree student who has earned from 30 to 59 credits.
A junior is a degree student who has earned from 60 to 89 credits.
A senior is a degree student who has earned 90 credits or more.

ELIGIBILITY FOR UNIVERSITY EXTRACURRICULAR ACTIVITIES

Full participation in University-sanctioned extracurricular activities and organizations is open to all full-time students who are not on academic probation and who have been assessed the Student Activity Fee. Extracurricular activities include, but are not limited to the following: academic, athletic, dramatic, or musical organizations or teams; student organizations registered with the Committee on Student Organizations (COSO); fraternities and sororities; student publications; program boards; and University committees.

Students on probation may participate in any activity required as partial fulfillment of their degree program; may attend meetings of organizations; and may play intramural sports. They may not otherwise compete, perform, or hold a leadership position. At the beginning of each fall semester, the activity’s faculty or staff advisor or appropriate committee chairperson shall determine with the Office of the Provost the eligibility of each participating student. Some activities apply stricter standards, and may monitor academic progress and review eligibility during the academic year. Students should consult with the individual activity for specific requirements.

READMISSION
Undergraduate students who have not attended the University for at least one semester should request readmission through the Office of the Registrar no later than two weeks before the beginning of classes, in the semester they wish to re-enroll. Readmission to the University is contingent on approval of the Dean of the school/college the student is applying to and clearance from the Office of Student Account Services. International students who seek readmission must receive clearance from International Admission and submit a bank letter to receive an I-20 from International Student and Scholar Services. If the student has attended another college or university since he/she last was enrolled in the University of Miami, he/she will be required to provide a transcript of his/her work.

Leave of absence policies may vary from one college or school to another. Students should consult with the dean of his/her college or school for details. Students granted a leave of absence may re-enroll either under the requirements of the Bulletin in effect at the time originally entered, or the Bulletin in effect at the time of re-admission. A student not granted a leave of absence must re-enroll under the requirements of the Bulletin in effect at the time of re-admission.

A student who is placed on the bachelor’s degree candidate list for a given semester will not receive registration materials for any subsequent semester until the student applies for readmission or admission to a new program. A candidate may wish to continue his/her studies in one of the following situations:

1. If the student fails to graduate and further registration is needed, they must delete their application for graduation in myUM and within twenty-four hours, registration for subsequent semesters or sessions should be available. Students should contact the Office of the Registrar if they experience problems.
2. If the student graduates and wishes to pursue a second bachelor’s degree, the student must apply for readmission, stating his/her new degree objective.
3. If the student graduates and wishes to take additional course work without a degree objective, the student must apply for unclassified status.

Proof of immunization must be provided before readmission to the University of Miami. Please provide proof to the Student Health Center at your earliest convenience. Failure to do so may prevent you from registering for classes.

STUDENT IDENTIFICATION NUMBERS

All students at the University of Miami will receive an identification number that is unique to them. This number supplements the social security number, which is also required by the university in order to provide information to the federal government and approved agencies. Access to the social security numbers is limited to staff who have a legitimate need for that information.

TRANSFERS BETWEEN SCHOOLS AND COLLEGES

Undergraduate students who have compiled fewer than sixty (60) credits may transfer between schools and colleges provided that such students:

1. demonstrate their academic admissibility to the new program (as defined by class rank and SAT scores) at the time of their original matriculation at the University;
2. satisfy any special criteria required for admission by a particular program (e.g., auditions in the arts, portfolios in architecture, etc.); and
3. obtain the approval of the Dean of the receiving school or college.

It is a general policy of the University that students admitted to degree seeking status may not transfer to an unclassified status.

Students who have compiled 60 or more credits with an average of 2.0 or higher and who have satisfied all of the above three conditions are eligible to transfer between schools and colleges pending space availability.
ADMISSION

The University of Miami is a member of the National Association for College Admission Counseling and subscribes to its Statement of Principles of Good Practice.

ADMISSION TO THE FRESHMAN CLASS

The Admission Committee reviews applications and bases admission decisions on the following factors:

- **The Secondary School Record.** The applicant must be in the process of completing graduation requirements at an accredited secondary school or must be a graduate of an accredited secondary school. The applicant must have successfully completed a solid college preparatory program including English, Mathematics, natural sciences, social sciences and foreign language.

- **Standardized Tests.** Official results of the SAT or ACT must be submitted by all applicants. The results of these tests, together with the secondary school record, provide a better measure of the ability of a candidate to perform college level work successfully than can be obtained by either measure alone.

- **The Counselors Evaluation Form.** This form is to be completed by the applicant’s secondary school counselor and includes rank in class, test score information, and an evaluation of potential for academic success in the student’s area of interest.

- **The Essay.** Since each applicant is considered individually, the Essay provides the opportunity to present information that may assist the Admission Committee as it evaluates the application for admission.

See admission procedures for freshmen

Admission of transfer students

Transfer admission may be granted in most fields of study to students who have earned credit from other regionally accredited colleges or universities. Courses completed with **passing grades of C or higher** at other colleges and universities and acceptable for academic credit by the University of Miami, will be verified, and where appropriate, will be translated into University of Miami equivalents by the Office of Admission. However, the Dean of the College or School within the University from which the student plans to graduate determines which transferred courses may be counted toward meeting graduation requirements of that College or School.

**Transfer of credits to UM**

Work taken at other institutions will appear on the University of Miami transcript in separate entries as:

a. The total number of transferable credits attempted and quality points earned, regardless of grades, and

b. The total credits transferred, which shall be the total credits for which a grade of C or higher was earned.
Note: Only the transfer totals earned are added to the University of Miami totals. Total credits attempted and quality points earned elsewhere are not included in the University of Miami totals.

The University does not accept transfer credit for courses in which a grade of C- and below (or the equivalent grade) was earned. However, grades of C-, D, and F are used to calculate the transfer admission grade point average.

Credits are not transferred from institutions not accredited by the appropriate regional accrediting association. Limited exceptions may be made with the approval of the Dean in the College or School of the student’s major. Credits transferred from institutions not in existence long enough to attain regional accreditation must be validated by the attainment of a C average or better in the first 12 credits of course work taken at the University of Miami.

The University does not have a coursework forgiveness policy. The grades of any repeated courses will be averaged.

A student may not repeat a course in which a grade of C or higher has been earned. This is considered an illegal repeat.

Upper division course requirements (300 level or above) at the University may not be satisfied with community college courses.

Required credits in residence at the University of Miami

A student transferring credits from a 2-year community or junior college (this being the last school attended) must complete a minimum of 56 credits in residence at the University of Miami to earn an undergraduate degree.

A student transferring credits from a 4-year college or university (this being the last school attended) must complete a minimum of 45 credits in residence at the University of Miami to earn an undergraduate degree.

At least half of the credits required for the chosen Major or Minor must be completed at the University of Miami.

See Admission procedures for transfer students

ADMISSION OF UNDERGRADUATE INTERNATIONAL STUDENTS

ELIGIBILITY FOR ADMISSION

ADMISSION PROCEDURES FOR INTERNATIONAL STUDENTS

EDUCATIONAL DOCUMENTS

Diplomas, Certificates
Copies should be enclosed with the application. Students from countries following the British educational system must submit certified photocopies, or ask the examinations council to mail confidential results to the University of Miami. Reports of scores in school-leaving examinations (e.g., Baccalaureate) must also be submitted.

**Transcripts, Statements of Marks**
A transcript must contain the following information: subjects studied; marks (grades) awarded; length of class periods; number of periods per week for each subject; and grading scale with minimum passing mark. Year-by-year records of marks should be sent to the University of Miami directly from U.S. institutions. Certified records from foreign institutions may be submitted by applicants, but the University may sometimes insist that such transcripts be sent directly to the University of Miami from the issuing institutions. All secondary and tertiary transcripts must be submitted.

**English Translations**
Documents in a language other than English must be accompanied by certified English translations. Notarized translations will not be accepted. Translations supplement but do not replace original documents. Please remember to send both.

**Syllabus of university study** (description of each course or subject studied accompanied by certified English translations. Notarized translations will not be accepted).

**A current (within the past six months) bank or government sponsorship letter** guaranteeing payment for tuition and fees, books, room and board, medical insurance and personal expenses for one calendar year (two semesters and two summer sessions) is required.

**EXAMINATIONS FOR INTERNATIONAL STUDENTS**
All international students whose native language is not English, including those applying for transfer from U.S. institutions, are required to submit the results of the Test of English as a Foreign Language (TOEFL).

**TOEFL Score Requirements**

<table>
<thead>
<tr>
<th>TOEFL</th>
<th>Minimum Passing Score</th>
<th>Concurrent Enrollment (IEP and Academic)</th>
<th>Full-time IEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBT</td>
<td>550</td>
<td>500-549</td>
<td>Below 500</td>
</tr>
<tr>
<td>CBT</td>
<td>213</td>
<td>173-213</td>
<td>Below 173</td>
</tr>
<tr>
<td>iBT</td>
<td>*59</td>
<td>*45-58</td>
<td>Below *45</td>
</tr>
</tbody>
</table>

*Note: TOEFL score requirements vary depending on the type of TOEFL (PBT, CBT, iBT). The scores listed above are minimum passing scores for different enrollment categories (Concurrent Enrollment: IEP and Academic) and for full-time IEP.
*Based on maximum score of 90 for Reading, Writing and Listening Sections only.

Conditional admission: Academically qualified applicants who are unable to take the TOEFL, or who have scored less than the required minimum, may be offered admission to undergraduate programs with the condition that they successfully complete level five of the University of Miami Intensive English Program or obtain a 550 TOEFL and higher.

**PROGRAMS OF STUDY**

International students are eligible to apply for all programs offered at the University of Miami. It should be noted that medicine and law are studied at the graduate level in the United States, and it is therefore inappropriate for undergraduate international applicants to request these programs.

**FINANCIAL INFORMATION**

The University of Miami has no financial assistance for international students other than academic scholarships. International students must provide funds for all of their expenses during the entire period of study, including travel and vacations. Students who would not be able to cover their expenses are best advised not to apply for admission.

**EARLY ADMISSION**

A limited number of carefully selected students who are currently enrolled in high school and who have completed three years of study may be admitted to the University as freshmen. Early admission applicants typically have a very strong academic background and demonstrate a mature character.

Students who wish to apply under Early Admission must have the support of his/her parents, guidance counselor, and high school. Early applicants must also schedule an interview with the Director of Admission.

Early Admission applicants must submit official high school transcripts, SAT or ACT examination results, Counselor Evaluation Form and Essay as part of the admission process.

Early Admission applicants will be notified of an admission decision by June 1 or after receipt of grades from the final high school year completed.

Since every applicant must be appraised individually, no general qualifications can be listed. Students interested in early admission may send inquiries and requests for applications to the Office of Admission.

**ADVANCED PLACEMENT AND/OR CREDIT GRANTED TOWARD GRADUATION**

The University allows students to receive college credit toward graduation from the following programs: Advanced Placement, International Baccalaureate, and College Level Examination Program. To have Advanced Placement, International Baccalaureate, or College Level Examination Program credits evaluated, the student must submit an official test result report to the Office of Admission. The University of Miami does not give credit for CLEP Foreign Language and General Examinations.
The University will accept not more than 60 credits from these programs to count toward the 120 credits required for graduation.

**SUBMITTING GED SCORES**

An applicant may apply to the University upon completion of the GED in lieu of completing high school. When applying with the GED, the applicant must submit official high school transcripts up to the time of withdrawal, as well as the official GED score report and diploma.

Applicants submitting the GED must achieve the following scores to be considered for admission. These scores should be considered a guideline and do not guarantee admission to the applicant.

**For exams taken in English:**
Overall score of 2800
No subscore below 500

**For exams taken in any language other than English:**
Overall score of 3000
No subscore below 600

It is strongly suggested that applicants submitting the GED in any language other than English also submit a TOEFL score.

**NON-DEGREE ENROLLMENT**

**ADULT STUDENT ACCESS PROGRAM (A.S.A.P.)**
Students may take up to 30 credits in an undergraduate, non-degree seeking category, which may be applied to a degree program, after all application and degree-seeking requirements are met. In order to be enrolled in this category, students submit a one-page application and no other documents or transcripts; academic achievement is evaluated after 12 credits are earned. A 2.5 G.P.A. is required to continue in the program beyond 12 credits.

Students may take up to 6 credits maximum in a graduate, non-degree seeking category which may be applied to certain degree programs, after all application and degree seeking requirements are met. However, not all graduate departments participate in this program. In order to enroll in this category, students submit a one-page application and no other documents or transcripts, after securing the written permission of the participating graduate department and the Dean of the Graduate School. The application for enrollment may be found on the Web at [www.miami.edu/asap](http://www.miami.edu/asap).

For more information, contact: The Adult Student Access Program, Division of Continuing Studies, University of Miami, P.O. Box 248005, Coral Gables, FL 33124-1610, (305) 284-2727.
FINANCIAL ASSISTANCE

The Office of Financial Assistance Services administers federal, state, private and University financial assistance programs. For information about student employment, including the Miami Commitment Program, see the Office of Student Employment.

FINANCIAL ASSISTANCE SERVICES

It is the purpose of the Office of Financial Assistance Services to provide needy and/or academically qualified students with financial aid in the form of scholarships, grants, loans and work programs to the extent that resources are available. In order to make the best use of limited funds, awards usually consist of a package of two or more types of aid.

In addition, professional staff members are ready to help all students plan for the most efficient use of their financial resources for education.

Underlying the awarding of need-based financial assistance is the nationally accepted philosophy that the student and family have the primary responsibility for educational costs. Need-based financial assistance serves to supplement these primary resources.

• Students who require financial assistance in order to attend the University should apply for assistance while they are candidates for admission.

• Candidates should indicate their interest in financial assistance application information by checking the box provided for that purpose in the Application for Admission.

• A determination of eligibility for assistance based on need is made using the results of the family’s submission of the Free Application for Federal Student Aid (FAFSA) on the Web to the U.S. Department of Education for the academic year that the student will attend.

• Entering freshmen should submit their FAFSA so that it is received by the federal processor by the February 1 preferred deadline.

• Entering transfer and graduate students should submit their regular or renewal FAFSA so that it is received by the federal processor by the March 1 preferred deadline.

• Continuing undergraduate students should submit their regular or renewal FAFSA so that it is received by the federal processor by the February 1 preferred deadline.

• It is permissible to use estimated financial information when completing the FAFSA on the Web if doing so is the only way the family can apply by the preferred deadline. Any estimated information must be updated by the applicant using FAFSA on the Web once final figures are available.

Financial aid applications are accepted throughout the year but it is important to note that the appropriate preferred deadline dates for receipt of aid applications be met. A new FAFSA on the Web must be submitted for EACH academic year.
STANDARDS OF ACADEMIC PROGRESS (Undergraduate and Graduate)

Yearly and Semester Review

- At the end of each spring semester, the Office of Financial Assistance Services reviews the academic progress of all University of Miami financial aid recipients.

- The academic records from both the fall and spring semesters are considered. If at that time it is determined that a student is not meeting the university standards of academic progress for renewal of regular financial assistance and academic scholarships, a written notification is sent to the student.

- Students granted a one-semester conditional appeal for scholarship and/or regular financial assistance by the Standards of Academic Progress Appeal Committee will be reviewed at the end of that semester.

Regular Financial Assistance

- In compliance with federal financial aid regulations, the University of Miami requires satisfactory progress towards a degree as an eligibility requirement for financial assistance.

- This policy is applicable to all undergraduate, graduate and doctoral students receiving financial aid through university, state, and federal aid sources, including the Federal Parent Loan for Undergraduate Students (PLUS).

Credit Requirements

- All full-time undergraduate students are required to register for at least 24 (a minimum of 12 each semester) new credit hours at the University of Miami each academic year, defined as the fall and spring semesters.

- Full-time undergraduate students who enroll for only one semester are required to register for at least 12 new credit hours during that semester.

- Graduate students must be enrolled at least half-time in order to receive federal financial assistance. Half-time enrollment status for a graduate student is constituted by at least five credits. The only exception to this credit requirement is enrollment in any of the 700 level research courses. Students enrolled in any of these courses are considered full-time and are eligible for federal loans.

- A student must have earned 75% of the total hours attempted during the term at his/her current degree level established by each University school or college.

- Undergraduate and graduate level credits cannot be combined to meet the 75% standard; however, hours transferred into the University of Miami are used in the calculation.

- Withdrawals, incompletes, audits, and Fs are not considered earned hours.
• Reinstatement of aid eligibility can be obtained by earning additional University approved credits, meeting the 75% standard, or appealing as outlined later in this section.

• Freshmen (0-29 credits) new to the University will be allowed a one-year adjustment period.

• If the student does not earn 75% of the hours attempted at the end of the initial academic year, the student will be considered on probation. Aid will not be withdrawn for the subsequent term, but at the end of that term, the student’s academic record will be reviewed by OFAS and appropriate renewal or termination actions will be taken.

Cumulative Grade Point Average Requirement

Undergraduate Students
All undergraduate students must meet and maintain the University of Miami credit and cumulative grade point average (CGPA) requirements to maintain satisfactory academic progress. The criteria listed below must be met to receive federal and institutional financial assistance administered by the Office of Financial Assistance Services.


<table>
<thead>
<tr>
<th>Semester Hours Earned</th>
<th>Minimum Cumulative G.P.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 33</td>
<td>1.7</td>
</tr>
<tr>
<td>34 to 64</td>
<td>1.8</td>
</tr>
<tr>
<td>65 to 96</td>
<td>1.9</td>
</tr>
<tr>
<td>97 +</td>
<td>2.0</td>
</tr>
</tbody>
</table>

This does not include University of Miami scholarships and State of Florida financial aid. State of Florida financial aid and University of Miami academic scholarships have their own CGPA requirements.

Graduate and Doctoral Students
All University of Miami graduate and doctoral students must maintain a minimum 3.0 cumulative grade point average (CGPA). First semester graduate students who have a semester grade point average below a 3.0 CGPA will receive a warning after that semester. Any graduate student who receives this warning letter must meet the full standards of academic progress by the end of the subsequent semester.

Graduate course credits earned include those labeled IP. Students who fail to meet the minimum credit or cumulative grade point average requirements have failed to meet the satisfactory academic progress standards established by the University. Those in violation of the satisfactory progress eligibility requirements will be notified in writing of their eligibility status and right of appeal.

Maximum Period of Eligibility

• Degree-seeking undergraduate and graduate students receiving federal aid must complete their degrees within 150% of the normal time for completion as determined by the school or college catalog under which the student was admitted. For example, if an academic program requires 120 credit hours, the student must complete the program within 180 total credit hours. Credits used in this calculation include those accepted for transfer and those attempted at the University of Miami.
• Students receiving University scholarships and need-based grants are limited to four years of eligibility (five years for five-year degrees).

• William L. Boyd, IV, Florida Resident Access Grant (BFRAG) and Florida Student Access Grant (FSAG) recipients are limited to nine semesters of eligibility.

• Graduate students entering the dissertation or thesis stage of their degree program may receive federally funded assistance for only two years. Please note that these two years are included in the maximum periods previously listed.

• Graduate students who plan to enroll in a graduate degree program should keep in mind their aggregate loan limits. For more information, go to the National Student Loan Data System (NSLDS) at www.nslds.ed.gov. This site displays information on loan amounts, outstanding balances, loan statuses and disbursements.

Graduate Students

In order to receive a graduate assistantship, fellowship or tuition scholarship, a graduate student must:
• Be admitted unconditionally to a post-baccalaureate degree program;
• Be enrolled for full-time study; and
• Maintain a cumulative graduate grade point average of 3.0 or above.

For additional information, please visit the Graduate School Website at www.miami.edu/grad. For specific information, contact the Graduate Advisor of each program. For information regarding loan and work-study opportunities, visit the Office of Financial Assistance website at www.miami.edu/ofas.

SCHOLARSHIPS (Undergraduate only)

• Students who are receiving any of the University of Miami academic scholarships - Singer, Weeks, Hammond, Miami, Bowman Ashe, Stanford, Pearson, Merrick, or Alumni - must meet the same credit requirements as students receiving regular financial assistance.

• Scholarship recipients, however, must maintain a CGPA of at least 2.0 for all credits earned at the University of Miami to retain their scholarship.

• First-time freshmen are eligible for University of Miami academic scholarships for up to eight semesters; transfer students are eligible for up to four semesters.

• Golden Drum/Ronald Hammond scholarship recipients should refer to their contract for renewal criteria from the Office of Multicultural Student Affairs.

Guaranteed Scholarship

First-time freshmen awarded a University of Miami academic scholarship, automatically retain their scholarship after their first year of school. The student must maintain a minimum 2.0 CGPA and complete at least 24 University of Miami credit hours during their second academic year to guarantee their scholarship for the remaining two years of undergraduate studies.
First-year transfer students awarded a University of Miami Stanford or Pearson Scholarship are guaranteed their scholarship if they

- have completed 24 credit hours during their first academic year,
- have maintained a minimum 2.0 CGPA, and
- have registered as a full-time student for their second year of eligibility.

Transfer students meeting these requirements will be guaranteed their scholarship for four semesters or until they graduate, whichever comes first.

Any University of Miami academic scholarship will be guaranteed for the remainder of an undergraduate student’s eligibility if they are not on probation at the end of their 4th semester (2nd semester for transfer students).

**Automatic Probation and Scholarship Assistance**

At the conclusion of each fall, spring, and summer (I and II inclusive) term during the academic year, the appropriate OFAS staff members will review the eligibility of aid recipients. Those in violation of the satisfactory progress eligibility requirements will be notified in writing of their eligibility status and right of appeal.

- If a student receiving a University of Miami academic scholarship does not meet the renewal requirements at the end of their 4th semester of eligibility (2nd semester for transfer students) he/she may receive a one-year probationary award. Students who fail to meet the minimum CGPA and/or course completion requirements at any time during their eligibility period retain their right of appeal if the scholarship is not automatically renewed.

A student may receive a scholarship probationary award only once. Therefore, any student who has received a scholarship probationary award must meet the standard of academic progress requirements for that scholarship assistance by the end of the probationary period in order to maintain his/her eligibility for that scholarship in the future.

**State of Florida Aid**

*The Florida Department of Education* has its own standards of progress for state financial assistance.

- All Bright Futures recipients are eligible for up to 132 credit hours; however, eligible students may only receive up to 45 hours of credit per academic year, including summer terms.

- Course work taken during a previous summer may be used in meeting the 24 credit hour requirement on the BFRAG and FSAG (i.e. classes taken in the summer of 2006 may be used to meet the credit hours for the 2006-2007 academic year).

- Students enrolling for only one semester must complete at least 12 new credit hours while maintaining the required CGPA.
• Any probation or conditional appeal granted by the University of Miami does not apply to State of Florida aid. Only the Florida Department of Education can grant an appeal for state aid.

THE APPEAL PROCEDURE

All students who do not meet the academic progress requirements may submit a written appeal for a reinstatement of their eligibility to receive federal and institutional aid. To appeal, a student must complete the University of Miami’s Standards of Academic Progress Appeal Petition. This petition requires the student to:

1. Submit in writing an explanation as to why he/she was unable to meet or maintain the academic progress requirements; and

2. Submit documentation that substantiates the student’s circumstances, such as a letter from a doctor or copies of medical bills if a student cites medical reasons for not meeting the requirements.

The appeal form may be downloaded from the financial assistance website. Submit the Appeal Petition and all documentation to the Standards of Academic Progress (SOAP) Appeal Committee, c/o the Office of Financial Assistance Services. All appeals should be submitted no later than 30 days from notice of ineligibility. All appeals submitted completely and on time will be reviewed by the committee prior to the beginning of each semester.

The preceding guidelines should be followed if an undergraduate student wishes to appeal the loss of their Golden Drum Scholarship. However, the Appeal Petition should be submitted to the Director of the Office of Multicultural Student Affairs.

All appeals submitted to the Office of Financial Assistance Services are reviewed by the Standards of Academic Progress Appeals Committee. Decisions are made based upon the information provided by the student and a review of the student’s academic record. All decisions by the committee are final.

A general description of the major financial assistance programs available through various departments as well as the Office of Financial Assistance Services can be found at www.miami.edu/ofas.
FINANCIAL PAYMENT POLICIES

Policy
All semester charges (tuition, room, board and fees) are due by the date on the Registration Billing Statement, unless an established Monthly Payment Plan contract has been finalized with the Office of Student Account Services. Previously unbilled and new charges are due and payable when incurred. A student is responsible for his/her tuition and fees upon Registration. Financial registration is considered complete only when all charges are paid or when satisfactory arrangements to pay have been finalized with the Office of Student Account Service.

Consequences of Non-Payment
The University will not process transcript and diploma requests if a student is delinquent in paying his/her student account and Monthly Payment Plan. Course selection will not be permitted for all past due accounts including Monthly Payment Plans.

Finance Charges
No additional charges are imposed on an account once Account Balance payments are received by the payment due date. If, however, payment is received after the payment due date, a Finance Charge is assessed. Finance charges are computed on the average daily account balance at an Annual Percentage Rate of 16%.

Deferred Payments
If financial aid funds are not available at the time of registration, the student would normally be expected to cover these payments. However, financial aid awards will be automatically deferred under the following conditions:

- The Office of Financial Assistance Services (OFAS) is provided with a source of aid (other than College Work Study or Miami Commitment) on the student's award package.
- OFAS awards the corresponding amount on the student's award package. i.e., outside scholarship information must be provided to both the Offices of Financial Assistance and Student Account Services in order to defer payment.
- OFAS allocates the guaranteed award during the semester that the disbursement should be expected.
- Final guarantees have been processed by the appropriate student alternative loan lender - preliminary approvals will not result in automatic alternative loan deferments.

Examples
Veterans Monthly Educational Benefit Checks: An amount not to exceed the total of the checks expected to be received during the semester (for Fall and Spring, this is typically three checks) may be deferred. Arrangements for this type of tuition deferment must be initiated with a representative of Veterans Affairs through the Office of the Registrar and the Office of Student Account Services. Students with VA benefits are required to sign a promissory note with the Office of Student Accounts in order to defer anticipated payments.

International Students with Government Sponsorships: Payment of all or a portion of charges that can be billed directly to corresponding government agencies may be deferred upon presentation of appropriate documentation from their government or embassy. In addition, international students who receive monthly stipends for living
expenses from their government may (if expenses are covered by the student’s sponsor) defer a portion of the payment of their room and board charges. However, no deferment is permitted to an international student having a previous balance at the time of registration or one receiving tuition remission. Arrangements for this type of tuition deferment must be initiated with a Third Party Advisor at the Office of Student Account Services.

Florida Prepaid Program

The University of Miami will assist you with your child’s education expenses by using available Florida Prepaid College Program funding. As a Florida Prepaid participant, you may authorize the University of Miami to request various payment disbursement options that best match your needs and current savings in the plan. We encourage all participants to authorize a payment that will facilitate your overall financial planning objectives for your child’s enrollment at the University of Miami.

The University of Miami requires new students to have completed an authorization form entitled the “Florida Prepaid College Program Authorization Form”. In addition to the University of Miami authorization form, all students who plan to use their prepaid funds must contact Florida Prepaid at 1-800-552-4723 option 2, and request a separate Florida Prepaid Transfer Form. Upon your request, Florida Prepaid will mail the Transfer Form to you. The purchaser of the plan must complete this form and return it directly to Florida Prepaid. It is necessary that Florida Prepaid have this Transfer Form on file in order for students to use Florida Prepaid funds at the University of Miami.

Questions in reference to Florida Prepaid should be e-mailed to saccounts@miami.edu with "Florida Prepaid" in the subject line. The required authorization form for the University of Miami and an example can be viewed on the following sites:

  www.miami.edu/account-services/flpp.pdf. (Blank Form)
  www.miami.edu/account-services/flppexamples.pdf. (Examples of completed authorization forms)

Process

Final arrangements for tuition deferments that do not appear on Registration Billing Statements must be made with representatives of the Office of Student Account Services. For further clarification and interpretation of the University’s tuition deferment policy, contact the Office of Student Account Services. Student Accounts may be emailed at: saccounts@miami.edu.

Policy on previous and unpaid balances

Non-Payment

The University of Miami may declare due and payable at once the sum of all past due balances. In addition, the student will be responsible for interest accrued on all past due and unpaid amounts at the maximum rate permitted by law and any and all costs incurred by the University of Miami in enforcing its rights. The University reserves the right to withhold transcripts, diplomas, readmission, and future registration for non-payment of outstanding balances. The University’s Collection Department may also disclose the student’s outstanding indebtedness, along with other relevant information, to credit information bureaus. A non-refundable $100 reinstatement fee will be charged to reinstate each unpaid and cancelled semester.
Refund Policy

DEFINITIONS

Title IV Financial Aid or Title IV Programs refers to the following awards:

- Federal College Work Study
- Federal Perkins Loan
- Federal Supplemental Educational Opportunity Grant (SEOG)
- Federal PELL Grant
- Federal Family Education Loans
  1. Subsidized Federal Stafford Loans
  2. Unsubsidized Federal Stafford Loans
  3. PLUS Loans (Parent Loans)
- State Subsidy Incentive Grants

REFUND POLICY

Students who have advised the appropriate University department of their withdrawal, through 60 percent of the semester, will receive credit for tuition and eligible financial aid refunds using a pro-rated calculation based on the percentage of the semester attended by the student. Unearned Title IV funds will be returned in accordance with the refund policy established in Section 484B of the Higher Education Act of 1965, as amended (HEA) and provided for through the Student Assistance General Provisions regulations enacted on October 7, 1998. Fees are not refundable and will not be pro-rated.

This schedule does not apply to students in the following on-campus and off-campus programs: The Executive MBA, the MBA Program for Working Professionals or the Masters of Science in Professional Management. Orientation is the first day of the program for Executive MBA students. No refund is given for the first semester if a student attends orientation. Additionally, there is no tuition refund for students in these programs unless the student has completed official withdrawal procedures at least seven (7) days prior to the beginning of subsequent semesters with the MBA Program Department. Executive MBA students may not participate in commencement if they are not in good standing. This will include a review of academic records and student accounts.

PROCEDURE

The amount of earned tuition and financial aid will be calculated on a daily pro-rated basis. Unearned tuition will be credited to the student's account. Unearned, disbursed financial aid will be charged to the student's account and refunded to the appropriate financial aid programs. Students who have not completed the verification process are ineligible to receive any financial aid and therefore no financial aid will have been earned. All disbursed financial aid will be charged to the student's account and refunded to the appropriate financial aid program.

The return of financial aid will be refunded to the following sources used in the specific order as noted below until the total amount of the school’s responsibility has been satisfied:

- Unsubsidized Federal Stafford Loans
- Subsidized Federal Stafford Loans
- Federal Perkins Loans
- Federal PLUS Loans
- Federal Pell Grant
- Federal Supplemental Opportunity Grant (SEOG - Federal Portion Only)
- Any other Title IV Assistance
- State financial aid
- University grants and scholarships

In the event of an overpayment of unearned Title IV grants, the University will send the student a notification letter requesting payment in full or the establishment of a satisfactory payment arrangement with the University or the Debt Collection Services of the U.S. Department of Education. This notification letter will be processed within 30 days of the date of the University’s determination that the student withdrew.

If the student does not respond to the request for repayment within 15 days, the University will notify the Department of Education of any Title IV grant overpayment. If the student does not make satisfactory repayment arrangements for the repayment of Title IV grant aid, the student will then become ineligible for federal assistance on the 46th day from the date of the University’s repayment letter.

WITHDRAWAL EXAMPLE

A student notifies the Registrar of withdrawal on the 50th day of the semester. If the total number of calendar days in a semester were 108, the earned tuition and financial aid ratio would be 50 divided by 108 or 46.3 percent. The University would have earned 46.3 percent of the semester tuition and the student would have earned 46.3 percent of the approved federal aid that the student was originally scheduled to receive for the term. The remaining 53.7 percent of unearned tuition would be credited to the student's account. The 53.7 percent of the student scheduled or disbursed aid remains unearned and must be returned to the Federal Program. If a student remains in school until the percentage of earned financial aid is 60% or more, then federal regulations consider the student to have earned 100% of their federal aid.

POST WITHDRAWAL DISBURSEMENTS

If the University determines that a student is eligible for Title IV funds that have not been disbursed, grant funds that the student is eligible for will be disbursed first. Federal aid that the student is eligible for will be credited to the students account and applied against any outstanding charges.

ANNUAL TUITION

In cases where tuition is assessed on an annual rather than semester basis (except for special contracted programs), the refund will be treated as though tuition were assessed in two equal halves, one for each of two semesters.

Reinstatement of cancelled classes

Classes are subject to cancellation if the student fails to complete Financial Registration at the start of the semester. A non-refundable $100.00 Reinstatement Fee will be assessed on the student account in order to reinstate canceled classes.
If the student does not reinstate his/her canceled classes prior to the end of the semester, the student will not be allowed to register for subsequent semesters. The student will be allowed to register only when he/she has paid the student account balance in full, with certified funds, and has reinstated all canceled classes.

Important Note: Students who are receiving financial assistance and have had their classes canceled for the semester may lose all or part of their financial aid for that semester.

Final arrangements for reinstatement of canceled classes must be made with a representative of the Office of Student Account Services.

Reinstatement of canceled classes must occur no later than one semester after the end of the semester in which the student completed/attended. Students must be reinstated into all classes in which they initially registered. Partial semester reinstatements will not be authorized.

**Payment options**

The University Cashier accepts cash, personal checks, traveler’s checks, cashier’s checks, certified checks, money orders, and check drawn on credit card lines. Personal check and credit card payments are accepted through the myUM system. Bank wire transfers are also accepted.

**On-Line Payments:**

**Web Checking Account (ACH) Payments:** Free on-line checking account payments are accepted through the myUM system. Students must sign onto the myUM system (www.miami.edu/myum) and select the “Student” tab. The “Financial” drop down box should then be selected. The option of “Billing and On-Line Payment” and subsequent on-line instructions will then be provided. Once payment is processed, a confirmation email will be sent to the student’s email address noted in the University’s database. The student’s account will then be systematically updated with the payment. Please note that this option is only available on the myUM system at no charge to the student.

**On-Line Credit Card Payments:** Students must sign on to the myUM system (www.miami.edu/myum) and select the “Student” tab. The option of “Billing and On-Line Payment” and subsequent on-line instructions will then be provided. Once payment is processed, a confirmation email will be sent to the student’s email address noted in the University’s database. The student’s account will then be systematically updated with the payment. Please note that a non-refundable 2.5% convenience fee will be added to the amount charged by our credit card servicer.

**Checks and Money Orders**

Payments must be in U.S. Dollars and drawn on a U.S. bank. Payments must be made payable to the University of Miami and include the student’s identification number to ensure credit to the student’s account. **Post-dated checks are not accepted.**

IMPORTANT NOTE: Foreign drafts must be sent through a collection process requiring a 30-day process for collection purposes. Accounts will only be credited once confirmation of deposit has been received by the University’s bank. Collection fees, charged by the bank for processing these checks, will be charged to the students account.
Returned checks policy

All returned checks are deposited twice, automatically, and without notice. A Returned Check Fine will be assessed to the student’s account, as listed below, after the second attempt. Check cashing privileges will be canceled for those students who have three (3) or more returned checks.

A notification letter will be mailed to the maker of the check by the University’s Collection Department detailing the amount and fine for the returned check. Check cashing privileges will be restricted until cash or certified funds (money order or cashier’s check) are presented for payment. A personal check will not be accepted to replace a dishonored check.

Returned check fines (includes on-line check payments through myUM):

<table>
<thead>
<tr>
<th>Description</th>
<th>Fine Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check under $800.00</td>
<td>$20.00 fee</td>
</tr>
<tr>
<td>Checks over $800.00</td>
<td>2.5% of the check amount</td>
</tr>
<tr>
<td>Checks for Monthly Payment Plan</td>
<td>$25.00 Fee</td>
</tr>
</tbody>
</table>

Wire Transfer of Funds

Wire transfer of funds for payment on an account at the University of Miami may be processed through any full service bank. Please direct the transfer to:

Bank of America, N.A.
1500 South Dixie Highway
Coral Gables, Florida 33146

ABA Routing Number: 026009593
For Credit to: University of Miami Account 5508319094
For Further Credit to: Student Name and I.D. Number

The student’s name, student’s identification number and/or social security number are required in order to properly credit funds to the student’s account.

Tuition payment plans

The Office of Student Account Services offers several tuition payment options to assist students and parents. The University’s payment options are designed to provide convenient alternative plans of budgeting and paying educational costs whether or not a financial assistance award is granted.

MONTHLY PAYMENT PLAN (MPP)

Purpose: This plan allows you to divide all or part of your annual educational expenses (tuition, fees, on-campus housing, and meal plan less financial assistance) into nine convenient monthly payments for a fall/spring combined plan; four months for a fall-only plan; and five months for a spring-only plan

Contract length: This plan is offered on an annual basis for the Fall and Spring Semesters combined, and the fall and spring separately as noted above. The minimum annual contract for any of these plans is $2,000.
Fee: A 3% non-refundable participation fee of the amount financed is charged and included in the established monthly payments.

Conditions: Payments are due on the 1st of each month with the exception of the first payment which is due upon signing the Monthly Payment Plan Agreement. The Monthly Payment Plan is completed online at www.miami.edu/osas/mppapp.html. This online process guarantees faster processing for financial registration purposes and automatically updates applicants via email notifications.

**TUITION STABILIZATION PLAN (TSP) (Undergraduates Only)**

The University of Miami Tuition Stabilization Plan (TSP) allows you to pre-pay up to four years of tuition at the current tuition rate. The TSP relieves students and parents of concerns relating to future tuition increases and may also offer substantial savings in future tuition expenses. This plan does not include mandatory fees.

The TSP is a sensible alternative for families and independent students paying for tuition from existing savings or investment accounts. With increases in tuition rates at most Universities running above current inflation rates, a participant's savings in tuition increases may more than make up for the loss of investment income.

The TSP is designed to be used by full-time students for a minimum of two consecutive academic years and a maximum of four consecutive academic years; if a student withdraws from the University, the unused tuition will be refunded without penalty as outlined in the TSP agreement.

The TSP is designed to be used by students who are (a) are enrolled in a degree-seeking four-year program on a full-time basis and (b) do not receive any financial aid.

**TSP Contract Amount and Terms**

- 2-year contract: $61,464.00
- 3-year contract: $92,196.00
- 4-year contract: $122,928.00

**TUITION GUARANTEE PLAN (TGP) (Freshmen Only)**

The University of Miami Tuition Guarantee Plan (TGP) is a four-year budgeting plan for families. The TGP allows families to plan for only tuition expenses over a four-year period.

The TGP guarantees a pre-determined tuition rate increase for each of the four years and schedules payments over 44 months without interest or finance charges. A non-refundable participation fee of 3% of the plan amount is charged and included in the monthly payments. This payment plan also requires consecutive semester enrollment.

The TGP is designed to be used by students who are (a) first semester freshman; (b) are enrolled in a degree-seeking four-year program on a full-time basis and (c) do not receive any financial aid.

Note: A) Neither plan above (TSP/TGP) covers intersession classes, housing and/or meal plan charges. These charges must be paid separately.

B) The receipt of any awards noted above will be refunded to the account holder as long as required payments are current. Adjustments to monthly payments will...
not be processed on either plan as these payment plans will be fixed according to tuition rates in place at the time a contract is issued.

C) As noted below, the contracted amounts for the TGP include both tuition and fees. The TSP is inclusive of tuition only.

2006 – 2007 TGP Rate
TGP Contract Amounts and Terms

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006 – 2007</td>
<td>$31,288.00</td>
</tr>
<tr>
<td>2007 – 2008</td>
<td>$32,852.40</td>
</tr>
<tr>
<td>2008 – 2009</td>
<td>$34,495.02</td>
</tr>
<tr>
<td>2009 – 2010</td>
<td>$36,219.77</td>
</tr>
</tbody>
</table>

TOTAL. $134,855.19
3% $4,045.66
Total financed $138,900.85

(43 payments of $3,156.88 each starting 9/1/2006 and one last payment of $3,155.01 ending 4/1/2010)

THE SIGNATURE STUDENT LOAN

Purpose: Designed to meet the needs of credit-worthy families, the Signature Student Loan is an effective way to finance educational costs. Credit-worthy families may borrow up to the total cost of education less any other financial aid you have been awarded and any funds granted under the Federal Family Education Loan Program, such as Stafford loans, will be considered in the total cost. The minimum loan amount is $500.00 per year.

Contract length: The Student Signature Loan is repaid over 15 years and there are no prepayment penalties. The repayment process begins six months after you graduate or your enrollment status falls below half-time while you are still in school.

APPLICATIONS

Applications for undergraduate and graduate students may now be completed on-line at the following webs-site: www.salliemae.com/signature/nelliemae. Detailed information may also be obtained by contacting SallieMae Student Loans at 1-800-695-3317 to request an application.

All other students should contact their respective Offices of Financial Assistance for further information.

TUITION and FEES

Tuition

The basic undergraduate tuition rate covers the normal student load and is increased if the student carries an overload. Private instruction, e.g., music lessons, carries extra charges.

For tuition charges in special programs and sessions, see announcements that are published concerning these components of the University’s academic program.
The following list of charges is effective for the academic year 2006-2007.

**UNDERGRADUATES (ALL COLLEGES AND SCHOOLS)**

<table>
<thead>
<tr>
<th>Number of Credits</th>
<th>Tuition (per semester)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>$1,280.00</td>
</tr>
<tr>
<td>Two</td>
<td>$2,560.00</td>
</tr>
<tr>
<td>Three</td>
<td>$3,840.00</td>
</tr>
<tr>
<td>Four</td>
<td>$5,120.00</td>
</tr>
<tr>
<td>Five</td>
<td>$6,400.00</td>
</tr>
<tr>
<td>Six</td>
<td>$7,680.00</td>
</tr>
<tr>
<td>Seven</td>
<td>$8,960.00</td>
</tr>
<tr>
<td>Eight</td>
<td>$10,240.00</td>
</tr>
<tr>
<td>Nine</td>
<td>$11,520.00</td>
</tr>
<tr>
<td>Ten</td>
<td>$12,800.00</td>
</tr>
<tr>
<td>Eleven</td>
<td>$14,080.00</td>
</tr>
<tr>
<td>Twelve to twenty (Includes University Fee and Course Fees)</td>
<td>$15,366.00</td>
</tr>
<tr>
<td>In excess of 20, per credit</td>
<td>$1,280.00</td>
</tr>
<tr>
<td>No credit towards degree (audit), per course, non-refundable</td>
<td>$1,280.00</td>
</tr>
</tbody>
</table>

Undergraduate students carrying both undergraduate and graduate courses will be charged tuition at the rate in effect for undergraduate credits taken and appropriate fees. For example, tuition for a student carrying a total of 15 credits, of which 3 are graduate and 12 are undergraduate, would be charged at the $15,366 rate.

Undergraduate students taking graduate level coursework that is priced at a special level will be billed separately for these courses. Students should check with their advisors and/or the appropriate school’s department for more details on their course pricing requirements.

Full-time fees will be assessed according to student classification as an undergraduate or graduate.

The University reserves the right to change without notice tuition, fees, room and all other charges at the beginning of any academic year, and the right to change activities and board fees at the beginning of any semester.

**GRADUATE STUDENTS**

| (Pre-Master’s, Post-Master’s, and Doctoral Students per credit | $1,280.00 |
| Research in Residence (720 or 750) or Continuous Registration-Master’s Study (725), per fall/spring semester | $1,280.00 |
| Research in Residence (720 or 750) or Continuous Registration-Master’s Study (725), per summer session (0 Research Credit Courses) | $590.00 |
| Audit Work (No degree credit) Tuition, per course, non-refundable. | $1,280.00 |
The Executive M.B.A. Program officially begins with the Orientation session each year. Tuition charges and deposits are not refundable after the start of the Program which begins with the Orientation session. Refer to the current brochure for additional information or call (305) 284-2510.

Certain programs are conducted by the University under contract with the State of Florida. Florida residents who have been accepted as students in those contract programs are required to pay current state tuition for each credit hour taken and the state provides the University with additional funds in accordance with the terms of the contracts. Students involved in state contract programs should contact the appropriate school/college to ascertain the state tuition charge per credit hour that they are expected to pay.

**Fees**

Some fees depend upon full-time status. This is determined by the sum total of semester credits carried by the student in all divisions. Intersession classes are included with regular fall and spring semester classes in determining the student’s full- or part-time status. This determination will also result in the billing of required fees.

Full-time undergraduate students are all students carrying 12 or more credits in a regular semester or five (5) or more credits in a summer session.

Graduate students are classified full-time if they carry nine (9) or more credits in a regular semester or three (3) or more credits in a summer session.

### MANDATORY FEES

<table>
<thead>
<tr>
<th>FALL OR SPRING SEMESTER FEES (per semester)</th>
<th>Student Activity Fee</th>
<th>Athletic Fee New/Cont.</th>
<th>Wellness Center</th>
<th>University Fee</th>
<th>Total New/Cont.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate – full-time (12 or more credits)</td>
<td>$106.00</td>
<td>$49.00/ $26.00</td>
<td>$123.00</td>
<td>N/A</td>
<td>$278.00/ $255.00</td>
</tr>
<tr>
<td>Graduate, full-time (9 or more credits)</td>
<td>$35.00</td>
<td>N/A</td>
<td>N/A</td>
<td>$62.00</td>
<td>$97.00</td>
</tr>
<tr>
<td>Rosenstiel Graduate (9 or more credits)</td>
<td>$3.50</td>
<td>N/A</td>
<td>N/A</td>
<td>$57.00</td>
<td>$60.50</td>
</tr>
<tr>
<td>Medical Science Graduate (0 or more credits)</td>
<td>$3.50</td>
<td>N/A</td>
<td>N/A</td>
<td>$60.00</td>
<td>$63.50</td>
</tr>
<tr>
<td>Law Day Students (12 or more credits)</td>
<td>$41.00</td>
<td>N/A</td>
<td>$123.00</td>
<td>$68.00</td>
<td>$232.00</td>
</tr>
</tbody>
</table>

**Doctoral Dissertation Fee (non-refundable fee)** $125

<table>
<thead>
<tr>
<th>SUMMER SESSION FEES (per session)* Undergraduate, full-time (5 or more credits)</th>
<th>Student Activity Fee</th>
<th>University Fee (Health and Counseling Centers only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$8.50</td>
<td>$13.00</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>$21.50</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Insurance Fee (August 15, 2005 to August 15, 2006)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Undergraduate (Domestic &amp; International)</td>
</tr>
<tr>
<td>Int'l Graduate</td>
</tr>
</tbody>
</table>
Domestic Graduate $1,447

*Summer fees are mandatory for students taking 5 or more credits.

During the **summer sessions** the University fee is mandatory and is automatically added to tuition for students enrolled for 5 or more credit hours. Students who are enrolled for fewer than five credit hours during the summer must request this fee to be charged to gain access to the Student Health Center.

Students who are not enrolled for the current semester but intend to enroll for the next semester, and graduating seniors who wish access for one additional month can pay the Health Care Fee in order to gain access to the Health Center.

Note: Required for all domestic degree seeking students, enrolled in 6 or more credit hours per semester (exceptions listed at [www.miami.edu/student-health](http://www.miami.edu/student-health)), and all international students. The Health Insurance Fee is automatically charged each year to all eligible students. Domestic students with alternative health insurance may request a fee waiver via MyUM or by completing the required waiver form available at [www.miami.edu/student-health](http://www.miami.edu/student-health). The completed waiver form must be received by the Health Center prior to September 01 for the fall semester, February 01 for the spring semester, June 15 for summer I and July 15 for summer II. The insurance premium will be prorated for those students entering for the first time in the spring or summer semesters. No waiver and/or refund will be granted after the established deadlines. All inquiries should be directed to the Student Health Service at (305) 284-1652 or studenthealth@miami.edu.

### OPTIONAL FEES

<table>
<thead>
<tr>
<th>FALL OR SPRING SEMESTER FEES (per semester)</th>
<th>Student Activity Fee</th>
<th>University Fee</th>
<th>Athletic Fee</th>
<th>Wellness Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Students (1 to 11 credits)</td>
<td>$106.00</td>
<td>$73.00</td>
<td>$49.00</td>
<td>$123.00</td>
</tr>
<tr>
<td>Graduate Students (0-8 credits)</td>
<td>$35.00</td>
<td>$62.00</td>
<td>$49.00</td>
<td>$123.00</td>
</tr>
<tr>
<td>Graduate Students (9 or more credits)</td>
<td>N/A</td>
<td>N/A</td>
<td>$49.00</td>
<td>$123.00</td>
</tr>
<tr>
<td>Rosenstiel Graduate Students (0 to 8 credits)</td>
<td>$3.50</td>
<td>$57.00</td>
<td>$49.00</td>
<td>$123.00</td>
</tr>
<tr>
<td>Rosenstiel Graduate Students (9 or more credits)</td>
<td>N/A</td>
<td>N/A</td>
<td>$49.00</td>
<td>$123.00</td>
</tr>
<tr>
<td>Medical Science Graduate Students (0 or more credits)</td>
<td>N/A</td>
<td>N/A</td>
<td>$49.00</td>
<td>$369.00 (one time per year)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUMMER SESSION FEES (per session)*</th>
<th>Wellness fees (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduates/Graduates</td>
<td>$59.00</td>
</tr>
</tbody>
</table>

*Summer fees optional for students taking less than 5 credit hours.

### OTHER FEES

<table>
<thead>
<tr>
<th>DIPLOMA FEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Diploma</td>
</tr>
<tr>
<td>Replacement Covers</td>
</tr>
</tbody>
</table>
Replacement – Bachelors, Masters, Ph.D. $10.00
Replacement – Law, Medicine $15.00

TRANSCRIPT FEE
Mailed Transcripts $6.00
Pick-up and Immediate Transcripts $7.00

Note: Unofficial transcripts are available free of charge on EASY or for $3.00 each if ordered in the Office of the Registrar, 121 UC in writing. Those ordered in the Office of the Registrar will be available for pick-up within one week after the request is submitted.

PROFESSIONAL LIABILITY INSURANCE (annual, non-refundable, due at registration, estimated at time of publication)*

<table>
<thead>
<tr>
<th>Group</th>
<th>Summer Semester</th>
<th>Academic Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing students (mandatory for all Juniors and Seniors)</td>
<td>$100.00</td>
<td>$270.00</td>
</tr>
<tr>
<td>Physical Therapy students (second and third year)</td>
<td>$50.00</td>
<td></td>
</tr>
<tr>
<td>Clinical athletic training students</td>
<td>$75.00</td>
<td></td>
</tr>
</tbody>
</table>

MUSIC CHARGES FOR NON-MUSIC MAJORS OR MINORS (LESSONS IN APPLIED MUSIC)
Fees, in addition to regular tuition, per credit per semester $200.00

READMISSION FEE $20.00

GRADUATE APPLICATION FEE $50.00

LATE REGISTRATION FEE (Permission to register required)

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/24/2006-8/30/2006</td>
<td>$100.00</td>
</tr>
<tr>
<td>8/31/2006-9/6/2006</td>
<td>$200.00</td>
</tr>
<tr>
<td>9/7/2006 forward</td>
<td>$300.00</td>
</tr>
</tbody>
</table>

REINSTATENMENT FEE
Reinstatement Fee charged if classes are canceled AFTER Semester begins $100.00

PROFICIENCY OR COMPETENCY EXAMINATION FEE

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination Fee, per examination</td>
<td>$25.00</td>
</tr>
<tr>
<td>Recording Fee for Competency Examinations, per examination</td>
<td>$25.00</td>
</tr>
<tr>
<td>English Language Proficiency Test</td>
<td>$50.00</td>
</tr>
</tbody>
</table>
ALUMNI RATE and POLICY

Special Opportunity for UM Graduates

UM graduates are now able to take undergraduate credit courses in the College of Arts and Sciences on a space available basis, at a special alumni rate of $430 per credit hour. All University of Miami graduates are eligible for this special program.

Students may take whatever courses are of interest. From Anthropology to Theatre Arts and all the disciplines in between, participants may choose a course or collection of courses (maximum two courses per discipline) to meet professional or personal goals.

Interested students may call Continuing Studies at 305-284-4000 to inquire about the benefit, request an application, or enroll in the courses. They will submit a simple, no-fee, one-page application, simply select a course (open on a space available basis) and be on their way to continued learning at UM.

Policies Governing Enrollment in University of Miami Alumni Status

The University of Miami Alumni enrollment includes students who are not seeking a degree and meet the following requirements. Enrollment in a non-degree program and/or satisfactory completion of courses does not imply admission to a degree program.

a) University of Miami Graduates (completed degree);
b) U.S. citizens or permanent U.S. residents.

I. Conditions applying to University of Miami Alumni enrollment

a) Students may enroll to a maximum of 12 undergraduate credits per semester.
b) Students are limited to two courses per academic department.*
c) Courses may be selected from the College of Arts and Sciences only.
d) International students will not be issued I-20 forms.
e) International students in B-1 (business) or B-2 (pleasure) visa status may engage in study as long as the educational activity is secondary to the principal activity for which the visa was sought.
f) Enrollment may be completed on a space-available basis only.
g) Courses taken for undergraduate credit (including 500 level courses) will not be considered for graduate credit at a later date.

*Note: Not all courses and/or departments may be available.

ROOM RATES UNDERGRADUATES

<table>
<thead>
<tr>
<th>Residential Colleges</th>
<th>Semester</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double</td>
<td>$2,743.00</td>
<td>$5,486.00</td>
</tr>
<tr>
<td>Small Single¹ ²</td>
<td>$3,214.00</td>
<td>$6,428.00</td>
</tr>
<tr>
<td>Standard Single ²</td>
<td>$3,692.00</td>
<td>$7,384.00</td>
</tr>
</tbody>
</table>
1. Small Singles are only available in Hecht and Stanford Residential Colleges.
2. Single rooms are available only to returning upper-class students.
3. For upper-class students only; apartment area residents may stay in their apartments between semesters (Dec. 16, 2006 – Jan. 10, 2007) without additional charge.

### SUMMER SESSION

<table>
<thead>
<tr>
<th></th>
<th>Semester</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Room Air-Conditioned (per person)</td>
<td>$750.00 per session</td>
<td></td>
</tr>
<tr>
<td>Single Room Air-Conditioned</td>
<td>$1,050.00 per session</td>
<td></td>
</tr>
</tbody>
</table>

### GRADUATE HOUSING

Housing in the Residential Colleges and Apartment Area is not available for GRADUATE students in addition to married students, single parents with children, law students, and medical students. The Office of Commuter Student Affairs does maintain off-campus housing information at [http://www.miami.edu/commuter-affairs](http://www.miami.edu/commuter-affairs).

For further information, please contact their office at (305) 284-5646.

University Village, an apartment-style residential community with 12-month leases, is available on a very limited basis to graduate students. Interested graduate students should contact the Graduate School at (305) 284-2394. For general information on University Village, go to [http://www.miami.edu/universityvillage](http://www.miami.edu/universityvillage).

### MEAL PLANS

The following are the Meal Plan rates for the 2006 - 2007 academic year. Meal Plan enrollment is for the full academic year but charged on a semester basis.

<table>
<thead>
<tr>
<th>Plan</th>
<th>Dining Dollars per Semester</th>
<th>Semester Cost</th>
<th>Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Meal Plan</td>
<td>$50</td>
<td>$1924</td>
<td>$3848</td>
</tr>
<tr>
<td>14 Meal Plan</td>
<td>$150</td>
<td>$1839</td>
<td>$3678</td>
</tr>
<tr>
<td>8 Meal Plan</td>
<td>$200</td>
<td>$1597</td>
<td>$3194</td>
</tr>
<tr>
<td>5 Meal Plan</td>
<td>$50</td>
<td>$836</td>
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PARKING AND TRANSPORTATION SERVICES

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Parking on the University of Miami’s Coral Gables campus is a privilege extended to those using the facilities of the University consistent with the terms of the University’s Motor Vehicle Parking Code and other policies of the University as they are set or amended by the Provost. Parking privileges are extended only to those members of the university community including trustees, faculty, administrators, staff, students, vendors and visitors who have paid for, received and properly displayed a current and valid UM parking permit. In consideration of being allowed to use the University’s facilities for parking, the purchaser of a parking permit agrees to be bound by the rules set forth in the Motor Vehicle Parking Code, and agrees to pay to the University any fine or administrative charge assessed for non-compliance with this code.

Students, faculty, employees, and staff may not park in visitor parking spaces, and UM parking permits are not valid at parking meters. Students may [purchase parking permits online](#) in myUM through a charge to their student account, and specify convenient FedEx delivery for a nominal handling/shipping fee. Students may purchase only the permit appropriate to their University domicile: Resident for an on-campus address or commuter for an off-campus address. Annual permits are valid August 1, 2006 through August 15, 2007.
STUDENT SERVICES

COUNSELING CENTER
www.miami.edu/counseling-center

The University Counseling Center offers a variety of services to students, including short-term psychotherapy (individual and group), career and educational counseling, outreach, and various group programs aimed at enhancing personal growth and development. The Center is staffed by an experienced team of professionals from the fields of psychology, psychiatry and social work.

The Counseling Center offers help to students regarding issues including, but not limited to anxiety, depression, eating disorders, and sexual identity. Students can call the Counseling Center directly at 305-284-5511 or come in person to request appointments. The University Counseling Center is located in Building 21-R of the Center for Student Services. Psychologists can be contacted for crisis intervention on evenings and weekends by calling the Department of Public Safety at (305) 284-6666.

SEXUAL ASSAULT RESPONSE TEAM (S.A.R.T.)

The Counseling Center also sponsors the Sexual Assault Response Team (S.A.R.T.). Advocates can be reached for support and information at any time during the regular academic year by phoning (305) 798-6666.

STUDENT TRAINING

The Counseling Center participates in the Department of Psychology and the Department of Educational and Psychological Studies graduate training programs by making it possible for doctoral students in psychology to participate in the Center’s professional activities and to have first-hand contact with clinical problems. In addition, interns obtain professional training at the Counseling Center through the Dr. Jess Spirer Predoctoral Internship in Professional Psychology.

OFFICE OF THE DEAN OF STUDENTS - UNDERGRADUATE

The Office of the Dean of Students is responsible for the administration and record keeping of all undergraduate student disciplinary programs. The Dean of Students Office staff advises and directs the efforts of students, faculty and administrators in disciplinary concerns.

The Dean of Students Office coordinates The Center for Alcohol and Other Drug Education and oversees the University Chaplains Association. Also, the Dean’s Office plays an integral role in the development of students by advising the Association of Greek Letter Organizations, the National Pan-Hellenic Council, Inc., the Interfraternity Council, the Latino Greek Council, the Panhellenic Association, Rho Lambda Honor Society, Order of Omega Honor Society, Gamma Sigma Alpha, Alpha Lambda Delta Freshmen Honor Society, BACCHUS and GAMMA. The office staff is knowledgeable and prepared to assist all students in their adjustments to campus life.
ACCESSIBILITY RESOURCES
www.umarc.miami.edu

Accessibility Resources (AR) is the primary University office responsible for the coordination of auxiliary aids and services for students with disabilities. Information is available to prospective and enrolled students, their parents and/or sponsors.

The Americans with Disabilities Act defines an individual with a disability as a person who
a) has a physical or mental impairment which substantially limits one or more of the person's major life activities,
b) has a record of such an impairment or
c) is regarded as having such an impairment.

Those seeking services should contact Accessibility Resources to discuss individual needs.

Accessibility Resources requires current, appropriate documentation describing the nature of the disability and indicating the need for services. Auxiliary aids and services are provided on an individual basis, and may include, but are not limited to: letters to instructors outlining accommodation needs, note takers, testing accommodations and assistance with accessibility issues. Confidentiality of records is maintained by Accessibility Resources.

Services of a personal nature (for example, readers for personal use or assistance in eating or dressing) are not provided through AR. However, AR counselors will make referrals, where possible, to other offices or agencies that may assist in providing nonacademic or personal services.

Accessibility Resources is located in the Academic Resource Center in Whitten University Center N201. AR staff can be reached at 284-2374 (Voice), 284-3401 (TDD) or 284-1999 (Fax). Office hours are 8:30 am to 5:00 pm, Monday through Friday.

Accessibility Resources Internal Appeals Procedure:

The University of Miami, through The Office of Accessibility Resources, has adopted an appeals procedure providing for prompt resolution of student complaints regarding accommodation(s) granted or denied to students who are registered with the Office of Accessibility Resources.

Complaints must be addressed to the Office of Accessibility Resources, Academic Resource Center, University Center, Suite N201, 305-284-2374.

1. All complaints must be in writing and must contain the name and address of the student, and set forth specific facts in support of his/her complaint.

2. An appeal must be filed within five (5) days after the student receives notification that their request for an accommodation(s) has been denied.

3. An investigation, as may be appropriate, shall be conducted by the Director of the Academic Resource Center ("the Director") following receipt of the written appeal. The Director may review information and documentation contained in the student’s file as well as additional information the student may submit in support of their appeal.

4. Within ten (10) working days of the receipt of the appeal, the student will receive a
written decision from the Director.

5. If the student does not agree with the decision, the student may submit a final written appeal to the Vice Provost for Undergraduate Affairs, Ashe Building, Room 240, Coral Gables, Florida, 33124. The written appeal must: specifically state the issues to be considered and set forth why the student disagrees with the Director’s decision, i.e. inaccurate findings of fact. This appeal must either be postmarked or received by the Provost’s office within ten (10) days of the date of the Director’s decision. The student may not include any new or additional information that was not presented in the initial appeal.

6. Although the University will make every effort to comply with the timelines set forth herein, circumstances such as school breaks, may justify an extension of time.

Retaliation against a person who files an appeal, or opposes a policy he/she believes to be discriminatory is prohibited.

GENERAL CAREER SERVICES

TOPPEL CAREER CENTER
www.miami.edu/toppel

The Toppel Career Center, located in the Whitten University Center, assists undergraduate students, graduate students and alumni in formulating their career plans and in pursuing graduate/professional school as well as part-time, full-time and internship opportunities.

It is the intent and desire of the University of Miami and the Toppel Career Center to provide equal employment opportunities for students and graduates regardless of race, color, national origin, religion, gender, sexual orientation, age or disabilities.

INDIVIDUAL CAREER ADVISING SESSIONS with professional career advisors are available to assist students with career questions, issues and concerns. Students are encouraged to meet with a professional staff member to discuss career goals and to obtain assistance in developing a career action plan (please call to make an appointment). INTAKE is a service provided to students and alumni who need assistance with developing their resume and/or cover letter. No appointment is necessary for INTAKE - simply stop by Toppel Monday through Thursday, 10am - 3pm.

A series of PROGRAMS is offered throughout the academic year. Each session provides information and skill-building activities in the areas of resume development, interviewing skills, networking, securing internships, and much more.

THE TOPPEL INTERNSHIP PROGRAM is designed to provide valuable career-related work experience through internships with participating employers. Students can search CaneZone for hundreds of opportunities available to them. It is recommended that students complete at least two internships while in school. Students may take on an internship position beginning the second semester of their freshman year.

ON CAMPUS RECRUITING (OCR): Representatives from local, national and international businesses and industries, governmental agencies, military services, human services, and school systems visit the campus to meet with students and to interview and discuss career employment opportunities with graduating students and alumni. Individual interviews are scheduled with visiting employer representatives.
CAREER EXPOS AND EVENTS are open to all students and alumni and range from general events to major-specific fairs. CAREER EXPO is held twice a year - September 20, 2006 and February 21, 2007 - and is inclusive of all industries and majors. Special CAREER FAIRS are held for interested students in EDUCATION, ARCHITECTURE, ACCOUNTING and MARINE AND ENVIRONMENTAL SCIENCE, Nursing and Health Sciences, Non-profits, and Engineering. Regardless of the focus, these EXPOS and FAIRS are intended to provide students and alumni with an opportunity to network with recruiters from a wide variety of industries.

CAREER LIBRARY RESOURCES: The Toppel Career Center has established a comprehensive and current career resource and research facility, which contains career-related materials for use by University students and alumni in areas such as regional employment opportunities, salary surveys, descriptions of specific careers and the preparation necessary to attain them. Resource areas include:

- Job Postings
- Magazines and Periodicals
- Newspapers
- Career Resource Books
- Full and Part-time Job Binders

THE Lehman COMPUTER LAB enables students to work on their job and internship search. CaneZone our Career Management System, an internet-based program, allows students to create a career profile, upload resumes, search for jobs and internships, and sign up for on-campus interviews. Students/alumni can also utilize TypeFocus, a computerized career information system, which is an excellent tool for career decision-making.

CAREER COLUMN: a weekly “e-newsletter” available to all students, staff, and alumni that provides career information and updates about current events at the career center.

Inquiries about career services should be addressed to: Toppel Career Center, University of Miami, 1306 Stanford Drive, Coral Gables, FL 33124-6930, 305 284-5451, FAX 305 284-3668. Web: www.miami.edu/toppel. E-mail: toppel@miami.edu

OMBUDSPERSON PROGRAM

The University Ombudsperson acts as an independent representative of the University to hear student grievances and complaints. The Ombudsperson listens to student grievances, investigates the facts and attempts to resolve situations in the best possible way. The Ombudsperson neither makes University policy nor overrides it. However, because of his/her extensive knowledge of the University, the Ombudsperson is in a position to interpret University policy to students and make recommendations to the central administration when policy changes are needed. The Ombudsperson expedites the decision-making process within the University and ensures that the University follows its own published policies and procedures.

The University Ombudsperson Program was not established to bypass or circumvent those individuals who have responsibility for departments or classroom instruction. Nor is the Ombudsperson Program designed to eliminate certain structured grievance and appellate mechanisms already established by the University. The Ombudsperson seeks to resolve
matters informally before they become matters in a formal grievance-appeal proceeding and assists students in reestablishing communication with the person or persons with whom a complaint may have been filed.

The University of Miami Ombudsperson may be contacted in the Office of the Vice President for Student Affairs, Room 244 Ashe Administration Building or telephoned at 284-4922. For more information, visit www.miami.edu/ombudsperson.

RESIDENCE LIFE
www.miami.edu/housing

The University of Miami offers undergraduate on-campus housing in five residential colleges and an apartment area.

Each residential college has resident faculty members, a student affairs professional staff member, their families, and student staff who live in the residential college with the resident students to support and promote student well-being, academic achievement, learning, and development. In addition, to achieve these ends, numerous social, educational, cultural, and recreational programs are offered throughout the academic year.

- The University has both single and double rooms. Singles are assigned based on seniority living on campus and, thus, entering students are assigned to double occupancy rooms. Effort is taken to assign roommates of similar age, class standing, and smoking preference.

- All new freshmen students are required to live in University housing for two academic semesters, unless they are living with parents or legal guardians in Miami-Dade or Broward Counties.

- The apartment area on campus offers two and three bedroom furnished apartments housing four to six students per apartment. Sophomore standing or above is required to reside in the apartment area.

- All housing facilities are co-educational with men and women living on alternate floors or alternating separate suites or apartments.

- All student rooms are air-conditioned and equipped with bed, dresser, desk, chair, trash can, and window coverings. 75-channel cable television and local telephone service are also provided. Each residential college room is wired for internet access and wireless internet access is available in the apartment area.

Admitted students, following verification of acceptance to the University and payment of the enrollment deposit, can apply for housing on-line in myUM. myUM is the University’s web-based, interactive information hub.

- Students are encouraged to apply for housing as soon as possible after paying the enrollment deposit.

- The $250 non-refundable deposit can be paid by credit card or electronic check at the time of application or a paper check within 30 days of application.
Assignments to buildings, rooms, and specific roommates are made according to the date of application and receipt of the housing deposit.

Whenever possible, requests for specific buildings, rooms, and roommates are honored. However, if specific preferences are not available, the University reserves the right to assign students to other locations and roommates.

The housing agreement is for both fall and spring semesters, unless the applicant is:

1. applying only for spring semester housing or only for summer session housing
2. graduating in December
3. participating in a University of Miami study abroad experience spring semester
4. not enrolling in the University spring semester

*Note: Written notice of cancellations must be made to the Department of Residence Halls Office.

The dates of housing availability are:

- Fall Semester: August 18, 2006 - December 15, 2006
- Spring Semester: January 10, 2007 - May 12, 2007

For more information about housing on campus, please see the Department of Residence Halls web page at www.miami.edu/housing. Their office telephone number is (305) 284-4505 and their e-mail address is Housing@miami.edu.

Alternatively, University Village, which is an apartment-style residential community with 12-month leases, is an available option to juniors and seniors and on a limited basis to graduate and law students. Interested Graduate students should contact the Graduate School at (305) 284-4154 and interested Law students should contact the Law School at (305) 284-6746.

For general information on University Village, students should call (305) 284-3680 or go on the web to http://www.miami.edu/universityvillage.

**STUDENT HEALTH CENTER**

The Student Health Center is a modern, on-campus, out-patient medical center. Through its staff of qualified physicians, physician assistants, and nurse practitioners, the Health Center diagnoses and treats minor injuries, and new or ongoing illnesses. Services include primary care, select specialty services including women’s health and orthopedics, x-ray, pharmacy, advice on health related issues and referral to medical specialists when necessary.

Most routine services are provided free of charge to eligible students. **Students are not required to have the University sponsored health insurance plan in order to use the services of the Student Health Center.** All medical records are confidential.

The Student Health Center is located at 5513 Merrick Drive, Coral Gables, Florida 33146, (across from the Pavia Garage).

Contact numbers are:
- Telephone: (305) 284-5927/Fax: (305) 284-4098
- Hours of operation:
  - Fall and Spring semesters: 8:30 a.m. to 5:00 p.m., Mondays, Tuesdays, Wednesdays and Fridays. On Thursdays: 9:00 a.m. to 5:00 p.m.
Winter break, Spring break, and Summer sessions: Monday through Friday from 8:30 a.m. to 4:30 p.m.

The Health Center is closed on Saturdays, Sundays, and University holidays. After hours assistance is available by calling (305) 284-5927.

For illnesses or injuries requiring immediate attention, students are urged to go to an Emergency Room. For less serious conditions, students may call 305-284-5927 for after-hours assistance or utilize any of the Urgent Care Centers listed at www.miami.edu/student-health. The Emergency Room at HealthSouth Doctor’s Hospital is located across from Allen Hall, at 5000 University Drive, Coral Gables, 305-666-2111. South Miami Hospital is located at 6200 SW 73rd Street, South Miami, 305-661-4611. For sudden, severe illness or serious accident, students living on-campus should contact the Public Safety Department at extension 8-6666, or if appropriate dial “9-1-1”. Students living off-campus should dial “9-1-1”.

HEALTH INSURANCE

Domestic students enrolled in six or more credit hours per semester (or considered full time) are required to obtain adequate health insurance (see exceptions). The annual premium for the health insurance plan offered through the Student Health Service is added to each student’s fees. Domestic students with adequate alternative coverage may request cancellation of the insurance fee by submitting a Domestic Insurance Cancellation Form. Cancellation must be renewed each year via MyUM.

Deadlines to waive the insurance are:
September 01 for the Fall semester,
February 01 for the Spring semester,
June 15 for Summer I,
July 15 for Summer II.

Domestic students can check the status of their insurance waiver/cancellation request via MyUM. The insurance premium will be prorated for those students entering for the first time in the Spring or Summer semesters. No waiver and/or refund will be granted after the above dates.

Students who have previously waived the insurance charge can reinstate the insurance prior to the Spring semester or first Summer session by completing the reinstatement request form and checklist. Coverage can also be reinitiated at the start of the Fall semester by choosing not to re-waive the charge, or at other times during the academic year, if within 30 days of termination of other similar coverage, by completing the reinstatement request form and checklist. Documentation of termination may be requested.

Deadlines for reinstatement of insurance are February 1st for the Spring semester and June 15th for the Summer sessions. Please do not consider your reinstatement complete until reinstatement has been verified via MyUM, the charge has been posted to your student account and all charges on your account have been paid.

All international students are required to enroll in the University sponsored health insurance program. The annual premium for this coverage is added to each student's fees.

Any additional questions regarding the health insurance requirement should be directed to the Student Health Service at 305-284-1652 or to studenthealth@miami.edu.
**IMMUNIZATION**

All new students are required to provide proof of immunization against measles and rubella, and all international students must be screened for tuberculosis by completing an immunization form prior to arrival on campus. Students who do not comply with these requirements will not be able to register for subsequent semesters. A $25.00 processing fee will be charged for any form received after the start of the semester. Forms will be processed within 48 hours of receipt, and immunization status can be verified via MyUM.

Most students will be able to obtain the required immunization information from their prior medical providers or from their prior high school, college or university. Students who believe that they were previously immunized but are unable to provide proof of immunization may either obtain blood tests confirming immunity or obtain the necessary immunizations. Immunizations and blood tests documenting immunity are available at the Student Health Service. All charges are in addition to processing fees for late forms.

In addition to the above mentioned immunization requirements, all students living on campus (or their parent or guardian if they are less than 18 years old) must abide by Florida law by either documenting receipt of hepatitis and meningococcal meningitis immunizations, or by acknowledging both receipt of information about these vaccines and preference against immunization. This requirement is satisfied as part of the housing sign-up process.

All Students are encouraged to consider other immunizations including those effective against tetanus/pertussis, varicella (chicken pox), hepatitis B, and meningococcal meningitis.

Additional information is available at (305) 284-5933 or at studenthealth@miami.edu. An Immunization Compliance form can be obtained at www.miami.edu/student-health.

**PHARMACY**

The pharmacy is located on the second floor of the Student Health Center, and can fill prescriptions from most local and out of town medical providers.

Prescription prices are often lower than at local drug stores, and most insurance plans are accepted. Non-prescription medications, vitamins, nutritional supplements, personal care products, over-the-counter medications, and condoms are also available. New prescriptions can be dropped off or called or faxed by the ordering provider. Refill requests will be handled most promptly by having your prescription number available and calling the automated refill line at (305) 284-5922. Refills can also be requested via MyUM.

- Students, spouses, and dependents may have their prescriptions filled at the Health Center pharmacy.
- Oral and other contraceptives are available at preferred pricing which may be below insurance co-payments.
- Students with the Health Center sponsored insurance plan receive enhanced benefits if prescriptions are filled at the Health Center pharmacy.

Pharmacy telephone: (305) 284-5922; fax: (305) 284-4883.

Hours of operation:
Fall and Spring semesters are from 9:00 a.m. to 1:30 p.m. and from 2:00 p.m. to 5:30 p.m., Monday through Friday.
Winter break, Spring break, and Summer sessions, 9:00 a.m. to 5:00 p.m. Monday through Friday.

The pharmacy is closed on Saturdays, Sundays, and on University holidays.

**THE HONOR COUNCIL – UNDERGRADUATE**

The Honor Council is a standing committee of 29 undergraduate student representatives selected to investigate and adjudicate alleged violations of the Undergraduate Student Honor Code and to educate the University community on related issues.

The purpose of the Honor Code is to protect the academic integrity of the University by encouraging consistent ethical behavior in assigned course work by students. Should you have information concerning academic cheating or if you suspect cheating, call the Secretary of the Honor Council at 284-5353.

**INTERNATIONAL STUDENT AND SCHOLAR SERVICES**

The Department of International Student and Scholar Services (ISSS), is dedicated to ensuring that the experience of the international student at the University of Miami is as positive and fulfilling as possible.

ISSS offers a comprehensive orientation program at the beginning of each semester, designed to provide the international student with the initial framework for adjustment to a new cultural and academic environment. Upon their arrival, international students are given information on such topics as immigration and U.S. Department of State regulations, cultural adjustment, an introduction to the University of Miami and the Miami community, information on U.S. income tax and Social Security, and practical advice regarding housing, transportation and banking.

ISSS assists the international student in complying with regulations and documentation requirements of the U.S. Citizenship and Immigration Service and the U.S. Department of State, including information on regulations that govern on- and off-campus employment.

On a continuing basis, ISSS advises students and scholars on personal, academic and professional concerns. The Department further provides access to cross-cultural experiences to broaden students’ and scholars’ exposure to American society, culture and institutions, and to provide the opportunity to share the language, culture and history of their home country with Americans.

As part of its cultural programming, ISSS also works closely with the Council of International Students and Organizations (COISO) in highlighting the diversity of the University community and in planning cultural events and activities on campus, including United Nations Day and Thanksgiving Dinner each fall, and International Week and participation in National Model United Nations competition each spring semester.

The Department of International Student and Scholar Services (ISSS) is located at 5600 Merrick Drive, 21-F (Student Services Building) on the Coral Gables campus.
UNIVERSITY DINING SERVICES

The University of Miami Dining Services program offers students a variety of food options conveniently located throughout the campus. Among these are the:

- **Hurricane Food Court** - featuring varied concepts including several well known national brands;
- **The Eye** - a poolside snack bar featuring Sbarros, an Italian Eatery;
- **Wellness Center Juice Bar** - featuring a variety of healthy food choices;
- **Storm Surge Cafe**
- **Jenkins Snack Bar**
- **Convenience Store**
- **Starbucks at Richter Library**
- **Carts**

The University of Miami Dining Services program offers a variety of services that meet the individual student’s schedule of classes and extracurricular activities. Four different meal plan options are offered at the Hecht/Stanford and Mahoney/Pearson Cafeteria:

- 20-meal plan providing any 20 meals per week;
- 14-meal plan providing any 14 meals per week;
- 8-meal plan providing any 8 meals per week;
- 5-meal plan providing any 5 meals per week;

- Enrollment in any of the residential colleges (excluding apartments and University Village) requires participation in either the 8, 14, or 20 meal plans.
- Freshmen must choose from the 20 or 14 Meal Plans only.
- The 5-meal plan is open to commuter and apartment students only. This plan provides five meals per week.
- Graduate and undergraduate students who are 25 or older as of September 1 of the contract year are excluded from this requirement.
- Apartment, commuter, and other students not enrolled in the residential colleges may participate in any meal plan.
- The 8, 14, and 20 meal plans are available seven days a week. Students have the opportunity to eat meals five times a day up to their weekly meal total.

**Dining Dollars**

- Dining Dollars provided with the meal plan may be used in approved food service locations for food purchases only. Usage is limited to $20 per day.
- Unused Dining Dollars at the end of the Fall Semester will carry into the Spring Semester.
- Unused Dining Dollars at the end of the Spring Semester are forfeited.
- Dining Dollars may be used at the Hurricane Food Court, Carts, Eye, Convenience Store, Rathskeller, Subway, Business School Snack Bar, Starbucks, BankUnited Center and Wellness Center Juice Bar.

**Dining Services Contract**

- The Dining Services contract begins with the first meal of Fall Semester and extends through the last meal of Spring Semester.
- The student indicates choice of meal program on the Dining Contract.
- The student’s signature on the Dining Contract signifies acceptance of that board plan for the period indicated.
The student may also select a meal plan via myUM. Meals are not served when the University is not in session, during official University vacation periods, or between semesters. The entire semester amount must be paid in full at the same time students pay other registration costs (tuition and fees) during or before the first week of classes. All students may make changes to their meal plan within the first week of the semester by notifying the Department of Dining Services or via myUM. Changes made to meal plans for the Spring Semester will be assessed a $30 processing fee. Charges will be prorated up to the end of the week. Meal plan weeks run Monday through Sunday. Releases will be subject to a $300 penalty plus full charges through the week of cancellation, and may result in a Dining Dollars surcharge fee. Approval is obtained solely through the Department of Dining Services. The University reserves the right to terminate the contract by written notice if a student fails to comply with any of the terms and conditions of the contract and all other University and Dining Services rules and regulations.

For more information on Dining Services write to University of Miami, Dining Services, P.O. Box 248106, Coral Gables, FL 33124-6909, call Dining Services at 305-284-3584, email diningservices@miami.edu or visit www.miami.edu/dining-services.
HONORS PROGRAMS

In 1957 the faculty of the University of Miami established the General Honors Program to provide an academically challenging course of study for outstanding students. The program was later expanded by the addition of departmental honors. Students who satisfactorily complete the requirements for general and/or departmental honors are graduated with General Honors and/or Departmental Honors; the award is noted on the graduates diploma and official transcript.

GENERAL HONORS PROGRAM

Over the past four decades since its foundation, the General Honors Program has grown. The program now coordinates approximately 200 courses and sections each semester at the introductory through advanced levels, in a wide variety of fields in all colleges and schools of the University. In general, Honors courses are small classes taught as seminars with emphasis on interactive learning and discussion.

ADMISSION TO GENERAL HONORS

The University of Miami Honors Programs takes the initiative to invite the top 10% of the entering freshman class to join the General Honors Program. On receipt of an invitation, there is no further action required on the part of the student.

RETENTION AND REQUIREMENTS FOR GRADUATION WITH GENERAL HONORS

To remain in the General Honors Program a student must maintain an overall academic average of 3.500 and complete at least two Honors courses (six credits) per academic year.

To graduate with General Honors, a student must satisfy at least 24 credits in General Honors courses with a grade of “B” or better and have an overall grade point average of 3.500. Twelve of the 24 credits must be in courses at the 200 level or above. No more than 12 credits in the student’s major may be counted toward the 24 credits in General Honors.

WITHDRAWAL, DISMISSAL, AND REINSTATEMENT TO GENERAL HONORS

Students may withdraw from the program at any time at their discretion. They should notify the Honors Office in writing of their intention to withdraw. Honors students grade point averages and general performance are reviewed each academic year. Any student who fails to maintain the required cumulative grade point average or fails to take the required number of Honors credits will be excused from the program. Students may re-enter the program when their grade point average reaches 3.500; however, students must inform the Honors Office of the improved average and of their interest in re-entering the program.

DEPARTMENTAL HONORS PROGRAM

Among the departments offering approved programs for honors study at the junior-senior level for both majors and elective students are American studies, art and art history, biochemistry and molecular biology, biology, business management, chemistry, computer information systems, computer science, engineering, English, finance, French, German, history, international finance and marketing, international studies, Judaic Studies, management, management science, marine science, marketing, mathematics, meteorology, microbiology and immunology, philosophy, political science, psychology, religious studies,
Spanish, and women’s and gender studies. Admission into the program is by invitation, but any student who believes himself or herself qualified may apply to the Chairman or the Departmental Honors Advisor of the major department, preferably during the sophomore or early junior year. Upon successful completion of the required program and with approval by the faculty of the department, the notation Departmental Honors in … is included in the candidate’s diploma and transcript.

Departmental Honors Programs are designed primarily to provide an opportunity for the superior student to intensify and deepen his or her knowledge of the major, to permit closer associations with professors in the student’s area of concentration, and to prepare the student for research, thesis preparation, and other work at the graduate level in the major areas.

Minimal requirements for graduation with Departmental Honors are:
1. an over-all average of at least 3.300;
2. six credit hours or more in independent study, senior thesis, or designated advanced or special honors courses specified by the department, with grades of at least B;
3. an average in the major of at least 3.500.

Some departments specify additional requirements; the prospective Departmental Honors student should confer with the Honors Advisor within the department about specific requirements.

The College of Engineering offers a professionally oriented honors program which is described in their respective listing elsewhere in the Bulletin.

FOOTE FELLOWS PROGRAM

The Foote Fellows Program, established in 2001 in honor of former President Edward T. Foote, II, is a plan of study available only in the College of Arts and Sciences and is separate and distinct from the Honors Program. The Foote Fellows Program is intended for students who enter the University with advanced knowledge in several disciplines, who demonstrate intellectual rigor and an interest in a broad-based curriculum, and who are highly motivated thinkers and researchers. This program offers such students the opportunity to explore their academic interests by designing their course of study without the strictures of the conventional distribution requirements.

Students invited into the Foote Fellows program at the time they are admitted to the College of Arts and Sciences will be assigned a faculty mentor in a field which is of interest to them; or, the Associate Dean in the College of Arts and Sciences, Rita Deutsch, will act as the student’s mentor until such a choice is made. The mentor will carefully supervise the curriculum to ensure that it is consistent with the goals and values of a broad and rigorous liberal education.

HONORS PROGRAM IN BIOMEDICAL ENGINEERING

The Honors Program in Biomedical Engineering (HPBE) is a program for outstanding students that allow simultaneous undergraduate and graduate admission to the College of Engineering. Acceptance eliminates the pressure of gaining admission into this highly competitive field as a university or college senior. Applicants must be high school seniors in the top 10% of their class. They must have a minimum SAT I score of 1360 or (ACT 31). In addition to the regular Application for Admission to the University, the applicant must
complete a separate application form for the Honors Program in Biomedical Engineering. The HPBE application form and supporting materials must be submitted no later than January 15 of the applicant’s senior year. A review of completed applications will begin by the end of January.

For further information and application forms please go to the following web address: www.miami.edu/dualdegree.

HONORS PROGRAM IN LATIN AMERICAN STUDIES
The Honors Program in Latin American Studies (HPLA) is a dual degree program that allows students to receive a Bachelor of Arts and Master of Arts in five years following a rigorous, efficient, accelerated curriculum. This highly selective group of students will enjoy close faculty mentoring and the opportunity to engage in specialized research projects with faculty. Students will receive first-hand experience in their regions of focus by studying abroad. Most study abroad opportunities are for duration of six months. Applicants must be high school seniors in the top 10% of their class and must have a minimum SAT I score of 1360 or (ACT 31). In addition to the regular Application for Admission to the University, the applicant must complete a separate application form for the Honors Program in Latin American Studies. The HPLA application form and supporting materials must be submitted no later than January 15 of the applicant’s senior year. A review of completed applications will begin by the end of January.

For further information and application forms please go to the following web address: www.miami.edu/dualdegree.

HONORS PROGRAM IN MARINE GEOLOGY
The Honors Program in Marine Geology (HPMG) allows exceptional students to pursue an accelerated program in the undergraduate Geological Sciences and graduate Marine Geology and Geophysics programs. The degree consists of an undergraduate Bachelor of Sciences degree in Geological Sciences from the College of Arts and Sciences, combined with a graduate Master of Science degree from the Division of Marine Geology and Geophysics at the University of Miami Rosenstiel School of Marine and Atmospheric Science. Applicants must be high school seniors in the top 10% of their class and must have a minimum SAT I score of 1360 or (ACT 31). In addition to the regular Application for Admission to the University, the applicant must complete a separate application form for the Honors Program in Marine Geology. The HPMG application form and supporting materials must be submitted no later than January 15 of the applicant’s senior year. A review of completed applications will begin by the end of January.

For further information and application forms please go to the following web address: www.miami.edu/dualdegree.

HONORS PROGRAM IN MEDICINE
The Honors Program in Medicine (HPME) provides an opportunity for outstanding high school seniors who are seeking careers in medicine or medical science to obtain the Bachelor of Science and Doctor of Medicine degrees in seven or eight years.

This program has been designed by the School of Medicine and the College of Arts and Sciences. It provides a plan whereby students entering the University of Miami are admitted simultaneously into the Honors Program and a special Privileged Studies Program in the College of Arts and Sciences which allows HPME students to participate in an enriched and
challenging curricular experience without the strictures of conventional distribution requirements. HPME students are secure in the knowledge that they will have a place in the University of Miami School of Medicine as early as three years hence provided they maintain a cumulative grade point average of 3.700 in the sciences as well as an overall 3.700 g.p.a.

Applicants must have had in high school, or be in the process of completing at the time of application, four years each of English and mathematics and one year each of biology, chemistry, and physics. A course in calculus must be taken before beginning the program. Applicants must have minimum scores of 1400 on the SAT I (or 32 ACT). College Entrance Examination SAT II Subject Tests must be taken in English, mathematics, and either biology, chemistry, or physics and have a minimum score of 600. These tests must be taken no later than the October testing date of the applicant’s senior year in high school. In addition to the regular Application for Admission to the University, the applicant must complete a separate application form for the Honors Program in Medicine. The HPME application form and all supporting materials must be submitted by November 1 of the applicant’s senior year. A review of completed applications will begin by the end of December. Selected applicants will be invited for an on-campus interview with a member of the HPME Admission Committee.

For further information and application forms please go to the following web address: www.miami.edu/dualdegree.

HONORS PROGRAM IN PHYSICAL THERAPY

The University of Miami offers the Honors Program in Physical Therapy to high school graduates with high academic ability and achievement seeking careers in physical therapy. Participants may earn both the Bachelor of Science in Health Science (B.S.H.S.) and the Doctor of Physical Therapy (DPT) degrees in a six-year accelerated program, rather than the customary seven years.

The Honors Program in Physical Therapy is a cooperative venture of the School of Nursing and Health Studies and the School of Medicine, with students majoring in Health Sciences. Students pursue an enriched and highly challenging undergraduate curriculum, secure in the knowledge that they will have a place in the graduate physical therapy program after successful completion of three years of pre-physical therapy curriculum.

Applicants must be in the top 10% of their class and have a minimum SAT I score of 1360 (or ACT 31). These tests must be taken no later than the December testing date of the applicant’s senior year in high school. In addition to the regular Application for Admission to the University, the applicant must complete a separate application form for the Honors Program in Physical Therapy. The Honors Program in Physical Therapy application form and all supporting materials must be submitted no later than January 15 of the applicant’s senior year. A review of completed applications will begin by the end of January.

For further information and application forms please go to the following web address: www.miami.edu/dualdegree.

HONORS PROGRAM IN LAW

The University of Miami offers the Honors Program in Law (HPLW) which allows excellent students with high academic ability to gain admission to both undergraduate study and to graduate study in the law school. Such an achievement eliminates the pressure of applying
to law school and gives qualified students the chance to complete both Bachelor’s and Jurist Doctorate degree in 6 years. Applicants must be high school seniors in the top 5% of their class and have a minimum SAT I score of 1400 or (ACT 32). In addition to the regular Application for Admission to the University, the applicant must complete a separate application form for the Honors Program in Law. The HPLW application form and supporting materials must be submitted no later than January 15 of the applicant’s senior year. A review of completed applications will begin by the end of January.

For further information and application forms please go to the following web address. www.miami.edu/dualdegree

COURSES OFFERED IN HONORS - Dept. Code: HON

Because the list of these courses varies from semester to semester, an accurate list of offerings for a particular semester may be obtained from the Honors Program website (www.miami.edu/honorsprogram).

HONOR SOCIETIES

The following honor societies have chapters at the University of Miami:

Alpha Epsilon Delta (Pre-Med)
Alpha Epsilon Rho (Broadcasting)
Alpha Eta Mu Beta (Biomedical Engineering)
Alpha Kappa Delta (Sociology)
Alpha Lambda Delta (Freshmen General Scholarship)
Alpha Pi Mu (Industrial Engineering)
Alpha Psi Sigma (Criminology)
Alpha Rho Chi (Architecture)
Beta Alpha Psi (Accounting)
Beta Beta Beta (Biology)
Beta Gamma Sigma (Business)
Beta Gamma Sigma (Business)
Chi Epsilon (Civil Engineering)
Chi Kappa Nu (Electrical/Computer Engineering)
Gamma Theta Upsilon (Geography)
Golden Key National Honor Society (General Scholarship)
Honors Students’ Association (General Scholarship)
Mortar Board (General Scholarship)
Omilon Delta Kappa (General Scholarship)
Phi Alpha Delta (Pre-Legal)
Phi Alpha Epsilon (Engineering)
Phi Alpha Theta (History)
Phi Beta Kappa (General Scholarship)
Phi Lambda Pi (General Scholarship)
Phi Sigma Tau (Philosophy)
Pi Delta Phi (French)
Pi Kappa Lambda (Music and Music Education)
Pi Tau Sigma (Mechanical Engineering)
Psi Chi (Psychology)
Rho Rho Rho (Marine Science)
Sigma Delta Pi (Spanish)
Sigma Gamma Epsilon (Earth Sciences)
Sigma Pi Sigma (Physics)
Sigma Tau Delta (International English)
Sigma Theta Tau (Nursing)
Tau Beta Pi (Engineering)
Tau Sigma Delta (Architecture)
Theta Alpha Kappa (Religious Studies)

LEARNING COMMUNITIES

Learning Communities link two or more courses through a common, interdisciplinary focus. Instructors for each of the linked courses work collaboratively in developing a collective course outline that enables you to explore normally separate subjects through a common theme, allowing for greater coherence in what you are learning. Faculty who teach in Learning Communities work together to coordinate readings, assignments, field trips, and social activities.

Note: When you enroll in a learning community, you agree to participate in all of the courses included in that learning community. In most cases, dropping one learning community course requires that you drop the remaining related course(s).

UNIVERSITY EXPERIENCE – DEPT CODE: UMX
UMX 101, 102, 104, 106, 107, 109, 110, 111 and 112. University Experience 1-2 cr. – Offered Fall

Designed to promote a positive adjustment to University life; to promote and facilitate a positive UM experience; to foster community building and networking; to provide information about campus resources and how to use them to achieve success at UM and beyond. Sections will have particular emphasis on a particular academic theme. Includes both lecture and small group seminar meetings. Prerequisite: None; free elective. Not for major, minor, or required area of study requirement.

FIRST YEAR SEMINARS
FFA 190-199. First Year Seminars in Arts
FLT 190-199. First Year Seminars in Literature
FNS 190-199. First Year Seminars in Natural Science
FPR 190-199. First Year Seminars in Philosophy/Religion
FSS 190-199. First Year Seminars in the Social Sciences

Conceived as alternatives to standard freshman survey courses, first year seminars offer a limited number of students a small class focused on a specific topic. The seminars are interdisciplinary in nature and/or experimental in subject and design. Seminars are taught by distinguished faculty from a wide variety of academic disciplines. No student may take more than one. First year seminars are 3 credit courses that may be used to fulfill general education requirements in natural sciences, social sciences, or humanities (literature, fine arts, philosophy, and religion).
RESEARCH AND SPONSORED PROGRAMS

OAK RIDGE ASSOCIATED UNIVERSITIES
Since 1956, students and faculty of the University of Miami have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 91 colleges and universities and a contractor for the U.S. Department of Energy (DOE) located in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

Through the Oak Ridge Institute for Science and Education (ORISE), the DOE facility that ORAU operates, undergraduates, graduates, postgraduates, as well as faculty enjoy access to a multitude of opportunities for study and research. Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry, and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of underrepresented minority students pursuing degrees in science- and engineering-related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines, and details on locations and benefits can be found in the ORISE Catalog of Education and Training Programs, which is available at http://www.orau.gov/orise/educ.htm, or by calling either of the contacts below.

ORAU’s Office of Partnership Development seeks opportunities for partnerships and alliances among ORAU’s members, private industry, and major federal facilities. Activities include faculty development programs, such as the Ralph E. Powe Junior Faculty Enhancement Awards, the Visiting Industrial Scholars Program, consortium research funding initiatives, faculty research and support programs as well as services to chief research officers.

For more information about ORAU and its programs, contact Dr. Junko Kazumi, ORAU Councilor for University of Miami at 305-284-2908; or contact Ms. Monnie E. Champion, ORAU Corporate Secretary, at 865-576-3306; or

Visit the ORAU Home Page (http://www.orau.org)

PATENT AND COPYRIGHT REGULATIONS
Discoveries or inventions, whether or not subject to patent or copyright, developed by students as a result of research done or in connection with theses, dissertations or problems pertaining thereto, or as a result of a program of research financed wholly or in part by University funds, or by funds under the control of the University shall be the exclusive property of the University except as may be otherwise required by the terms of research grants or contracts. The University Patent and Copyright policy provides for the inventor(s) to share in any royalties received for any patented or patentable discovery or invention in which the University has a property interest. Any such discovery or invention shall be so disclosed promptly, but in any event within a period of not more than two months, to the Office of Technology Transfer. For specific information regarding the Policy, contact the Office of Technology Transfer, Medical Campus, 243-5689.

USE OF HUMAN SUBJECTS IN RESEARCH
All research that involves the use of human subjects must be reviewed and approved by one of the University Institutional Review Boards for the Protection of Human Subjects in
Research. This policy applies to both funded and non-funded faculty and student research. Any individual student research project, including thesis or dissertation, that involves human subjects must be approved by one of the committees prior to initiation of the research. For additional information, contact the Human Subjects Research Office at (305) 243-3195.
VETERANS

VETERANS BENEFITS

The University of Miami maintains a Veterans Affairs Office in the Office of the Registrar, 121 University Center, to assist veterans and dependents of veterans who are entitled to V.A. educational benefits under Chapter 30, 32 or Chapter 35 of Title 38, U.S. Code, and Chapter 106 or Chapter 1607, Title 10, USC. Anyone needing information on Veterans Benefits is advised to contact the Office of the Registrar.

V.A. students with previous postsecondary educational training/experience must request official transcript(s) be sent to the school. If the transcript has not been received prior to the end of the student’s initial semester, or as specified in the guidelines under the program he/she is enrolled in, the Veteran Affairs Office will not re-certify the student for V.A. educational benefits. The Veteran Affairs Office may re-certify the student after the transcript has been received.

The V.A. student’s previous training and/or experience will be evaluated by the school. Should credit(s) be accepted and/or granted, the V.A. student’s tuition and training time will be reduced proportionally. The V.A. and the student will receive a written notice of the credit(s) allowed.

STANDARDS OF PROGRESS POLICY FOR VETERANS

Satisfactory progress is indicated by a Satisfactory Progress Average (SPA), which is a variation of the Quality Point Average (QPA). The SPA is computed by the following formula:

\[
\begin{align*}
A &= 4 \\
B &= 3 \\
C &= 2 \\
D &= 1 \\
E &= 0 \\
IE &= 0 \\
F &= 0 \\
IF &= 0 \\
NG &= 0
\end{align*}
\]

Note that “E’s”, “F’s”, “IE’s” and “IF’s” are included in the SPA.

A grade of CR will be counted as CR=2.

The SPA is determined by dividing the total quality points earned by the credits attempted.

When a course is dropped with a grade of W, the V.A. requires a student to repay any benefits received for that course unless the V.A. determines there are mitigating circumstances involved. Benefits will not be paid for courses in which a student receives a NG or NC.

- An SPA of 2.0 or greater for undergraduate students, or 3.0 or greater for graduate students, is satisfactory progress.
- Less than 2.0 for undergraduate, and less than 3.0 for graduate students, is not satisfactory.

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• Law and M.D. students will be considered to be making satisfactory progress as long as they meet the academic standards set by their schools for retention in their degree programs.

• The SPA is non-cumulative. It is computed each term on a one-term basis.

• Any term a student’s SPA is less than 2.0 for undergraduate or 3.0 for graduate, he/she will be notified that he/she is not making satisfactory progress. He/she will be certified, in a probationary status, for only one additional semester.

• If, at the end of this additional semester, his/her SPA for that semester is still below the satisfactory level, the V.A. will be notified of the unsatisfactory progress and his/her educational benefits will be terminated.

• A student whose V.A. educational benefits have been terminated for unsatisfactory progress may petition the Veteran Affairs Office, 121 University Center, to be re-certified after one semester has elapsed.

• The Veteran Affairs Office may re-certify the student for V.A. educational benefits only if there is a reasonable likelihood that the student will be able to attain and maintain satisfactory progress for the remainder of the program.

FOR V.A. PAYMENT OF BENEFITS PURPOSES

• An “I” (Incomplete) designation for a course must be converted to a credit grade counting toward graduation, or a failing grade, by the end of one calendar year unless permission for a delay is granted by the Academic Dean.

• An “NG” (no grade) designation for a course must be converted to a credit grade counting toward graduation, or a failing grade, by the end of one regular semester unless permission for a delay is granted by the Academic Dean.

• If permission is obtained, a memo signed by the Academic Dean must be given to the Veteran Affairs Office during the semester in which the “I” or “NG” was to be removed. This memo should also state period of time for which delay is approved.

• If a memo giving permission for a delay in the “I” or “NG” removal is not received by the end of the semester in which the “I” or “NG” was to be removed, the V.A. will be notified of the incomplete grade resulting in loss of educational benefits for that course.

Please consult with our office regarding regulations for “IP’s” received in Thesis, Research, or Dissertation.

There is an official period after each registration in which a student may drop a course without a “W” appearing on his/her grade report: two weeks for Fall and Spring and four class days for each Summer Session. These periods are not to be confused with the last date to drop a course with a “W” grade, which occurs the eighth week of the Fall and Spring Semesters and the third week of class in the Summer Sessions.
CLASS ATTENDANCE AND ABSENCES

- Regular and punctual class attendance is vital for all students.
- It is the student’s responsibility to know the instructor’s policies regarding examinations, penalties for absences, and late or missed work.
- A copy of the student’s transcript will be placed in the student’s permanent file maintained by the Veteran Affairs Office.

Because of the far-reaching effects of these revisions in the V.A. educational benefits program, it is suggested that you exercise care and judgment in your program planning and in the selection of your courses.
SCHOOL OF ARCHITECTURE - UNDERGRADUATE
www.arc.miami.edu

The School of Architecture offers a five-year, accredited professional program leading to the Bachelor of Architecture degree. The Bachelor of Architecture fulfills the educational requirements for professional registration. It offers specialized architectural study through upper-level studios and architecture electives, as well as opportunities for the study of liberal arts through the elective sequence leading to a minor.

ACCREDITATION

The school is a member of the Association of Collegiate Schools of Architecture and the Association of Collegiate Schools of Planning, and is fully accredited by the National Architectural Accreditation Board, who asks each school to include the following paragraph on professional degrees in all literature:

In the United States, most state registration boards require a degree from an accredited professional program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit US professional degree programs in architecture, recognizes two types of degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted five-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards.

Masters degree programs consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, compromise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

The School of Architecture’s location in Coral Gables within the Miami metropolitan area provides an outstanding laboratory for research and advanced study; the challenges of conservation and development are intense in one of the nation’s fastest growing urban areas. These challenges result in an increasing demand for skilled professionals. Students have the opportunity to work with the faculty in the exploration of theoretical issues and in the resolution of practical problems. The School of Architecture values and sustains a creative, open and supportive environment, emphasizing personalized instruction in small classes and studio courses.

The school’s resources, including a state-of-the-art computer laboratory, are enhanced by the interdisciplinary opportunities offered by the other schools and colleges of the University of Miami. A distinguished faculty is joined each semester by internationally renowned visiting scholars and designers.

A Master of Architecture first professional degree and post professional programs in Suburb and Town Design, Computing in Design and Research are also available.

ACADEMIC POLICIES

Admission

Applications for incoming freshmen are processed and reviewed by the Office of Admission. Enrollment in the School of Architecture is selective and highly competitive. Application to
the Bachelor of Architecture program is requested by February 1st. Early application is encouraged.

Freshman: Admission decisions are based on the following factors: secondary school record, SAT/ACT score, counselor’s evaluation and the student essay.

Transfer Students: The academic accomplishments of each transfer student will be evaluated on an individual basis. A 3.0 G.P.A. is required for transfer admission. A portfolio is required for advanced placement in the design sequence of the Bachelor of Architecture Program. Application deadline for the School of Architecture program is March 1st.

Transfer Students

All transfer students requesting advanced placement in design must provide a portfolio of previous academic design and graphic work and three academic recommendations. Students accepted into third year design will be required to complete a transitional design course (ARC 301) during the summer prior to enrollment. The courses MTH 109 and PHY 103, or their equivalent be completed before admission into ARC 305.

Student Responsibilities

Students in the School of Architecture are responsible for planning their own programs and for meeting degree requirements. It is the student’s responsibility to understand and fully comply with all the provisions set forth in this Bulletin and written changes to their program of study. Students are provided assistance by advisors and faculty members. Written requests for variation from program or school requirements are reviewed by a faculty committee.

Academic Progress and Probation

The School of Architecture will review each student’s record at the end of each semester. When a students semester or cumulative average is less than stated below, or progress toward degree completion is unsatisfactory, the student will be placed on academic probation or warning in accordance with School of Architecture policies and procedures. Students on probation are not permitted to enroll in more than 13 semester hours, shall meet on a monthly basis with their academic advisor, and may have a STOP placed upon their future enrollment until grades for work-in-progress are reviewed. First semester freshmen who have a semester grade-point average below 2.0 shall be placed on probation.

<table>
<thead>
<tr>
<th>Credits earned</th>
<th>CGPA</th>
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</thead>
<tbody>
<tr>
<td>Fewer than 33 credits</td>
<td>2.0</td>
</tr>
<tr>
<td>33-64 credits</td>
<td>2.1</td>
</tr>
<tr>
<td>65-96 credits</td>
<td>2.2</td>
</tr>
<tr>
<td>More than 96 credits</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Students must complete all Architecture Design studios with a grade of C- or higher. Students receiving a grade of D+ or lower in an Architecture Design Studio must repeat the studio and will be restricted to a 15 credit semester load. The student will meet with an academic advisor on a monthly basis and will be reviewed prior to continuation.

Academic Dismissal
A student in the School of Architecture whose CGPA or progress toward degree completion falls below the level of the minimum standards of the University of Miami may be dismissed. In the School of Architecture this includes a student who receives three grades of D+ or lower in design courses.

Class Attendance and Absences

Class attendance is mandatory for all architecture courses; three unexcused absences constitutes grounds for dismissal from the course and/or a failing grade. Students are required to be present for an entire design review, therefore, students arriving late or departing early from class will be considered absent. Excused absences require written notification and are granted by the instructor.

Failing Grades or Incompletes

A required architecture course in which a student receives a failing grade must be repeated during the first subsequent semester in which the course is offered. Incompletes can be given only for reasons of serious illness or exceptional hardship.

Student Work

The University may retain selected student work and may place it in the architecture archives for exhibition, publication, or other use as the University deems appropriate. Each student in architecture is encouraged to maintain a design portfolio of every project undertaken throughout the five-year program.

Permission to Take Courses at Another University

A form is available from the Office of Academic Services and should be completed and approved PRIOR to off-campus enrollment. Students are encouraged to provide complete documentation for each course request form. Each student requesting transfer credit must supply the University of Miami registrar with certified transcripts. Additionally, each student should review transfer evaluations to be certain that all courses are correctly evaluated for credit. The proper transmission and transfer of credits is the responsibility of the individual student. The last 45 credits towards the degree must be completed at the University of Miami.

Changes to Academic Requirements

The School reserves the right to change academic requirements.

Computer Requirement

Undergraduate students entering their third year and all graduate students are required to purchase their own computers for use in the design studio. The School of Architecture computing resources are accessible via a wireless network with an approved device and subject to School and University policy. System requirements are published on the School of Architecture web site.

REQUIREMENTS FOR GRADUATION

The following courses are part of the required curriculum for all students pursuing the Bachelor of Architecture degree:
A. AREAS OF PROFICIENCY

*English Composition:* ENG 105 - English Composition I and ENG 106 - English Composition II

*Mathematics:* MTH 109 - Introductory Calculus

*Writing across the curriculum:* (minimum 15 credits required)
All required History of Architecture and Architecture Theory courses in the B.Arch. curriculum

B. AREAS OF KNOWLEDGE (24 credits required)

*Arts:* (6 credits required):
ARC 101 - Architecture Design I, ARC 111 Drawing I

*Humanities:* (6 credits required):
ARC 121 - Architecture and Culture, ARC 267 History of Architecture I: Ancient, Medieval and Renaissance

*Natural World (Natural Sciences):* (6 credits required):
PHY 103 - General Physics, and another course from the University’s approved master list of Natural Science courses taken as a non architecture elective.

*People and Society (Social Sciences):* (6 credits required):
HIS 211, HIS 212, HIS 221, HIS 222, HIS 251, HIS 252, HIS 261, HIS 262

**BACHELOR OF ARCHITECTURE MINOR REQUIREMENT**

The Architecture curriculum requires a minor outside the School of Architecture, to be taken as non-architecture elective courses. The minor may not be satisfied with architecture elective courses. Many programs at the University award minors for twelve or more credits of study. Students are advised to consult the Bulletin and the chair of the appropriate department for details. Transfer students are exempt from the minor requirement; but must complete 18 credits of non-architecture elective courses.

**ACADEMIC PROGRAM - UNDERGRADUATE**

**BACHELOR OF ARCHITECTURE CURRICULUM**

Tabular listing of the course requirements for the Bachelor of Architecture degree. Specific procedures and policies are detailed in the student handbook available from the Office of Academic Services.

<table>
<thead>
<tr>
<th></th>
<th>First Semester</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Credits</td>
<td>Credits</td>
</tr>
<tr>
<td>ARC 101</td>
<td>6</td>
<td>ARC 102</td>
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<tr>
<td>Architecture</td>
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<td>Design I</td>
</tr>
<tr>
<td>Design I</td>
<td>6</td>
<td>6</td>
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<tr>
<td>ARC 111</td>
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<td>ARC 112</td>
</tr>
<tr>
<td>Drawing I</td>
<td>3</td>
<td>Drawing II</td>
</tr>
<tr>
<td>ARC 121</td>
<td>3</td>
<td>ARC 122</td>
</tr>
<tr>
<td>Architecture</td>
<td>3</td>
<td>Introrductory</td>
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<tr>
<td>and Culture</td>
<td>3</td>
<td>Calculus</td>
</tr>
<tr>
<td>MTH 109</td>
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<td>PHY 103</td>
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<td>Introductory</td>
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<td>ENG 105</td>
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<tr>
<td>Composition I</td>
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</tr>
<tr>
<td>Total Credits</td>
<td>18</td>
<td>Total Credits</td>
</tr>
</tbody>
</table>
## First Semester
ARC 203 Architecture Design III 6  
ARC 223 Architecture and the Environment 3 cr.  
ARC 261 Building Construction 3  
ARC 267 History of Architecture I: Ancient, Medieval and Renaissance 3  
History Elective 3  
Total Credits 18

## Second Semester
ARC 204 Architecture Design IV 6  
ARC 213 Computing I 3  
ARC 231 Building Structures 3  
ARC 268 History of Architecture II: Baroque through Contemporary 3  
History Elective 3  
Total Credits 18

## Third Year
### First Semester
ARC 305 Architecture Design V 6  
ARC 362 Building Systems I 3  
CAE 213 Behavior of Structural Systems I 3  
Natural Science Elective 3  
Non Architecture Elective 3  
Total Credits 18

### Second Semester
ARC 306 Architecture Design VI 6  
CAE 313 Behavior of Structural Systems II 3  
ARC 363 Building Systems II 3  
Non Architecture Elective 3  
Architecture Elective 3  
Total Credits 18

## Fourth and Fifth Years
### Fourth Year
ARC 407 Architecture Design VII 6  
ARC 408 Architecture Design VIII 6  
ARC 452 Practice of Architecture II 3  
ARC Professional Practice Elective 3  
ARC History Elective 3  
ARC 371, 372, 373, 374, 390, 475, 476, 554, 570 6  
ARC 509 Architecture Design IX 6  
ARC 510 Architecture Design X 6  
Minor 12  
Architecture Electives 18  
Total Credits 63

## Curriculum Notes
The School reserves the right to retain all student projects done in for academic credit. MTH 109 AND ENG 105 are entry-level courses. Courses taken to achieve entry-level status cannot be considered towards the total credits required for the B.Arch. Degree.

## Electives
The program requires four types of electives:
- **Architecture electives (7 courses)**
- Investigations in areas of architectural interest beyond the core requirements
- Professional practice elective (1 course)
- Focused examination of a topic related to practice
- Non-Architecture electives (2-3 courses)
- Explorations of general University offerings
- Minor (4-5 courses)
- Concentrated study in an area outside of architecture

A minor or its equivalent is required for all students other than transfers. Areas are selected in consultation with faculty advisors.

## Architecture Minor
A minor in architecture is available to non-architecture majors as an option in the undergraduate architecture program. The purpose of the minor is to provide a general understanding and appreciation of the discipline of architecture. The minor does not satisfy professional requirements in architecture but does offer an introductory basis for further
study at the undergraduate or graduate level. The program requires 12 credit hours in architecture courses. Four architecture electives from the following list of courses: ARC 121, 122, 141, 191, 223, 267, 268, 294, 323, 371, 372, 373, 374, 475, 476, 521, 551, 554 may be taken to complete the requirements for the minor.

**COMPUTING AREA OF CONCENTRATION**

A concentration in computing is available as an option in the undergraduate architecture program. The purpose of the concentration is to provide a broad understanding and appreciation of computing as it applies to the discipline of architecture. The program requires 15 hours in computer courses that will be credited as electives in the undergraduate architectural program.

**LANDSCAPE ARCHITECTURE AREA OF CONCENTRATION**

A concentration in landscape architecture is available as an option in the undergraduate architecture program. The purpose of the concentration is to provide a broad understanding and appreciation of the natural and historical landscape. The concentration does not satisfy professional requirements in landscape architecture but does offer a basis for further study at the graduate level. The program requires 12 credit hours in landscape architecture related courses that will be credited as electives in the undergraduate architectural program.

[Architecture Course Listing]
The College of Arts and Sciences offers courses leading to the degrees of:
Bachelor of Arts
Bachelor of Science
Bachelor of Fine Arts
Bachelor of Liberal Arts

Graduates with one of these degrees will have had a sound liberal arts introduction to the major fields of human knowledge. In addition to this background each bachelor’s candidate has the opportunity to select an area of academic or of occupational interest. Within the degree may be built certain professional or pre-professional curricula leading to certification in teaching, medical technology, chemistry, or to dentistry, medicine, law, etc.

The degrees of Master of Arts, Master of Science, Master of Fine Arts, Doctor of Arts, and Doctor of Philosophy are available in certain departments in the College. These programs are under the supervision of the Dean of the Graduate School and the Faculty Council on Graduate Studies.

REQUIREMENTS FOR GRADUATION

BACHELOR OF ARTS AND BACHELOR OF SCIENCE DEGREES

Candidates for B.A. and B.S. degrees in the College of Arts and Sciences must complete the credit hours of work and achieve the quality point average specified for students in the University at large. These requirements are indicated in the Academic Procedures and Information section of this Bulletin.

I. Required Areas of Study. Courses taken for the major, the minor, and the writing requirement may also be used to satisfy the Areas of Study requirements of the College. In each department and program, the applicable prerequisites must be met before upper division courses can be taken. No more than six credits in any discipline may be used to satisfy the Areas of Study requirements.

A. English Composition   B.A. and B.S. degrees: 3-6 credits

Students (except those first enrolling in English 103) must take English 105 and 106, or their approved equivalents, in the first year of residence.

Students with an appropriate score on the Advanced Placement [AP] language and literature examination, or with an appropriate score on the International Baccalaureate [IB] higher level English examination, may earn 6 credits in English 105 and English 106. Those with an appropriate score on the SAT verbal or ACT verbal exams may be exempted from English 105. Those with transfer credit for English 105 will take English 106 or its equivalent in the first year of residence; those with credit for English 105 and 106 will take an approved advanced composition course or intensive writing course section in the first year of residence, unless otherwise exempted with the approval of the English Composition Program.

B. Languages   B.A. and B.S. degrees: 3-9 credits

Students must earn at least 3 credits of a language other than English at the 200 course level or higher. Special 100- and 200-level Spanish courses are required of native
Spanish speakers who choose to fulfill the language requirement by taking Spanish. Students may fulfill the foreign language requirement from the following: Arabic, French, German, Greek Hebrew, Italian, Japanese, Latin, Portuguese and Spanish.

C. People and Society (Social Sciences)  B.A. and B.S. degree: 12 credits

B.A. and B.S. degree candidates must earn twelve credits in the following social science disciplines: Africana Studies, American Studies (AMS only), Anthropology (except APY 203), Classics (CLA 301, 302, 303 and 304), Economics, Geography and Regional Studies (except GEG 120), History, International Studies, Judaic Studies (JUS), Political Science, Psychology, Sociology, and Women’s Studies (WGS only). No more than six credits may be earned in any one discipline.

One approved First Year seminar course may be taken for the Social Sciences requirement. See the College of Arts and Sciences Center for Student Academic Services for details of specific courses.

D. Arts and Humanities  B.A. and B.S. degree: 12 credits

B.A. and B.S. degree candidates must earn twelve credits in the three areas listed below. At least three credits must be earned in each area.

**Fine Arts:** courses in the departments of Art and Art History, Dance (DAN 250 only), Musicology (only the following: either MCY 131 OR MCY 132, but not both, MCY 325, MCY 361 and MCY 362), Music Theory (MTC 125 only), and Theatre Arts (THA 101 only) count toward this requirement.

**Literature:** literature courses in the departments of English (200-level and higher) Foreign Languages and Literatures (300-level and higher) and Classics (CLA 220, CLA 310, CLA 311 and CLA 370) count toward this requirement.

**Philosophy and Religious Studies:** courses in the departments of Philosophy and Religious Studies count toward this requirement.

One approved First Year seminar course may be taken for the Arts and Humanities requirement. See the College of Arts and Sciences Center for Student Academic Services for details of specific courses.

E. Mathematics  B.A. degrees: 3-6 credits
B.S. degrees: 11-12 credits

B.A. degree candidates who do not place out of MTH 101 must take MTH 101 or MTH 107 during their first year in the College. In addition, all B.A. degree candidates must take one of the following MTH courses: MTH 103, MTH 108, MTH 109, MTH 111, or MTH 131.

B.S. degree candidates must earn 11-12 credits, consisting of two semesters of Calculus: MTH 110-112, MTH 111-112, MTH 131-132 and either a) one semester of a computer course approved by the major department; or b) a statistics course approved by the major department.

F. Natural World (Natural Science)  B.A. degrees: 9 credits
B.S. degrees: 4-8 credits
B.A. degree candidates must earn nine credits in two of the following disciplines: Biology, Chemistry, Ecosystem Science and Policy, Geological Sciences, Marine Sciences, Physical Sciences, and Physics. APY 203 and/or GEG 120 may also be taken for this requirement.

B.S. degree candidates minoring in one of the subjects approved as a B.S. major must earn 4 credits, and those minoring in other subjects must earn 8 credits, in one of the following departments: Biology, Chemistry, Geological Sciences or Physics. These credits must be taken in a department other than the major or the minor, and must be earned in courses that count toward a major in that department.

II. Writing

Every student must complete five (5) writing-oriented (W) courses beyond ENG 105 and 106. Students are required to write at least 4000 words in each W course. Writing assignments will be graded on both content and style. All literature and foreign language literature courses receive writing credit. Transfer students must satisfy at least three (3) courses of the writing requirement at the University of Miami.

III. Major

Every candidate for a degree must choose a major field. To find the requirements for the major, consult this Bulletin under the discipline concerned, and confer with the designated departmental representative. The candidate for the B.A. degree may choose a major from among the disciplines offering majors in the College of Arts and Sciences, from the Departments of Political Science and Economics in the School of Business Administration, and from Elementary Education and Special Education in the School of Education. The candidate for the B.S. degree must choose a major from the following areas: Biochemistry and Molecular Biology, Biology, Chemistry, Computer Science, Ecosystem Science and Policy, Geological Sciences, Marine Science/Biology, Marine Science/Computer Science, Marine Science/Chemistry, Marine Science/Geological Sciences, Marine Science/Physics, Mathematics, Meteorology/Mathematics, Microbiology and Immunology, Neuroscience, Physics, or Psychology. The choice of a major field should be made not later than the beginning of the junior year and must be approved by the major department. Any student making unsatisfactory progress in a major may be required to change his/her major or to relinquish candidacy for the degree.

IV. Minor

Except for those majoring in Ecosystem Science and Policy, Latin American Studies, Marine Science/Biology, Marine Science/Computer Science, Marine Science/Chemistry, Marine Science/Geological Sciences, and Marine Science/Physics, all students must choose a minor. The minor must be in a department other than the major except for students in the Department of Foreign Languages, who may major and minor in different languages. The minor requirements are specified by each department and are listed under departmental headings in the Bulletin.

If the candidate for the B.A. degree presents Biology, Chemistry, Computer Science, Geological Sciences, or Mathematics, as a major, the minor may not be selected from among these disciplines or from Biochemistry and Molecular Biology, Marine Sciences, Microbiology and Immunology, Physics, or Engineering. Subject to the foregoing, students may select a minor from any discipline in the College of Arts and Sciences, the College of Engineering or the Schools of Architecture, Business Administration, Communication, Education, or Music, which lists a minor. Courses taken for the minor may also be used to
satisfy the Areas of Study requirements of the College up to the limit of each area. Students planning a minor in Music should contact the School of Music for information regarding placement examinations in theory and applied music requirements.

V. Other Requirements.

Credit Only. Only free electives may be taken under this option. Courses which satisfy the major, the minor, the distribution requirements of the College and the general education requirements of the University may not be taken for credit only.

Exemption. Exemption from a course or courses refers specifically to the following: a) credit by examination through the Advanced Placement (AP) or International Baccalaureate (IB) programs; b) advanced placement by proficiency examinations or test scores, with no credit earned; c) advanced standing and/or placement, with credit granted.

Transfer Credits. Credits transferred from other institutions may not count towards the completion of a major or minor without the written approval of the department or program.

General Electives. Sufficient for a total of 120 credits. Electives may be chosen from any courses offered by the University except certain specific unapproved courses such as activity courses in the School of Education. The student should consult an advisor before selecting elective courses.

BACHELOR OF FINE ARTS DEGREE

I. The candidate for the degree of Bachelor of Fine Arts must complete 120 credit hours with an overall quality point average of 2.0 or above as specified in departmental and program sections of this Bulletin.

II. The student must satisfy the College of Arts and Sciences distribution requirements for the Bachelor of Fine Arts by:

A. Satisfactory completion of six credits of English Composition (English 105 and 106 or its equivalent). Admission to English 105 requires a placement test score acceptable to the Department of English. A high test score may exempt a student from English 105 but not from 106 or its equivalent.

B. Satisfactory completion of the General Education Requirements from the areas of study listed below.
   1. ENG 105 and ENG 106
   2. MTH 101 and a course in math numbered above 101. (MTH 107 does not fulfill this requirement.)
   3. 5 writing oriented courses above ENG 105 and 106.
   4. 6 credits in Humanities (from Literature, Philosophy, or Religious Studies)
   5. 6 credits in Natural Sciences
   6. 6 credits in Social Sciences

III. Students must satisfy the requirements of a major as determined by the Department of Art and Art History or the Department of Theatre Arts. Students must maintain at least a 3.0 average in their major.

BACHELOR OF LIBERAL ARTS DEGREE

I. The candidate for the degree of Bachelor of Liberal Arts must complete 120 hours with an overall quality point average of 2.0 or above.
II. He/she must satisfy the General Education Requirements of the University as set forth elsewhere in this Bulletin.

III. At least 60 of the 120 credit hours required must be in 300, 400, or 500-level courses. Of these, 30 credits must be completed in the College of Arts and Sciences.

IV. Not more than 40 hours in 300-level or higher courses may be taken in any one department. No more than 52 hours (in total credits) may be earned in any one department.

V. Up to 30 of the 120 hours may be courses from other schools and colleges of the University of Miami except for those courses expressly excluded from recognition by the College. These credits include both lower and upper division courses. Students who exceed this maximum will have the number of credits required to graduate increased by the number earned over 30 credits.

VI. The student may, but is not required to, elect a major in a department. If a student fulfills the departmental requirements for the major, it will be recorded on the official transcript. No minor may be elected.

**PRELAW PREPARATION**

Although no specific curriculum is required in preparation for Law School, the Pre-Law Committee of the American Bar Association strongly recommends that students considering a career in Law should have a well-balanced education. This education should include courses requiring intensive writing, logical reasoning and critical thinking and reading skills.

The College of Arts and Sciences Student Academic Services Office located in Room 200 in the Ashe Building, provides a variety of services to all students interested in attending Law School. These services include:

1. Pre-Law Advising: confidential advising in preparation for law school (i.e. application process, general information, discussion of your concerns).
2. The Pre-Law Manual: everything you want to know about law school.
3. Pre-Law Newsletter: information about programs and events.
4. LSAT and LSDAS registration booklets (for juniors and seniors).
5. Campus-wide programs for pre-law students such as Law Day.
6. Programs and seminars in coordination with other University of Miami departments such as: School of Law Career Planning Center, School of Law Center for Ethics and Public Service, Toppel Career Planning and Placement, the Counseling Center, and the Reading and Study Skills Center.

In order to take advantage of the services listed above you will need to complete a Pre-Law registration card at the beginning of the academic year.

**PREMEDICAL PREPARATION**

The Committee on Premedical Studies, located in the College of Arts and Sciences (Ashe Building 205), assists students who plan to enter medicine (allopathic or osteopathic), dentistry, podiatry, optometry, chiropractic, or veterinary medicine. The Director of
Premedical Studies provides guidance and also prepares a composite letter of recommendation in support of the application to health professional school.

Freshmen are encouraged to attend the premedical orientation in August and to set up a group appointment with the Director of Premedical Studies in the spring semester of their freshman year. At this time they will receive a copy of the “Premedical Student Guidelines” which details the process of opening, building and completing a file with Premedical Advising Office. Students are welcome to view the guide at www.as.miami.edu/premed.

For further guidance in curriculum planning, students should examine the requirements of the individual health professions. The Premedical Advising Office maintains a library of health professions admissions requirements and information on summer programs and related graduate programs.

In general, however, premedical students should take:
- English, two semesters
- College Mathematics, two semesters
- General Biology with lab, two semesters
- General Chemistry with lab, two semesters
- Organic Chemistry with lab, two semesters
- Physics with lab, two semesters
- Biochemistry, one semester

Other recommended courses are:
- Physiology
- Genetics
- Cellular and Molecular Biology
- Microbiology
- Psychology

Most medical schools advise against the study of science subjects to the exclusion of broadening courses in a College of Arts and Sciences; therefore, students should include classes in literature, philosophy, religious studies, history, and foreign languages.

UNDERGRADUATE ACADEMIC PROGRAMS

AEROSPACE STUDIES - Dept. Code: AIS
www.miami.edu/aerospace-studies

The Department of Aerospace Studies, the Air Force Reserve Officer Training Corps (AFROTC), at the University of Miami provides academic instruction and training experiences leading to commissioned service in the United States Air Force.

AFROTC is an educational program designed to give men and women the opportunity to become Air Force officers while completing a Bachelor’s degree. The AFROTC program is designed to prepare them to assume positions of increasing responsibility and importance in the modern Air Force.

AFROTC offers several routes to an Air Force commission. Optimally, the program lasts four years, but it can be completed in three, two or even just one year if you are majoring in a
critically needed area. Depending on the program chosen, attendance at either a four-week or six-week summer field training course is required. AFROTC cadets will receive junior officer training, career orientation, and learn how the Air Force operates. Travel to and from the base where field training occurs is paid for by the Air Force. The end product of the AFROTC program is to produce second Lieutenants in the Air Force upon graduation. For more information, contact Captain McAndrew at 305-284-2870.

ENROLLMENT
There is no military obligation to sign up for AFROTC. To take classes students must be U.S. citizens or resident aliens, and must be U.S. citizens to receive a commission. It is possible to begin AFROTC as a resident alien and earn a commission once citizenship is obtained. AFROTC cadets must also pass the Air Force Officer Qualifying Test, a physical fitness test including a 1.5 mile timed run, push-ups and sit-ups and pass a Department of Defense physical exam in order to be eligible for scholarships and ultimately commissioning.

SCHOLARSHIPS
A variety of AFROTC scholarships for one, two, three, and four years are available on a competitive basis and include a $600 textbook allowance per semester plus a non-taxable $250 - $400 stipend each month during the school year. Some scholarships provide full college tuition while others begin at $15,000 per year. In selected academic areas, scholarships may extend to meet a five year degree program recognized by the college. The one year program is for students preparing for occupations for which the Air Force has a special need. The majority of two to four year scholarships are for students pursuing degrees in certain fields of engineering, science and math, with a limited number going to other academic degrees. A number of scholarships are also available to students enrolled in certain non-technical degree programs such as: business administration, accounting, economics, and management. Scholarships for careers in the medical field are also offered.

Additionally, University of Miami undergraduates enrolled in the Air Force ROTC program are assured annual combined University grant and/or scholarship resources amounting to one quarter* of the University’s tuition for up to four years. Students must maintain continuous enrollment in the AFROTC program and full time enrollment in one of the University’s undergraduate degree program. No application required. Awards are made automatically based on information provided by the University’s AFROTC detachment.

*Assured amount is lower if the total of all scholarships, grants and/or stipends received by the student would exceed the student's cost of attendance for the academic year, as determined by the University Of Miami Office of Financial Assistance Services.

BENEFITS
All AFROTC cadets receive uniforms, books and equipment for ROTC classes at no cost. Upon being commissioned a 2nd Lieutenant in the Air Force, you will receive a starting salary and allowances worth more than $35,000 per year. Free medical and dental care, 30 days annual vacation with pay and added educational benefits are also part of the compensation package.

Aerospace Course Listing

AFRICANA STUDIES - Dept. Code: AFS
www.as.miami.edu/africanastudies
www.as.miami.edu/ids
The Program in Africana Studies (AFS) provides opportunities for students to learn about the experiences of people of African descent in North and South America, the Caribbean and continental Africa. Courses are presently offered leading to a major or minor in Africana Studies. Students are encouraged to pursue these courses, even if they are not majors or minors, in order to achieve a balanced education in keeping with the stated goals of the University of Miami.

MAJOR IN AFRICANA STUDIES
- A major in Africana consists of 30 credits.
- Twelve of the 30 credits must be completed at the 300 level or above.
- A grade of C- or better with an overall GPA of 2.0 is required in each course taken for the major.
- Africana majors must complete the following core courses: AAS 250, AAS 490, HIS 201, and HIS 372 or HIS 373.
- Africana majors must complete one course in Caribbean Studies (ENG 361, APY 385, GEG 212)
- The remaining courses must be selected from the list of acceptable courses approved by the program, in any school or college within the university.

MINOR IN AFRICANA STUDIES
- A minor in Africana consists of 15 credits.
- Africana minors must complete the following courses: AAS 250 and HIS 201 or HIS 372.
- The remaining courses must be selected from the list of acceptable courses approved by the program, in any school or college within the university.
- A grade of C- or higher with an overall GPA of 2.0, is required in each course taken for the minor.
- The remaining courses must be selected from the list of acceptable courses.
- A minimum of six credits must be numbered 300 or higher.

The Program in Africana Studies (AFS) provides opportunities for students to learn about the experiences of people of African descent in North and South America, the Caribbean and continental Africa. Courses are presently offered leading to a major or minor in Africana Studies. Students are encouraged to pursue these courses, even if they are not majors or minors, in order to achieve a balanced education in keeping with the stated goals of the University of Miami.

MAJOR IN AFRICANA STUDIES
- A major in Africana consists of 30 credits.
- Twelve of the 30 credits must be completed at the 300 level or above.
- A grade of C- or better with an overall GPA of 2.0 is required in each course taken for the major.
- Africana majors must complete the following core courses: AAS 250, AAS 490, HIS 201, and HIS 372 or HIS 373.
- Africana majors must complete one course in Caribbean Studies (ENG 361, APY 385, GEG 212)
- The remaining courses must be selected from the list of acceptable courses approved by the program, in any school or college within the university.

MINOR IN AFRICANA STUDIES
- A minor in Africana consists of 15 credits.
- Africana minors must complete the following courses: AAS 250 and HIS 201 or HIS 372.
- The remaining courses must be selected from the list of acceptable courses approved by the program, in any school or college within the university.
- A grade of C- or higher with an overall GPA of 2.0, is required in each course taken for the minor.
- The remaining courses must be selected from the list of acceptable courses.
- A minimum of six credits must be numbered 300 or higher.

Africana Studies Course Listing

AMERICAN STUDIES - Dept. Codes: AMS
www.as.miami.edu/ams
www.as.miami.edu/ids

American Studies is a flexible program that emphasizes comparative and integrative study among literature, history, ecology, sociology, religious studies, and the fine arts. Central to this interdisciplinary mix are issues of cultural diversity, ethnic and racial identities, sexuality, gender, class dynamics, and popular culture. The program is not limited to U.S. contexts and includes a hemispheric perspective that encourages students to explore interests in the Caribbean, Latin America, the Pacific Rim and other border crossings. Because of the location of the University and the character of the surrounding community, the American Studies program emphasizes ethnic and cultural diversity, and places developments within the wider context of the Americas.

THE MAJOR (ten courses - 30 credits):
1. Introduction to American Studies (AMS 101). Specific topics for this course may change annually; its purpose will be to acquaint beginning students with the approaches and areas of inquiry common to the field.
2. Advanced seminar in American Studies (AMS 301 or 401).

3. Two of the following courses in American history and politics: HIS 261, HIS 262, POL 211.

4. Two of the following courses in American literature and culture: ENG 213, ENG 214, ENG 260, ENG 261, REL 131, ARH 345.

5. Three courses, chosen in consultation with an American Studies advisor, in a specialized area of American Studies (at least two of these courses must be at the 200 level or higher). Students may work in areas such as ethnic studies, Caribbean studies, Latin American studies, Latino/a studies, environmental studies, communication studies, women’s literature, urban studies, Africana studies, religious studies and folklore.

6. One elective (300 level or higher).

Honors in American Studies consists of the above plus Honors Thesis and one additional elective at the 300 level or above.

**THE MINOR (five courses - 15 credits):**

1. Introduction to American Studies (AMS 101).

2. Two courses in history (HIS 261, HIS 262) or American literature (ENG 213, ENG 214).

3. Advanced seminar in American Studies (AMS 301 or 401).

4. One elective (300 level or higher).

Students in American Studies must complete all courses taken for the major or minor, including those in specialized areas of study and electives, with a grade of C- or higher with an overall G.P.A. of 2.0.

[American Studies Course Listing](#)

**ANTHROPOLOGY - Dept. Code: APY**

[www.as.miami.edu/anthropology](http://www.as.miami.edu/anthropology)

Anthropology is the scientific study of humankind, from its beginnings to the present. Of the many sciences that study aspects of humans and their behavior, only anthropology attempts to understand and integrate the entire panorama of human biology and culture in all times and places.

**MAJOR**

- A major in Anthropology consists of 30 credits in Anthropology, passed with a grade of C- or higher with an overall GPA of 2.0.
- APY 201, 202, 203, 204 (or approved alternatives), and a minimum of four anthropology courses at the 300 level or higher are required.
- The remainder of the program will be developed with the student’s departmental advisor.
MINOR

A minor in Anthropology consists of 15 or more credits, passed with a grade of C- or higher with an overall GPA of 2.0 including any two 200-level anthropology courses.

Any two of the following courses in other departments may be applied to the major in Anthropology; any one to the minor:
ARH 239, 241, 242, 243, 249, 250, 330, 332
MCY 554
COS 545
MAF 515, 526 and
MAF 501 or MAF 505.

Anthropological knowledge has taken an increasing role in the solution of practical problems in public health, cultural resource management, economic development in the Third World, business relations with immigrant and overseas populations, State and Federal programs, and many other areas. Anthropology majors may become professionals in the field by continuing their training in one of the many excellent graduate programs around the country.

Anthropology Course Listing

ART AND ART HISTORY - Dept. Codes: ART, ARH

The Department of Art and Art History offers two degrees: the Bachelor of Arts with tracks in Art History, General Study and Studio Art; and the Bachelor of Fine Arts with specializations in Painting, Sculpture, Printmaking, Photography/Digital Imaging, Graphic Design/Multimedia and Ceramics. The B.A. requires a minimum of 36 credit hours in the department with a grade of C- or higher and an overall GPA of 2.0. The B. A. major is also required to have a minor outside the department. Minor requirements are specified by each department and are listed in the Bulletin. The B.F.A. requires a minimum of 72 credit hours in the department, a successful portfolio review, a grade of C- or higher in each course and at least a 3.0 average in departmental courses. The B.F.A. major is not required to have a minor outside the department.

The overall program provides facilities and instruction to serve equally the needs of the general student for participation in and appreciation of the visual arts and those of students with specialized interests and abilities preparing for careers in the production, teaching, utilization, and interpretation of Art and Art History.

AUDIT

Due to the nature of studio courses, it is not possible for a student to audit courses offered in the studio areas.

BACHELOR OF ARTS - ART HISTORY

Foundation Courses: 6 Credits
ART 101. Introduction to Drawing I
ART 104. Three-Dimensional Design

Art History Foundation Courses: 9 credits
ARH 131. Survey of Western Art I and
ARH 132. Survey of Western Art II and
ARH 133. Art of Non-Western Cultures or
ARH 134 Ancient American Art

Area of Study:
Art History: six courses from 200 level or higher, plus one art history seminar course

Total: 36 credits

BACHELOR OF ARTS - GENERAL STUDY

Foundation Courses: 15 credits
ART 101. Introduction to Drawing I
ART 102. Introduction to Drawing II or
ART 107. Introduction to Drawing III or
ART 105. Figure Drawing
ART 103. Two-Dimensional Design
ART 104. Three-Dimensional Design
ART 109. Introduction to Electronic Media

Art History Courses: 9 credits
ARH 131. Survey of Western Art I or
ARH 133. Art of Non-European Cultures or
ARH 134 Ancient American Art and
ARH 132. Survey of Western Art II

One course from 100, 200, or 300 level

General Study Courses: 12 credits
Any four courses from the following areas:
Art History
Drawing
Painting
Sculpture
Printmaking
Graphic Design/Multimedia
Photography/Digital Imaging
Ceramics/Glass

Total: 36 credits

BACHELOR OF ARTS STUDIO ART

Foundation Courses: 15 credits
ART 101. Introduction to Drawing I
ART 102. Introduction to Drawing II or
ART 107. Introduction to Drawing III or
ART 105. Figure Drawing or
ART 108 Introduction to Figure Modeling
ART 103. Two-Dimensional Design
ART 104. Three-Dimensional Design
ART 109. Introduction to Electronic Media
Art History Courses: 9 credits
ARH 131. Survey of Western Art I or
ARH 133. Art of Non-European Cultures or
ARH 134 Ancient American Art and
ARH 132. Survey of Western Art II

One course from 100, 200, or 300 level

Studio Art Courses: 12 credits
Four Studio courses from the following areas:
Drawing
Painting
Sculpture
Printmaking
Graphic Design/Multimedia
Photography/Digital Imaging
Ceramics/Glass

Total: 36 credits

BACHELOR OF FINE ARTS

PORTFOLIO REVIEW
All students who anticipate graduating with a Bachelor of Fine Arts (BFA) degree must submit a portfolio consisting of 15-20 images of their work on either a CD/DVD or in slides for review by the faculty. Students can apply as incoming freshmen or following the completion of the foundation program. NO STUDENT IS OFFICIALLY CONSIDERED A BFA CANDIDATE UNTIL THE PORTFOLIO IS APPROVED BY THE FACULTY. If the BFA portfolio is not submitted at the proper time or fails to be passed by the faculty, the student will be advised and registered as a Bachelor of Arts (BA) candidate.

BFA EXHIBITION
Unless otherwise instructed, each BFA candidate will take part in an exhibition of work screened and approved by a faculty member from their area of specialization, accomplished as an art major at the University of Miami, in the Fall or Spring semester of the senior year. The BFA exhibitions are held in the College Gallery.

At the time the candidates BFA exhibition is hung, a formal critique will be arranged between the student and the art faculty.

BFA COURSE REQUIREMENTS

General Foundation Courses: 24 credits
ART 101. Introduction to Drawing I
ART 102. Introduction to Drawing II
ART 103. Two-Dimensional Design
ART 104. Three-Dimensional Design
ART 109. Introduction to Electronic Media

BFA Foundation Courses:
ART 105. Figure Drawing or
ART 108. Introduction to Figure Modeling
ART 106. Issues in Art Making
ART 107. Introduction to Drawing III
**Art History Courses:** 15 Credits
ARH 131. Survey of Western Art I or
ARH 133. Art of Non-European Cultures or
ARH 134. Ancient American Art and
ARH 132. Survey of Western Art II
ARH 343. Modern Art or
ARH 344. Contemporary Art
Two courses from 100, 200, or 300 level

Note: ARH 346; History of Graphic Design is required for Graphic Design/Multimedia majors.

**Departmental Electives** 12 Credits
12 Credits to be taken in the Department outside of area of specialization, at least 6 credits must be from alternate group to specialization (Group I-Drawing, Painting, Photography/Digital Imaging, Printmaking, Graphic Design/Multimedia) or (Group II-Sculpture, Ceramics, Glass)

**Areas of Specialization (one entire sequence required)** 21 Credits
- Painting: ART 202, 301, 302, 401, 402, 501, 502
- Sculpture: ART 217, 317, 318, 417, 418, 517, 518
- Printmaking: seven courses from the following: ART 251, 351, 451, 252, 352, 452, 253, 353, 453, 254, 354, 454 (at least one 400 level course)
- Graphic Design/Multimedia: Choose from two tracks:
  Graphic Design: ART 291, 292, 293, 391, 491, any two (493 or 591 or 593)
  Multimedia: ART 291, 292, 293, 392, 492, any two (492 or 592 or 593)
- Photography/Digital Imaging: ART 210, 310, 312, 311, 410, 411, 510 or 511
- Ceramics: ART 261, 262, 361, 362, 461 or 462, 561, 562 or 564

**TOTAL: 72 Credits**

Arts and Sciences Requirements (see Section V (Required Areas of Study)) and University Electives. One University Elective must be taken at 300 level or higher in an area outside the department.

**TOTAL: 48 Credits**

Writing Requirement: five writing-oriented (W) courses beyond English 105 and 106.

**TOTAL: 120 Credits**

*BFA Minor in Art History*
All BFA studio majors automatically minor in art history. A minor outside the department is not required.

*BFA Double Specialization*
Double Specialization requires the completion of an entire sequence in a second area of specialization.

**MINOR IN ART AND ART HISTORY**
A minor in Art and Art History consists of 15 credits (6 of which must be from the University of Miami) in departmental courses passed with a C- or higher with an overall GPA of 2.0.

DEPARTMENTAL HONORS PROGRAM

Admission
Admission is by invitation from the Department Chairman. Students are invited the first semester of their junior year and are required to complete the program before their date of graduation.

Requirements
Studio Art Majors - Students must have passed the B.F.A. Portfolio Review and have a GPA of 3.5 or higher in the Art major.

Art History Majors - Students must be a declared Art History major, and have a GPA of 3.5 or higher in the Art History major.

Students must complete a minimum of six credit hours in designated honors courses (ART 499 or ARH 499) with a grade of B or higher.

Students must have an overall GPA of 3.3 or higher.

Students must submit the results of their honors study for approval to a Departmental Honors Committee.

ART SCHOLARSHIPS
Partial tuition scholarships are awarded on the basis of artistic ability and academic achievement. Students must be accepted for admission to the University of Miami in order to apply for an Art Scholarship. The deadline for submission of materials is March 1.

Art and Art History Course Listing

ASTRONOMY
For courses in Astronomy see PHYSICS, in particular PHY 110, 316, 317.

BIOCHEMISTRY AND MOLECULAR BIOLOGY - Dept. Code: BMB
http://molbio.med.miami.edu

A major in Biochemistry and Molecular Biology leading to a Bachelor of Science degree requires a thorough foundation in chemistry and biology or microbiology and background knowledge of physics and mathematics.

MAJOR
Minimum requirements:
1. 15 credits from the courses offered by the Department of Biochemistry and Molecular Biology. Examples of courses that can be taken for the major are BMB 151, 251, 258, 506, 407 or 507, 501, 509, 511 and 545. Courses printed in bold letters are absolutely required. Only in exceptional cases will BMB 401 be accepted in place of BMB 506. Students are encouraged to take at least one semester of BMB 545 (laboratory research). The Department will make its own independent determination on a case-by-case basis concerning the equivalency of courses taken at other universities.
A UM cumulative grade point average of 2.9 is required to declare a biochemistry major or minor. A grade of C or better must be earned in each Biochemistry and Molecular Biology course.

2. Required Biology and/or Microbiology courses are:
   BIL 150, 151, 160, 250, 252 or 256 or 251 (252 is preferred), 255 plus
   BIL 355 (Developmental Biology) or MIC 301

3. Required Chemistry courses are CHM 111/113, 112/114, 201/205, and 202/206. Chemistry 331 is recommended.

4. Mathematics: MTH 111 and 112 or 131 and 132.

5. Physics:
   For students contemplating graduate studies: PHY 205, 206 and 207 or PHY 205 and 210.
   For students not contemplating graduate studies: PHY 101 and 102 are acceptable.

Variations of the above program are feasible for students entering with advanced standing on the basis of placement tests or for transfer students.

MINOR
Minimum requirements are:
1. 8 credits in Biochemistry and Molecular Biology. BMB 506 is required. The remaining credits may come from any of the courses offered by the Department. Only in exceptional cases will BMB 401 be accepted in place of BMB 506 with the permission of the undergraduate advisor. Students should become familiar with the credit sharing rules. Credits for a minor cannot be used for a major. Credits can be shared between two majors.

2. The Department will make its own independent determination on a case-by-case basis concerning the equivalency of courses taken at other universities.

A grade of C or better must be earned in each Biochemistry and Molecular Biology course.

For graduate programs or combined Ph.D.-M.D. programs, consult the Bulletin of the Graduate School.

Registration in all 500-level courses requires permission from the Biochemistry advisor or course coordinator.

HONORS
Departmental honors can be earned by biochemistry majors who have:
1. successfully completed two semesters of research (5 or 6 credits of BMB 545). This research must be described in a brief thesis that needs to be approved by three BMB faculty members.

2. a 3.5 or higher grade point average in all BMB courses.

3. at least a 3.3 average for all their courses taken at the University of Miami.

For general honors see elsewhere in this Bulletin.

Biochemistry and Molecular Biology Course Listing
BIOLOGY - Dept. Code: BIL
www.bio.miami.edu

Two undergraduate degrees are available in Biology: the B.S. and B.A. Both require a major in Biology of 34 credits with a minimum grade of C- in each course and an overall GPA of 2.0.

Bachelor of Science Degree
The B.S. degree is recommended in preparation for graduate schools, professional schools, marine biology, and high school or college teaching. In addition to the College of Arts and Sciences general degree requirements, the B.S. requirements are as follows:
1. BIL 150, 151, 160, 161
2. BIL 235, 250, 255, 265
3. Two laboratory or field courses beyond 151, 161 may be counted towards this requirement.
4. Additional BIL electives to total 34 credits.

One course of up to four credits toward the major, but not the minor, may be selected from courses numbered 300 or higher from the following departments: Biochemistry and Molecular Biology, Marine Biology and Fisheries, or Microbiology and Immunology. BME 305 may be used instead of a course from BMB, MBF, or MIC.

- A maximum of two credits of BIL 371 and BIL 372 and six credits of BIL 495, 496 and 497 may be applied towards the major.
- One course only from BIL 495, 496 or 497 may be counted towards the laboratory course requirement for the B.S. degree.
- A maximum of one credit in BIL 381 and one credit of BIL 382 may be applied towards the major, although these two courses may be taken more than once each for general elective credit.

In addition, students must complete the following:

1. Select one course from the following: BIL 311, BIL 511, EEN 118, CSC 120, MTH 224, PSY 204, or equivalent. This will fulfill the Mathematics-statistics/computer programming requirement under the College of Arts and Sciences General degree requirements.
2. One year of inorganic chemistry (111-112) with laboratory (113-114), one semester of organic chemistry with laboratory (201/205).
3. Two semesters of college physics with laboratory or three semesters of university physics with laboratory.
4. A minor in chemistry, physics, geological sciences, marine sciences, biochemistry and molecular biology, computer science, mathematics, or microbiology and immunology.

Bachelor of Arts Degree
The B.A. degree is recommended for students involved in interdisciplinary programs and for entrance to those professional schools and specific biological careers not requiring a B.S. degree with a major in Biology. In addition to the College of Arts and Sciences degree requirements, the B.A. requirements are as follows:

1. Biology 150, 151, 160, 161 plus BIL electives to total 34 credits.

2. One course of up to four credits toward the major, but not the minor, may be selected from courses numbered 300 or higher from the following departments: Biochemistry and Molecular Biology, Marine Biology and Fisheries, or Microbiology and Immunology. BME 305 may be used instead of a course from BMB, MBF, or MIC.

3. One semester of inorganic chemistry with laboratory (111/113 or 103/105) and one semester of organic chemistry with laboratory (201/205 or 104/106).

4. A minor in a department other than natural science.

**Neuroscience Major**

A major in Neuroscience leading to the Bachelor of Science degree in the College of Arts and Sciences is offered through an interdisciplinary program by faculty from the Departments of Biology and Psychology and faculty from the School of Medicine. For details, consult the program description listed under NEUROSCIENCE.

Transfer students will be advised as needed, to adjust previous work to the above programs.

Prospective biology teachers should contact the School of Education for current certification requirements.

**MINOR**

A biology minor consists of one year of general biology with laboratory plus BIL electives to total 18 credits, with a minimum grade of C- in each course. (Note: All courses in the minor must be in BIL. Courses from BMB, MBF, MIC, or BME may not be counted towards the minor.)

Overall GPA in the major or minor must be a minimum of 2.0.

One half of the credits required for a Biology major or minor must be earned in residence at the University of Miami.

**HONORS PROGRAM**

See HONORS PROGRAMS elsewhere in this Bulletin for minimal requirements. In addition to the grade point averages specified in the minimal requirements, the following program constitutes the Biology Departmental Honors Program:

1. A minimum of two of the following: Biology 495, 496, 497 (2 credits each), involving a research project carried out under the supervision of a member of the Department of Biology faculty.

2. Biology 498, a senior thesis, of superior quality, on the results of the research.

4. A minimum of two BIL credits from the following list: 253, 257, 299, 374, 375.

5. A minimum of one course in the Department of Biology at the 500 level.

6. An overall GPA of 3.3 and a biology GPA of 3.5.

Advanced placement, and in certain situations, course credit can be earned through the College Entrance Examination Board program, placement examinations, and departmental proficiency examinations.

For Graduate programs, consult the Graduate School section of this Bulletin.

Variations within the above program may be permitted by the Department Chairman in special cases.

Biology Course Listing

CHEMISTRY - Dept. Code: CHM
www.as.miami.edu/chemistry

Three programs lead to degrees with a chemistry major:

1. the B.A. degree
2. the B.S. degree
3. the B.S. degree with certification by the American Chemical Society Committee for Professional Training of Chemists.

Each program requires the core courses CHM 111, 112, 113, 114, 201, 202, 205, 206, and 304; one year of calculus; and at least two semesters of physics. The requirements for a major are flexible and should conform to the objectives of the student. A grade of C- or higher must be earned in all courses taken for major or minor credit, and the Chemistry GPA must be 2.00 or higher. Credits earned in CHM 381 and CHM 382 do not count toward the major or minor.

1. The B.A. degree requires 27 credits of chemistry: the core courses; CHM 331 or 360; plus electives from the following sufficient to reach the required credit hours for the degree: CHM 316, 320, 365, CHM 401, CHM 531, 520 or BMB 401. This major is designed for premedical students, high school science teachers, and others who choose a non-science minor. It may be combined with business courses in an interdisciplinary program.

2. The B.S. degree requires 34 credits of chemistry: the core courses; CHM 360, 364, 365 and 316, 320; plus electives from the following sufficient to reach the required credit hours for the degree: CHM 401, CHM 441, 520, 563 or BMB 401 or 506. Two semesters of physics are required. This major meets the minimum entrance requirements of many graduate programs in chemistry.

3. The American Chemical Society certified B.S. degree consists of 44 credits: the core courses; 316, 320, 360, 364, 365, 441, 442, 464, BMB 506; CHM 520, and 563; at least two credits in CHM 488 or 490; either PHY 210/205; or PHY 205, 206, and 207; and both PHY 208 and 209. The Professional Chemistry Program is also available in the Engineering
Science Department, College of Engineering. A senior research thesis is required by the ACS for awarding of this degree.

Variations within the above programs may be recommended by the Department. Transfer students must complete a minimum of half of the required major credits in residence in the Department. Students should make certain that math and physics prerequisites are fulfilled in a timely manner. For students who plan to do graduate work in physical chemistry a double minor is recommended: Mathematics and Computer Science through 310 and 311, Physics through 350 and 360.

MINOR

A minor in chemistry consists of 8 credits in chemistry courses at the 200 level or above, taken at the University of Miami, exclusive of CHM 381, 382, 488 and 490.

Credit may be earned in only one of the courses Chemistry 103, 111 or 151. Credit may not be earned in both CHM 104 and CHM 201.

HONORS

Honors in Chemistry may be earned by students who are in good standing within the University’s Honors Program. In addition to the general requirements for University Honors, a student must also complete the core courses in Chemistry; CHM 360, 364, and 365; at least six credits of CHM 490; and any three of the following: CHM 316, 441, 520, 563, BMB 502, and BMB 401 or 506, all with an average grade of at least 3.30. A written Honors Thesis and oral defense on the subject of the Honors Research must be presented by the student and approved by a Department Honors Committee.

For graduate programs, consult the Bulletin of the Graduate School.

Chemistry Course Listing

CLASSICS

www.as.miami.edu/classics

For a minor in Classics, 15 hours (five courses) are required, of which 9 must be in three core courses in the language, literature and culture of the ancient Mediterranean world. Courses in parentheses are among frequently offered courses that satisfy the requirement.

CORE COURSES

The core courses for the minor in Classics are taught on a regular annual basis and include the following:

3 credits in Greek (101, 102, 201) or 3 credits in Latin (101, 102, 201)
3 credits in Greek or Latin literature and culture (Classics 310, 311 and 370)
3 credits in Greek or Roman History (Classics 301,302, 303, 304)

ELECTIVE COURSES

The remaining 6 hours of the minor can be selected either from the above list or from a variety of elective courses cross-listed with Classics. A grade of "C-" or better must be earned with an overall GPA of 2.0 to fulfill the minor.
Bachelor of Science in Computer Science for students in the College of Arts and Sciences

Students must complete the Core, a Track, and the Science & Ethics requirements.

Core
Computer Science (17 credits)
- CSC 120 - Computer Programming I
- CSC 220 - Computer Programming II
- CSC 314 - Computer Organization and Architecture
- CSC 517 - Data Structures and Algorithm Analysis
- CSC 527 - Theory of Computing

Mathematics (17 Credits)
- MTH 111 - Calculus I
- MTH 112 - Calculus II
- MTH 210 - Vectors and Matrices
- MTH 224 - Introduction to Probability and Statistics
- MTH 309 - Discrete Mathematics I

Comprehensive Track (Available to all students)
- CSC 519 - Program Languages
- CSC 521 - Principles of Computer Operating Systems
- CSC 523 - Principles of Filing and Database Systems
- CSC 524 - Computer Networks
- CSC 531 - Introduction to Software Engineering
- At least 8 credits of approved electives (note: CSC 322 is prerequisite to CSC 521 and CSC 524)

The Comprehensive Track provides coverage of the topics in Computer Science prescribed by the Association of Computing Machinery curriculum and the ABET Computing Accreditation Commission.

Flexible Track (Available to all students)
- CSC 521 - Principles of Computer Operating Systems
- CSC 524 - Computer Networks
- CSC 531 - Introduction to Software Engineering
- At least 14 credits of approved electives (note: CSC 322 is prerequisite to CSC 521 and CSC 524)

Scientific Computing and Visualization Track
(Requires permission of the Director of Undergraduate Studies)
- CSC 529 - Introduction to Computer Graphics
- CSC 547 - Computational Geometry
- 3 credits from CSC 410 - Computer Science Project Planning-CSC 411 - Computer Science Project Implementation
- MTH 311 - Ordinary Differential Equations or
MTH 515 - Ordinary Differential Equations
- MTH 320 - Introduction to Numerical Analysis or
  MTH 520 - Numerical Analysis I
- At least 8 credits of approved electives

**Cryptography and Security Track**
(Requires permission of the Director of Undergraduate Studies)
- CSC 507 - Data Security and Cryptography
- CSC 521 - Principles of Computer Operating Systems
- CSC 524 - Computer Networks
- 3 credits from CSC 410 - Computer Science Project Planning-CSC 411 - Computer Science Project Implementation
- MTH 505 - Theory of Numbers or
  MTH 509 - Discrete Mathematics II
- At least 8 credits of approved electives (note: CSC 322 is prerequisite to CSC 521 and CSC 524)

**Graphics and Games Design Track**
(Requires permission of the Director of Undergraduate Studies)
- CSC 529 - Introduction to Computer Graphics
- CSC 531 - Introduction to Software Engineering
- CSC 545 - Introduction to Artificial Intelligence
- 3 credits from CSC 410 - Computer Science Project Planning-CSC 411 - Computer Science Project Implementation
- 2 credits from CSC 401 - Computer Science Practicum I-CSC 403 - Computer Science Practicum III
- 9 credits from
  - CSC 322 - C Programming and UNIX
  - CSC 329 – Introduction to Game Programming
  - CSC 521 - Principles of Computer Operating Systems
  - CSC 524 - Computer Networks
  - CSC 547 - Computational Geometry
  - CSC 555 - Multimedia Systems
  - EEN 596 – Maya Animation
  - MMI 504 - Audio Analysis & Synthesis
  - MMI 505 - Musician – Machine Interfaces
- The courses used to meet the Science requirement must include either
  - PHY 101 - College Physics I or
  - PHY 205 - University Physics I

**Science & Ethics Requirement**
The Computer Science major requires 13 credits of Science. The Science courses must include a two semester sequence of courses with laboratory. Courses may be taken in Biology, Chemistry, Environmental Science, Geological Science, Marine Science, Physics, and Physical Science. The Science courses must be acceptable for the Natural Science requirements in the College of Arts and Sciences, for Bachelor of Science students. The Computer Science major requires completion of the Ethics course PHI 115. This course is acceptable for the Arts & Humanities requirements of the College of Arts and Sciences.

**Approved Electives**
- Any CSC 3XX, CSC 4XX, CSC 5XX (maximally 6 credits from CSC 40X - Computer Science Practicum)
Upper Division Electives
The Upper Division Electives requirement of the College of Art and Sciences is waived for Bachelor of Science students who complete a Computer Science major.

Honors
In addition to the University’s requirements for Departmental Honors, Departmental Honors in Computer Science requires completion of the major, and an additional 6 approved credits (all CSC 4XX and CSC 5XX courses are approved). The major or additional credits must include at least 3 credits from CSC 410 and CSC 411.

Medical Informatics Major for Bachelor of Science students in the College of Arts and Sciences
This program leads to a B.S. degree in Computer Science, tailored to the needs of students who are planning to work in a medical environment after graduation, including pre-medical, pre-dental, and pre-nursing students. The Medical Informatics program consists of three parts: (1) the basics of hardware and software systems, (2) information storing, retrieval, processing, and analysis, and (3) the application of the knowledge acquired in a medical environment. Students must complete the courses listed below, and an internship in medical information systems at a hospital or medical center. The Department will help students find an internship. Students in the Medical Informatics program will have enough flexibility to include all courses necessary for pre-medical or pre-dental curriculum within a 120 credit hour plan of study; students may wish to consult the University of Miami pre-medical guide.

Computer Science (26 credits)
- CSC 120 - Computer Programming I
- CSC 220 - Computer Programming II
- CSC 314 - Computer Organization and Architecture
- CSC 517 - Data Structures and Algorithm Analysis
- CSC 521 - Principles of Computer Operating Systems
- CSC 523 - Principles of Filing and Database Systems
- CSC 531 - Introduction to Software Engineering
- CSC 555 - Multimedia Systems

Mathematics (17 credits)
- MTH 111 - Calculus I
- MTH 112 - Calculus II
- MTH 210 - Vectors and Matrices
- MTH 224 - Introduction to Probability and Statistics
- MTH 309 - Discrete Mathematics

Other (9 credits)
- CIS 360 - Analysis of Information Systems
- MTH 542 - Statistical Analysis or IEN 312 - Applied Statistical Methods
- CSC 412 - Internship, approved by the Coordinator of the Medical Informatics Program

Bachelor of Arts in Computer Science for students in the College of Arts and Sciences

Core
Computer Science (20 credits)
- CSC 119 - Computers and Society or CIS 320 - Introduction to Programming or CIS 120 - Introduction to Computer Information Systems or GEG 199 - Introduction to GIS or 3 credits from CSC 3XX, CSC 4XX, CSC 5XX
- CSC 120 - Computer Programming I (note: MTH 108 is corequisite to CSC 120)
- CSC 220 - Computer Programming II
- CSC 314 - Computer Organization and Architecture
- CSC 322 - C Programming and UNIX
- CSC 531 - Introduction to Software Engineering

Mathematics (6 credits)
- MTH 111 - Calculus I
- MTH 309 - Discrete Mathematics

Electives
6 approved credits from
- Any CSC 3XX, CSC 4XX, CSC 5XX
- CIS 360 - Analysis of Information Systems and CIS 523 - Database Management Systems
- CIS 430 - Business Telecommunications
- EEN 414 - Computer Organization and Design
- EEN 514 - Computer Architecture
- EEN 368 - Internet Computing I and EEN 568 - Internet Computing II or EEN 576 - Internet and Intranet Security
- EEN 567 - Database Design and Management (or equivalent) and EEN 577 - Data Mining
- MMI505 - Musician-Machine Interfaces (for Music Engineering students only)

Computer Science as a Second Major
A second major in Computer Science is available to all students. A second major in Computer Science requires completion of the requirements of either the 70 credit Bachelor of Science version or 33 credit Bachelor of Arts/second major version.

Computer Science Minor
A minor in Computer Science requires completion of the following:

- CSC 120 - Computer Programming I
- CSC 220 - Computer Programming II
- CSC 314 - Computer Organization and Architecture
- 6 credits from CSC 3XX, CSC 4XX, CSC 5XX

NOTES
- A grade of C- or better is required in all CSC courses in a major, honors, or minor.
- The overall GPA for CSC courses in a major must be 2.5 or better.
- For all Computer Science majors, at least 15 credits of CSC courses must be completed at the University of Miami.
- For the Computer Science minor, at least 9 credits of CSC courses must be completed at the University of Miami.

Computer Science Course Listing

CRIMINOLOGY

The major in Criminology prepares students to assume roles of leadership in this critical area of modern society. Courses are designed to review theory, research, and applications of knowledge regarding delinquency and crime, in addition to understanding the manner in which offenders are processed. Detailed analyses are made of the functions of the law, police, courts, and correctional systems and the ways in which these are linked to broader aspects of society.

MAJOR

The major in Criminology consists of 31 credit hours including SOC 101, SOC 210, SOC 211, SOC 212, SOC 371, and SOC 470. Fifteen additional credit hours in Sociology and/or Criminology courses are required.

MINOR

The minor in Criminology consists of 15 credit hours, including SOC 101, and SOC 371. A student majoring in Sociology may not minor in Criminology. All courses taken for major or minor credit must be passed with a grade of C- or higher with an overall GPA of 2.0. Additional information and course descriptions are listed under the Department of Sociology in this Bulletin.

ECONOMICS

Economics uses the idea of maximizing behavior to provide a unified framework for studying human action. The economics curriculum is designed to give students an understanding of economic theory and its application to a wide range of human behavior. The program provides excellent preparation for careers in business, in government, and in international agencies. It is particularly recommended for students planning graduate study or professional training in fields such as law, business, international studies, public
administration, and economics. Students in the College of Arts and Sciences may major or minor in economics.

**MAJOR**
The major in economics consists of at least 24 credits, which must include ECO 211, 212, 301, and 302. The minor in economics requires twelve credits which must include the sequence of ECO 211 and 212, or the sequence of ECO 301 and 302. In addition, six credits other than the core courses of ECO 211, 212, 301 and 302 must be taken. All courses submitted for the major or minor must be completed with a grade of C- or higher and with an overall grade point average of C or higher. Academically qualified students may elect to take courses from the Departments curriculum for Honors credit.

Members of the Department are prepared to counsel students in the selection of courses and in other matters relating to the preparation for careers.

Economics may be the major of a candidate for the Master of Arts and Doctor of Philosophy degrees. General requirements for these are listed in the Bulletin of the Graduate School.

**ECONOMICS COURSE LISTING**

**ECOSYSTEM SCIENCE AND POLICY** Dept. Code: ECS
[www.cesp.miami.edu](http://www.cesp.miami.edu)

In this new century, we need to find ways to meet human demands, while protecting and restoring the natural environment that sustains us. As science increasingly demonstrates the complex interconnectedness of all the elements of natural systems, environmental decisions must take into account potential ecosystem-wide effects to be truly effective. Policy decisions will have to be made in the face of scientific uncertainty about key causal linkages in natural systems, often relying on untested technologies, and that subsequent scientific and technological advances may call for significant revisions in policy approaches. Environmental scientists and nonscientist policy-makers, managers, and planners must communicate with each other in new and better ways as development and environmental policy decisions are made.

The goal of the undergraduate program in Ecosystem Science and Policy (ECS) is to produce the next generation of environmental leaders. The ECS program provides students with a broad background in environmental issues from a variety of perspectives, along with in-depth education in an area of specialization. This preparation will give students both the theoretical background and technical skills to pursue an environmental career, including teaching and research as well as for careers in government and private industries concerned with the environment.

The Ecosystem Science and Policy program offers two undergraduate degree major programs: a Bachelor of Science (B.S.) and a Bachelor of Arts (B.A.). The ECS degree is a double major program. Students earning a B.S. in ECS must also complete a second major from one of the following disciplines: biology, biochemistry, chemistry, computer science, geological sciences, math, microbiology, or physics. Students earning a B.A. in ECS must also complete a second major in a non-science area. The ECS major will offer a series of problem-based learning courses, culminating in a capstone course in the senior year team-taught by scientist and non-scientist faculty, emphasizing integration of science and policy approaches to real-world environmental issues. Students will be required to complete either a research internship an environmental organization or a research project with the Center for Ecosystem Science and Policy or with other UM faculty.
Only those courses passed with a grade of “C-” or better in the ECS core may be applied to the major or minor. All ECS majors are required to maintain an overall cumulative grade point average of 2.5 or better in order to graduate with a double major in ECS.

**Bachelor of Science Degree:** The B.S. degree is recommended in preparation for careers in science, including graduate schools, professional schools, technical careers in government and private industries concerned with the environment, and high school or college teaching. In addition to the College of Arts and Sciences general degree requirements, the B.S. requirements are as follows:

**ECS Core:**
- ECS 111, 112, 201, 202, 301, 302, 403, and either ECS 401 (internship) or 402 (research)

In addition, students must take the following courses, which may fulfill the College of Arts and Sciences general education or second major requirements:

**Science Core:**
- Biology: BIL 160, 161 and 235
- Chemistry: CHM 111, 112, 113, 114
- Environmental Pollution: CAE 240
- Geological Sciences: GSC 102, 103, 105, 106, 110 and 114 or 115
- Marine Science: MSC 101 or, 111
- Physics: PHY 101 and 106 or PHY 205, 206, and 208
- Environmentally-related science electives at the 300 level or above to total 6 credits.

**Mathematics:**
As required by the College, all B.S. degree candidates must pass two semesters of calculus (MTH 110-112, MTH 111-112, or MTH 131-132) and a statistics course (MTH 224 or PSY 204).

**Social Science Core:**
- Economics ECO 211/212 or Political Science POL 211/212
- Ethics: PHI 330 or another environmentally-related ethics course
- Environmentally-related social science elective at 300 level or above to total 3 credits

**Bachelor of Arts Degree:** The B.A. degree is recommended in preparation for careers in law and government, including professional schools and careers in government and private industries concerned with the environment. In addition to the College of Arts and Sciences general degree requirements, the B.A. requirements are as follows:

**ECS Core:**
- ECS 111, 112, 201, 202, 301, 302, 403, and either ECS 401 (internship) or 402 (research)

In addition, students must take the following courses, which may fulfill the College of Arts and Sciences general education or second major requirements:

**Science Core:**
- Biology: BIL 103
- Chemistry: CHM 101 and 102 or 111 and 112
- Environmental Pollution: CAE 240
- Geological Sciences: GSC 110 and 114 or 115
- Marine Science: MSC 111
Environmentally-related science electives at the 200 level or above to total 3 credits.

**Mathematics:**
As required by the College, all B.A. degree candidates must pass one of MTH 103, 108, 109, 111, or 131. All ESC majors must complete one semester of a statistics course (MTH 224 or PSY 204).

**Social Science Core:**
Economics ECO 211/212 or Political Science POL 211/212
Ethics: PHI 330 or another environmentally-related ethics course
Environmentally-related social science elective to total 9 credits (at least two must be at 300 level or above)

**Minor in Ecosystem Science and Policy:**
A minor in ECS is 19 credits and includes:
ECS 111, 112, 201, 202, 301, 302
One environmentally-related science elective to total 3 credits
One environmentally-related social science elective to total 3 credits

Ecosystem Science & Policy Course Listing

**EDUCATION**

**Degree in Teacher Education for Elementary, Special Education or Secondary Schools**

The School of Education in conjunction with the College of Arts and Sciences and the School of Music offers a degree program in teacher education. Students majoring in Elementary or Special Education elect a major in the School of Education and complete a second major in the College of Arts and Sciences.

The program in teacher education enables a student to teach in a secondary school in the areas of English, Mathematics, Chemistry, Biology, and the Social Sciences. Students wishing to earn certification in Secondary Education must complete a Bachelor of Arts or a Bachelor of Science degree in the College of Arts and Sciences with a major in Secondary Education. *

Arts and Sciences students may complete a non-certification minor through the School of Education by completing 15-16 credits in Education courses approved by the Associate Dean in the School of Education.

All education programs are approved by the State of Florida Department of Education and accredited by the National Council for the Accreditation of Teachers of Education (NCATE)

* For specific information regarding required coursework, please see education advisor.

**ENGINEERING**
www.miami.edu/engineering

**MINOR**
The College of Engineering offers the student in the College of Arts and Sciences a variety of 15-credit minors designed to give the student a basic understanding of the technologies that support and shape our civilization. Minors may be elected in Civil, Architectural, Environmental, Electrical, Computer, Industrial, or Mechanical Engineering. The student is given considerable freedom in choosing courses in accordance with the student’s interests.

Faculty in the College are prepared to assist Engineering minors in the preparation of programs of study.

More detailed descriptions of these minors will be found in the COLLEGE OF ENGINEERING section of this Bulletin.

ENGLISH - Dept. Code: ENG
www.as.miami.edu/english

The English Department offers programs for students interested in a liberal arts education directed toward careers in law, business, creative writing, secondary education, and university teaching and scholarship. Students who would like to learn more about any of these programs are encouraged to consult the Director of Undergraduate Studies in the Department of English, Ashe Bldg. 321. For requirements leading to graduate degrees in English, see the Graduate Academic Programs section of this Bulletin.

MAJOR
Students majoring in English must meet the requirements for one of the tracks described below:
The English Literature Major
The Creative Writing Concentration
The Concentration in British Literary History or
The Women’s Literature Concentration

Credits earned for courses in freshman composition (ENG 105 through 107) may not be applied toward the total number of credits required for the major. In each English course, the English major must make a grade of C- or better, with an overall GPA in the major of 2.0.

Students interested in seeking Departmental Honors in English should consult the Director of Undergraduate Studies in English, normally before the end of the junior year.

ENGLISH LITERATURE MAJOR
1. Two of the following courses: English 201, 202, 205, 210, 211, 212, 213, 214, 215, 260, 261. 6 credits

2. Five literature courses numbered 300 or above, at least two of which must be numbered 400 or above, distributed as follows: two courses in literature before 1700, two courses in literature between 1700 and 1900, and one course in literature since 1900. 15 credits

3. Three more English courses numbered 200 or above. 9 credits

Total 30 credits
CONCENTRATION IN BRITISH LITERARY HISTORY
1. English 211 and 212. 6 credits

2. Eight courses numbered 300 or higher with at least four at the 400-level:
   One course on Shakespeare.
   One course on history of criticism or literary theory.
   Two additional courses in British literature (or a combination of British and
   other literatures) before 1800.
   Two additional courses in British literature (or a combination of British and
   other literatures) after 1800.
Two electives. 24 credits
Total 30 credits

3. Recommended: ancillary courses in Art History, Music, History, Philosophy, in
   consultation with departmental advisor.

DEPARTMENTAL HONORS IN LITERATURE
To enter the program a student must have achieved by the end of the junior year a 3.5
average in English courses and a 3.3 average overall. In addition to fulfilling the
requirements for the English Literature Major, the candidate for Departmental Honors must:

1. Take at least three literature courses at the 400-level or higher in fulfilling
   requirement 2 of the English Literature Major.

2. Complete a six-credit Senior Thesis. This thesis is a documented essay
   of about 35 double-spaced typewritten pages on a literary subject and is
   graded by the thesis director and a second reader. The student undertaking
   a Senior Thesis normally registers in ENG 497, Special Topics/Independent
   Study, for the first semester of the project, and in ENG 498, Senior Thesis,
   for the second semester. The student must receive a grade of B or higher
   in both courses in order to qualify for honors.

3. Achieve an average in the major of at least 3.5, and an overall average
   of at least 3.3.
Total 36 credits

CREATIVE WRITING CONCENTRATION
1. ENG 209. 3 credits

2. Choose one of the following workshop tracks:

   Fiction:
   1. ENG 290
   2. Two fiction workshops at the 400 level:
      ENG 404 and/or ENG 405 (either may be repeated). ENG 408 may be substituted
      for one 400-level fiction workshop. 6 credits

   OR

   Poetry:
   1. ENG 292 3 credits
2. Two poetry workshops at the 400 level:  
   ENG 406 and/or ENG 407 (either may be repeated). ENG 408 may be substituted for one 400-level workshop.  

3. Two of the following: English 201, 202, 205, 210, 211, 212, 213, 214, 215, 260, 261.  

4. Four more literature courses numbered 300 or higher, at least two of which must cover literature earlier than 1900. Two of the four courses must be 400 level.  

DEPARTMENTAL HONORS IN CREATIVE WRITING  
To enter the program a student must have achieved by the end of the junior year a 3.5 average in English courses (including courses in creative writing) and a 3.3 average overall. In addition to meeting the requirements for the Creative Writing Concentration, the candidate for Departmental Honors must:  

1. Take at least three literature courses at the 400-level or higher in fulfilling requirement 5 of the Creative Writing Concentration.  

2. Complete a six-credit Senior Creative Writing Project. The student undertaking this project normally registers for ENG 497, Special Topics/Independent Study, for the first semester of the project, and ENG 499, Senior Creative Writing Project, for the second semester. The student must receive a grade of B or higher in both courses in order to qualify for honors.  

3. Receive for the project a recommendation for honors by the director of the Senior Creative Writing Project and by one other faculty reader designated by the Director of Creative Writing.  

4. Achieve an average in the major of at least 3.5, and an overall average of at least 3.3.  

WOMEN’S LITERATURE CONCENTRATION  
Students considering this concentration may want to take a special Women’s Studies section of ENG 106 in the freshman year. Requirements for the concentration are as follows:  
   1. ENG 215 and two of the following: ENG201, 202, 205, 210, 211, 212, 213, 214, 260, 261.  
   2. Five literature courses numbered 300 or above, at least two of which must be numbered 400 or above, distributed as follows: two courses in literature before 1700, two courses in literature between 1700 and 1900, and one course in literature since 1900.  
   3. Two more English courses numbered 200 or above.  
   4. Three of the courses in 2 and 3, above, must be chosen from the following: ENG 372, 373, 374, 490, 494, or any English course numbered 200 or higher (other than 215) cross-listed with Women’s Studies.  

DEPARTMENTAL HONORS IN WOMEN’S LITERATURE
To enter the program a student must have achieved by the end of the junior year a 3.5 average in English courses and a 3.3 average overall. In addition to fulfilling the requirements for the Women’s Literature Concentration, the candidate for Departmental Honors must:

1. Take at least three literature courses at the 400-level or higher in fulfilling requirements 2 and 3 of the Women's Literature Concentration.

2. Complete a six-credit Senior Thesis. This thesis is a documented essay of about 35 double-spaced typewritten pages on a literary subject and is graded by the thesis director and a second reader. The student undertaking a Senior Thesis normally registers in ENG 497, Special Topics/Independent Study, for the first semester of the project, and in ENG 498, Senior Thesis, for the second semester. The student must receive a grade of B or higher in both courses in order to qualify for honors.  

3. Achieve an average in the major of at least 3.5, and an overall average of at least 3.3.

Total 36 credits

MINOR
The student minoring in English completes, with a grade of C- or better in each course and with an overall GPA in the minor of 2.0, at least 15 credits at the 200-level or above beyond the credits earned for freshman composition. The student must take at least one 400-level literature course and is strongly advised to take at least one of the two-semester sequences: World Literature (ENG 201-202), English Literature (ENG 211-212), or American Literature (ENG 213-214).

English Course Listing

FOREIGN LANGUAGES AND LITERATURES
Dept. Codes: ARB, FLL, FRE, GER, HEB, ITA, JPN, POR, SPA  
www.fll.miami.edu/fll

The study of languages is integral to education in a global university. In addition to providing access to various cultural perspectives, multilingualism fosters success in business, economics, law, medicine, education, social sciences, politics, arts, and literature. Language study most effectively enriches academic as well as personal experiences when students choose a language based on its relevance to possible careers, to research in particular fields, to personal heritage, or to the understanding of unfamiliar cultures. At the University of Miami, students can choose courses in Arabic, French, German, Hebrew, Italian, Japanese, Portuguese, and Spanish.

Many students combine advanced foreign language study with majors in other fields. Students majoring in a foreign language typically choose second majors in programs such as International Studies, Communications, History, Political Science (and other pre-law fields), Biology (and other pre-med fields), Finance, Latin American Studies, Anthropology, Psychology, Computer Science, Sociology, and Philosophy.

Students completing a major or minor in a foreign language are encouraged to study abroad. The International Education and Exchange Program (IEEP in Allen Hall, room 212)
sponsors programs for French, German, Italian, Japanese, Portuguese, and Spanish. It is also possible to fulfill some Arts and Sciences distribution requirements abroad. In order to take full advantage of study abroad, students should visit IEEP early in their university careers, discuss course equivalencies with the Study Abroad Advisor for their chosen languages (contact the Department office for names and office hours), and consult with their major advisors.

Students may qualify for a wide range of departmental awards for excellence in linguistic and literary achievement. The Foreign Languages and Literatures Awards Reception takes place annually on Honors Day. Awards are designated for beginning language students in any language as well as for advanced majors, and many include cash prizes or scholarship funds. Some awards are conferred through nomination by professors; others require an application. Students may obtain information on specific awards in the Department office. The annual deadline for applications is usually in early March.

The Department participates in the Honors Program with courses at all levels in French and Spanish. Graduation with Departmental Honors is available to qualified students in French, German, and Spanish. Interested students should consult with the appropriate Director of Undergraduate Studies.

**Majors and Minors**

The Department has Undergraduate Advisors for each language. You are encouraged to consult with them for placement, and must consult with them if you plan to major, minor, or study abroad (contact the Department office for names and office hours). If you plan to double major, you must have an advisor from each of your fields.

You do not have to be a student of the College of Arts and Sciences to major or minor in a foreign language; you need only the approval of your college or school advisor and to complete the departmental requirements. If you wish to complete a double degree, consult with an Arts and Sciences Advisor.

**Majors are offered in French, German, and Spanish**

A major consists of at least 18 credits beyond the 200-level, distributed as follows: at least 9 credits must be at the 300 level; at least 6 credits must be above the 300 level; at least 3 credits must be at the 500 level. FLL 505 (taught in English) may count toward the 18 credits, but cannot replace 500-level credits in the target language. Only one professional Spanish course (SPA 432 or SPA 433) will count towards the Spanish major, although students are free to take both. Students with transfer credits at the 300-level must take at least 12 graded credits at or above the 300-level at the University of Miami. Students must earn a grade of C- or higher in every course counting toward the major, and maintain a minimum overall average of 2.5 in the major.

**Minors are offered in French, German, Italian, Portuguese, and Spanish**

A minor in one foreign language consists of a minimum of 9 credits in that language, 6 of which must be graded and from the University of Miami on the 300-level or above. Students must earn a grade of C- or higher in every course counting toward the minor, and maintain a minimum overall average of 2.5 in the minor.

**Minor in Foreign Languages**
This minor in two foreign languages consists of at least 18 graded credit hours with 9 credits in one language on any level and 9 credits in any other language, 3 of which must be on the 300-level or above. For example: Arabic 101, 102, and 201 along with Spanish 211, 212, and 301 would constitute a Minor in Foreign Languages; so would French 211, 212, and 332 along with Portuguese 101, 102, and 211. Many other combinations are possible. This minor must include 12 graded credits from the University of Miami. At least one course in each of the languages in the minor must be taken at UM. Students must earn a grade of C- or higher in every course counting toward the minor, and maintain a minimum overall average of 2.5 in the minor.

DEPARTMENTAL HONORS IN FOREIGN LANGUAGES

Departmental Honors in Foreign Languages are possible in the three languages for which the major is offered: French, Spanish and German. In order to request admission to Departmental Honors, candidates must have completed at least nine credits at the 300 level or above. They must have a GPA of 3.5 in all their major courses and a 3.5 overall average GPA. Both GPAs must be maintained in order to graduate with Departmental Honors.

During their junior year, candidates for honors will identify an honors thesis supervisor and a second reader and request admission to Departmental Honors. Admission to candidacy must also be approved by the Director of Undergraduate Studies for the appropriate language.

In addition to fulfilling the regular major requirements, students must register in their Senior year for FRE or GER or SPA 594-595, Senior Honors Thesis. This is a two-semester, six credit sequence: 594 for research and 595 for the actual writing of the honors thesis.

The honors thesis advisor and the second reader will determine whether the finished thesis merits Departmental Honors.

Placement

Most students studying a language as a non-native speaker can determine their appropriate level by following these guidelines:

1. If you have no experience in the language, or two years or less of high school instruction in the language, begin with 101.

2. If you have had three years of high school instruction in French or Spanish, begin with 105. If you have had four years of high school instruction, begin with 211. If you have had three or four years of high school instruction in another language, begin with 102 or 211, after consulting with the respective Undergraduate Advisor.

3. If you have taken 101 in French or Spanish at the University of Miami or at another university, begin with 102. (In most cases, 105 represents an illegal repeat and will be automatically deleted from your transcript.)

4. If you scored a 3 on the AP exam, or a 4 on the IB exam, begin with 211 for French, German, Italian, Portuguese or Spanish. For Arabic, Hebrew, Japanese or Latin, begin with 201.

5. If you scored a 4 on the AP exam or 5 or 6 on the IB exam, then begin with 212.
6. If you scored a 5 on the AP Language exam in French or Spanish, begin with 212, 301 or 343 (consult with the respective Undergraduate Advisor).

7. If you scored a 5 on the AP Literature exam or a 7 on the IB exam in French or Spanish, you may begin with 301 or 343.

Students studying their native language should follow these guidelines (your native languages are the languages you have spoken regularly in your home since childhood):

1. The Department offers courses for native speakers of French, German, Italian, Portuguese, and Spanish.

2. Native speakers may not enroll in 101, 102, 105, 201, 202, 211, 212, 242, or 301 in their language.

3. If you are a native speaker of French, German, Italian, Portuguese, or Spanish and graduated from a high school where that was the official language of instruction, you may take any course above 301 (consult with the respective Undergraduate Advisor).

4. If you are a native or heritage speaker of Spanish and have no formal training in writing or reading Spanish to one year of high school instruction, begin with 143. If you have had two to three years of high school instruction in Spanish, begin with 243. If you have had four or more years of high school Spanish, begin with 343. You may not enroll in 101, 102, 105, 211, 212, 242 or 301.

5. If you are a native speaker of French, German, Italian, or Portuguese, and have little or no formal training in writing or reading that language, consult with the respective Undergraduate Advisor.

Students may not move on to a higher course until they have received a passing grade in the prerequisite.

**Arts and Sciences Foreign Language Requirement**

The College of Arts and Sciences requires all B.A. and B.S. degree students to show competency in a language other than English by successfully completing an approved college language course at the 200-level or higher.

**Humanities Literature and Writing Credits**

The Department offers a variety of courses that fulfill these Distribution Requirements for students in most majors (please consult the guidelines of your School or College); students can easily fulfill some or all of these requirements by majoring or minoring in a foreign language.

Courses fulfilling the Humanities Literature Requirement:
Any literature courses in French, German, Italian, Portuguese or Spanish on the 300-level or higher.

Courses granting Writing Credit:
301, 302, 303, 310, 321, 343, 353, 354, 363, 364, 365, 442, 444, and all 500-level courses
Courses may simultaneously fulfill the Humanities Literature Requirement and Writing Credit, or the Foreign Language Requirement and Writing Credit. A course cannot simultaneously fulfill the Foreign Language Requirement and the Humanities Literature Requirement.

Foreign Languages and Literatures Course Listing

Course Listings for:
Arabic, French, German, Hebrew, Italian, Japanese, Portuguese, and Spanish

GEOGRAPHY AND REGIONAL STUDIES - Dept. Code: GEG
www.as.miami.edu/geography

Geography and Regional Studies is concerned with the spatial or locational dimensions of environmental phenomena and organizational patterns of human activity on the earth’s surface. Concretely, geography deals with the analysis of topics ranging from environmental problems, political boundary disputes, and ethnic conflict to applied and more localized issues such as establishing new voting districts to provide better representation for ethnic minorities, determining where the next freeway link should be built, assessing the location of oil pipelines, or various matters regarding urban planning and governance.

Traditionally, geographers have regional expertise combining topical and geographic fields of knowledge: for example, population issues in the Caribbean, sustainable development in the Amazon basin, economic and political integration in Europe, territorial conflict in the Middle East, or the growth of megacities in South Asia.

Geographers are prepared for positions in teaching, government, private business, urban and regional planning, cartography, geographic information systems (GIS), conservation, and environmental analysis. The University of Miami’s Department of Geography and Regional Studies offers a wide range of specializations that relate to the social sciences at large and especially the field of international studies. Processes of globalization have increased the importance of the geographical analysis of human society and particularly the linkages between global processes and local outcomes and the growing interconnections of places across the globe.

The Department of Geography and Regional Studies offers specializations in areas such as:
International migration
Urban geography and international urbanization
Environmental studies
International and regional development
Globalization

In addition, there is a range of courses on world regions such as Europe, the Middle East, Middle America, South America, etc. Finally, the department offers a set of courses that provide training in indispensable skills for everyone entering the present-day labor market:
Research methodology
Statistics
Computer cartography
Geographic information systems
Remote sensing of the environment

MAJOR
REQUIREMENTS FOR GEOGRAPHY AND REGIONAL STUDIES
Students in the College of Arts and Sciences who take Geography and Regional Studies as a major must complete the following requirements:

I. Students must take at least 30 credits in geography courses.

II. For a geography course to count towards the major, the student must achieve a grade of C- or higher.

III. The overall GPA in courses toward the major must be 2.00 or higher.

IV. Majors must successfully complete three of the following courses:
   GEG 105
   GEG 110
   GEG 120
   GEG 199

GEOGRAPHY AS A SECOND MAJOR
Students who take Geography and Regional Studies as a second major must complete the following requirements:

I. Students must take at least 24 credits in geography courses.

II. For a geography course to count towards the major, the student must achieve a grade of C- or higher.

III. The overall GPA in courses counting toward the major must be 2.00 or higher.

IV. Majors must successfully complete two of the following courses:
   GEG 105
   GEG 110
   GEG 120 or GEG 121
   GEG 199

MINOR
Students in the College of Arts and Sciences who take Geography as a minor must meet the following requirements:

I. Completion of at least 15 credits in Geography courses.

II. For a Geography course to count towards the minor, the student must achieve a grade of C- or higher.

III. The overall GPA in courses counting toward the minor must be 2.00 or higher.

IV. At least 6 credits must be at the 300-level or higher.

INTERNSHIP CREDIT
Students are encouraged to find a suitable internship experience with the Career Planning and Placement Center. Upon approval, 3 to 4 credits may be earned with an internship. These credits will be included in the fulfillment of major requirements (GEG 535).

HONORS THESIS

Students with an appropriate GPA are encouraged to write an honors thesis in order to graduate Magna (minimum 3.75 GPA) or Summa Cum Laude (minimum 3.90 GPA). Six credits toward the major may be earned with the honors thesis.

OVERLAPPING COURSES AMONG DUAL MAJORS

Of the coursework at the 200-level or higher in Geography and Regional Studies, no more than 6 credits may count double towards the other major.

STUDY ABROAD

Majors are strongly encouraged to study abroad for a summer, a semester, or an entire year. Study abroad at carefully selected institutions will complement the student’s curriculum and area of specialization, will enhance fluency in the foreign language, and will result in heightened affinity for a foreign culture. The study abroad experience need not result in credit overloads or extended time spent in the program.

ACADEMIC STANDING

Only courses in which the grade of C- or better is attained may be counted towards the major or minor, and students must maintain a GPA of 2.00 or better in all required courses.

For more information, e-mail rgrant@miami.edu, come by the Department of Geography and Regional Studies at 229 Ferre, or call 284-4087, to make an appointment.

Geography and Regional Studies Course Listing

GEOLOGICAL SCIENCES - Dept. Code: GSC

Geological Sciences is concerned with Planet Earth, its origin, evolution, structure, internal and surface processes, mineral resources, environmental preservation, global dynamics, paleoclimate reconstruction, and life history. Geologists use their knowledge of chemistry, biology, physics and mathematics to solve Earth problems.

Geological Sciences undergraduates are prepared for graduate programs in geosciences, the environmental sciences, and marine sciences, leading to careers in research and teaching, as well as careers in the petroleum and mineral industries and in industries and government organizations concerned with energy resources, geodynamics, the marine environment, conservation, and climate change.

MAJORS
The Department of Geological Sciences offers three undergraduate degree major programs: Bachelor of Science (B.S.) Bachelor of Arts (B.A.) in Geological Sciences
In addition, a 5-year B.S./M.S. program is available to qualified students leading to degrees in Geological Sciences/Marine Geology and Geophysics. Many students also pursue a dual major in Geological Sciences and Marine Sciences or an Environmental Sciences B.S. or B.A. with a focus in Environmental Geology.

For the Geoscience Graduate Program please see the Division of Marine Geology and Geophysics at the RSMAS campus.

**BACHELOR OF SCIENCE**

The B.S. in Geological Sciences is recommended as preparation for graduate school and careers in professional research and science teaching. B.S. Students must complete a core curriculum of 34 credits (GSC 110 or 120, 114 or 115, 111, 260, 360, 380, 410 or 540, 440, 480, and 482) with a grade of C- or better and with an overall GPA of 2.0. In addition, the B.S. candidates must complete a summer field course (GSC 580 or an approved field course through another university).

B.S. students must choose a minor from the following:
- Biology
- Chemistry
- Computer Science
- Marine Science
- Mathematics
- Physics
- Ecosystem Science and Policy

The minor requirements are specified by each department and are listed under Departmental headings in the Bulletin.

**BACHELOR OF ARTS in GEOLOGICAL SCIENCES**

The B.A. in Geological Sciences is recommended for science oriented students who plan to use an understanding of Earth systems in their professional careers but desire a broader liberal arts education or are pursuing a dual major outside the sciences. B.A. students must complete a core curriculum of 24-27 credits including:
- Two courses in the GSC 101, 102 or 111, 103 or 110 or 120 series; GSC 114 or 115; 260; 360; 482; two of 380, 410, 440, and 480 or 540 with a grade of C- or better and with an overall GPA of 2.0. In addition, B.A. students are strongly encouraged to take the summer field course (GSC 580) and/or field courses offered during spring break (GSC 231 or GSC 311).

**FIVE YEAR B.S. /M.S. IN GEOLOGICAL SCIENCES AND MARINE GEOLOGY**

A 5-year B.S. /M.S. in Geological Sciences and Marine Geology allows qualified students to complete a master’s degree in one year of study beyond the B.S. The B.S. degree in Geological Sciences is offered through the Department of Geological Sciences in the College of Arts and Sciences. The Master of Science (M.S.) degree in Marine Geology and Geophysics is offered through the Division of Marine Geology and Geophysics in the Rosenstiel School of Marine and Atmospheric Science (RSMAS). Undergraduate requirements are listed under the B.S. degree above. By the spring of their junior year students should have obtained a graduate faculty advisor, selected an approved topic for research, and begun work on their senior thesis as preparation for the M.S. In the senior year, students will increase their focus on graduate courses and work closely with their graduate faculty advisor. Contact Dr. Harold Wanless at the departmental office (305-284-4253) for more information.
The field course (GSC 580 or an approved equivalent at another University) is required for B.S. students and encouraged for others in order to gain practical experience in the skills of observation, interpretation, measuring, sampling, mapping and report writing. This requirement when completed has proven to be a strong asset when applying for graduate work or employment.

MINOR
A minor in Geological Sciences consists of 16 credits in courses numbered 110 or higher. A minimum grade of C- must be earned in each course with an overall GPA of 2.0.

As required by the College, all B.S. degree candidates must pass two semesters of calculus (MTH 110-112, MTH 111-112, MTH 131-132) and either (a) one semester of a computer course or (b) a statistics course. All Geological Sciences majors must also complete the “Required Areas of Study” of the College (see under COLLEGE OF ARTS AND SCIENCES in this Bulletin).

There are two special programs that the Department offers with other units of the University.

DOUBLE MAJOR
A double major is offered in cooperation with the Marine and Atmospheric Science Program.

This program consists of a major in the Geological Sciences and a major in Marine Science. Interested students should read the information under Marine and Atmospheric Science in this Bulletin and contact the Marine Science office (184 Cox Science or 284-2180) for details concerning the Marine Science major.

Another option is a program in Environmental Geology, which combines courses in Geological Sciences and the Environmental Sciences leading to a B.S. degree in the Environmental Sciences. Students interested in this program should read the information under Environmental Sciences in this Bulletin and contact Dr. Harold Wanless (43 Cox Science or 284-4253).

Any student contemplating graduate study in the Geological Sciences is advised to complete at least eight credits of physics at the 200 level or higher.

The Geological Sciences courses 101, 102, and 103 (The Evolution of the Earth System) form a sequence suitable for both B.A. science majors and non-science majors. These courses may be applied to the Natural Science requirement under the “Required Areas of Study” for the College of Arts and Sciences.

Geological Sciences Course Listing

HISTORY - Dept. Code: HIS
www.as.miami.edu/history

History is the systematic study of the past. The study of history includes training in how to gather information, how to research issues and problems, how to analyze data and construct arguments, and how to communicate ideas in writing. These are essential skills, tools that are prized in the world beyond the university. A major in history is an excellent beginning and solid stepping stone to professional school and the business world. For goals ranging from law to journalism, and from medicine to the MBA, history serves as a versatile
undergraduate major. Multinational businesses demand that their executives understand the peoples and cultures around them, and be able to communicate that understanding effectively. If an occupation demands critical thinking and analysis, a background in history is invaluable.

MAJOR

A major in history consists of at least 30 credits in history with a grade of C- or better in each course, and with a cumulative GPA of at least 2.0 in history courses. These credits may include history courses taken for general distribution requirements, and must include at least 18 credits at the 300 level or above, of which at least 6 credits must be at the 500 level. All courses for majors will be selected by students in consultation with advisors designated by the department. History majors with a cumulative GPA of at least 3.6 in history courses may earn departmental honors by completing a research project of 6 credits judged worthy of honors by a departmental committee, provided that at least 6 courses worth 18 credits have been completed at the University of Miami.

MINOR

A minor in history consists of at least 15 credits in history with a grade of C- or better in each course, and with a cumulative GPA of at least 2.0 in history courses. These credits may include history courses taken for general distribution requirements, and must include at least 9 credits at the 300 level or above. Courses for minors should be selected in consultation with a departmental advisor.

All history courses expose students to historical interpretation and critical analysis. Courses at the 100 and 200 levels are intended as introductions to broad fields of history and are open to students with no previous college-level history experience. All 300 level history courses are writing intensive, are graded principally through essay examinations and short papers, and count toward the fulfillment of the University of Miami writing across the curriculum requirement. The normal prerequisite for 300 level history courses is 3 credits in history at the college level. Courses at the 400 level are programs of individual directed study. Permission of the instructor is required in each case, and such permission is normally given only to students who have completed a lower-level course with the faculty member in question. Courses at the 500 level require a 300 level history course as prerequisite. All 500 level courses deal extensively with the historiography of their particular subjects, and all require a written research project as a major component of the work of the course.

Credits from other institutions may be counted toward the major or minor, and to general distribution requirements as appropriate, but departmental approval is required in each case. Students who complete the Advanced Placement course in either United States or European history and pass the examination with a grade of 4 or 5 may receive credit in the appropriate history courses. Students who complete the International Baccalaureate program and pass the higher level history examination with a grade of 5 or higher will receive 3 credits in the appropriate entry-level history course. (However, in some cases students will only receive elective credit). At least 18 credits of the major and at least 9 credits of the minor must be completed at the University of Miami.

The department offers a variety of study abroad options with credit toward the major or minor.

For the requirements of the M.A. and Ph.D. degrees in history see the Bulletin of the Graduate School.
INTERNATIONAL STUDIES - Dept. Code: INS  
www.as.miami.edu/internationalstudies

The International Studies major provides a focused educational experience aimed at familiarizing students with the key structural features and dynamics of the international system and preparing them to enter the growing international job market. Processes of globalization, in part driven by global capital flows, expanding trade and the unrelenting development of communication and information technologies, have affected virtually everyone in every country, often in ways we are just beginning to understand. These developments often pose serious problems for government and other societal institutions, while also creating a demand for individuals who understand international processes. Jobs in virtually all sectors have acquired a decidedly international dimension, whether in trade, tourism, finance, public policy, government, or education. INS Graduates have moved on to the corporate world, the public sector, started their own businesses, or have continued their studies at the graduate level (i.e. Law, Business, and International Studies).

Requirements for the Major in International Studies (30 credits)

The International Studies major consists of three components:
I. Core Requirements  
II. Thematic Core  
III. INS Electives

I. Core Requirements (12 credits)

INS 101* Global Perspectives – Introduction to International Studies.  
INS 102   Global Economics.  
INS 201* Globalization and Change in World Politics.  
INS 202   Research Methods in International Studies.

* These courses must be completed before taking the Thematic Core courses.

II. Thematic Core (12 credits):

Students should choose at least one course from each of the following four fields. Additional classes will be counted toward the elective portion of the INS major, if taken. Other courses, including classes in other disciplines, may be taken with the approval of the INS Advisor.

*International Politics, Foreign Policy and Peace Studies:*
INS 341 Nationalism, Ethnicity and Conflict  
INS 540 International Peace and Conflict Resolution  
INS 542 Drug-Trafficking in the Americas  
INS 560 US Foreign Policy  
INS 561 Negotiation and Bargaining  
INS 566 US-Latin American Relations

*Comparative Studies of Politics and Societies in a Globalizing World:*
INS 330 Introduction to Comparative Analysis  
INS 335 Democratization
INS 533 Transnational Social Movements
INS 534 The Military, State and Society
INS 565 The World Before European Domination
INS 584 Latin American Thought

*International Economics, Political Economy and Development:*
INS 320 Global Economics II
INS 321 Global Political Economy
INS 322 Economics of Development and Environment
INS 420 Global Trade
INS 520 Environmental Economics and Policy
INS 571 International Development and Human Welfare

*International Law, Organizations, and Global Governance:*
INS 460 United Nations Seminar
INS 564 International Law
INS 570 Globalization and Health
INS 573 Disasters, Terrorism and Global Public Health
INS 591 The European Union
INS 595 European Social Movements

**III. INS Electives and Interdisciplinary Options (6 credits):**
Students are required to take a total of 6 additional credits of elective course work from INS courses at the 300 level or above. With the approval of the INS Advisor, students may take courses from other departments outside of INS such as Geography and Regional Studies, History, Anthropology, Sociology, Political Science, Economics, Religion, Art History, Foreign Languages, Environmental Science, et cetera. Appropriate study abroad courses, an approved internship (INS 519), or an honors thesis (INS 418 & 419) may also be used to fulfill elective credit requirements.

**V. Honors thesis**
Students with an appropriate GPA are eligible and encouraged to apply to the Honors Office for permission to write an honors thesis in order to graduate Magna (minimum 3.75+ GPA) or Summa Cum Laude (minimum 3.90 GPA). Upon approval by the Honors Office and by the involved faculty member (the thesis advisor), six credits (INS 418 and 419) may be earned with the writing of the honors thesis, and may partially substitute for the major requirements in the Thematic Core or INS Electives.

**Important Advising Notes for all International Studies Majors**

1) **Double Counting**
   Of the combined courses in the Thematic Core and the INS Electives, no more than 6 credits may count double towards a second major. A student may not count any course used to fulfill the requirements of the INS major toward a minor requirement.

2) **Study Abroad**
   Students are strongly encouraged to study abroad for a summer, a semester, or an entire year, depending on the program. Study abroad at carefully selected institutions will complement the student’s curriculum and area of specialization, will enhance fluency in the foreign language, and will result in heightened affinity for a foreign culture. The study abroad experience need not result in credit overloads or extended time spent in the program.
3) Internship Credit
Students are encouraged to find a suitable internship during their undergraduate career. Upon approval by an advisor in the International Studies Undergraduate Program Office, 3 credits may be earned with an internship (INS 519), either toward the major or as elective credits (depending on the relevance of the particular internship to the INS major). The University’s Toppel Career Planning and Placement Center regularly advertises internships.

4) Academic Standing
Only courses in which a grade of C- or better is attained, may be counted towards the International Studies major and students must maintain a GPA of 2.75 or better in all major requirements (30 credits).

Requirements for the Minor in International Studies (15 credits)
The International Studies Minor consists of two parts: (I) a 6-credit set of introductory courses; (II) 6 credits in advanced courses.

I. Base (6 credits)
Two of the following core requirements must be taken:
INS 101 — Global Perspectives - Introduction to International Studies
INS 102 — Global Economics
INS 201 — Globalization and Change in World Politics
INS 202 — Research Methods in International Studies

II. Advanced courses (9 credits).
In order to graduate with a minor in International Studies, students must take three INS courses at the 300-level or above. Advanced level courses from other departments may be taken if approved by the INS advisor.

Only courses in which a grade of C- or better is attained may be counted towards the minor in International Studies, and students must maintain a GPA of 2.75 or better in all minor requirements (15 credits).

International Studies Course Listing

THE GEORGE FELDENKREIS PROGRAM IN JUDAIC STUDIES – DEPT.
CODE: JUS
www.as.miami.edu/judaic

The George Feldenkreis Program in Judaic Studies is a broad, flexible, interdisciplinary program designed for undergraduates to gain an understanding of Jewish civilization and its diverse cultural experiences. The program, which is non-theological in orientation, is an academic exploration of the multi-faceted, socio-historical, 4,000-year record of the Jewish people. Courses taught in, and cross-listed with the Program highlight the variety of cultural, political, social, and religious experiences of Jews in different times and places.

The program is structured to provide an in-depth liberal arts education that will constitute a foundation for advanced academic study, professional careers in a variety of fields, and a more complex and rich understanding of the Jewish world. Judaic Studies courses frequently meet the requirements for both the Humanities and Social Sciences in the
College of Arts and Sciences, the College of Engineering, the School of Communication and School of Business, and can be used to satisfy requirements by majors and non-majors.

**THE MAJOR (ten courses – 30 credits):**

1. *Jewish Civilization: Society, Culture, and Religion* (JUH/JUS 231*). This course will be designated as Humanities (JUH) or Social Sciences (JUS) depending on the instructor. Its purpose will be to acquaint beginning students with the approaches and areas of inquiry common to the field of Judaic Studies.
2. An advanced seminar in Judaic Studies (JUS 401, JUS 410, or JUS 411).
4. A course in Hebrew at the 200-level or higher (which can be used simultaneously to fulfill the College of Arts and Sciences Foreign Language requirement).
5. One course in Ancient Jewish History and Society and one course in Modern Jewish History and Society. Courses will be designated appropriately by the Program Director each semester.
6. 15 more credits (5 courses) in classes listed in or cross-listed with Judaic Studies, 12 credits of which must be completed at the 300-level or higher.

Honors in Judaic Studies consists of the above plus an Honors Thesis and one additional elective at the 300 level or higher.

**THE MINOR (five courses – 15 credits):**

1. *Jewish Civilization: Society, Culture, and Religion* (JUH/JUS 231). This course will be designated as Humanities (JUH) or Social Sciences (JUS) depending on the instructor. Its purpose will be to acquaint beginning students with the approaches and areas of inquiry common to the field of Judaic Studies.
3. A course in Hebrew.
4. A course in Ancient Jewish History and Society (to be designated as such by the Program Director each semester).
5. 3 more credits (1 course) in class listed or cross-listed with Judaic Studies, which must be completed at the 300-level or higher.

A grade of "C-' or better must be attained in each course taken for the major or the minor with an overall g.p.a. of 2.0.

[Judaic Studies Course Listing](#)

**LATIN AMERICAN STUDIES**
[www.as.miami.edu/lasp](http://www.as.miami.edu/lasp)
[www.as.miami.edu/ids](http://www.as.miami.edu/ids)

**MAJOR IN LATIN AMERICAN STUDIES (BA or BS)**

Latin American Studies offers an interdisciplinary approach to learning about the cultures and societies of Latin America. Undergraduate courses are offered in American Studies, Afro-American Studies, Anthropology, Art and Art History, Biology, Economics, Foreign Languages and Literatures, Geography, History, International Studies, Marketing, Political Science, Sociology, and Women’s Studies. The major in Latin American Studies is designed for the student who wants to acquire a background of knowledge about the area or who is
interested in some aspect of Latin American affairs, such as government, law, business, research, journalism, or education. Students are strongly encouraged to spend at least one semester abroad on a program with a Latin American Studies component (see Office of International Education and Exchange Programs, 212 Allen Hall).

Program of Study:

1) First-year Seminar in LAS  
(or an LAS-approved elective)  
3 credits

2) 212 level (or higher) in French, Spanish, or Portuguese and 105 (or equivalent) in a different one of those languages (or in an indigenous language or Creole of Latin America, with approval of the degree director)  
6 credits

3) Gateway Course in LAS (LAS301)  
3 credits

4) Six credits in Latin American history  
6 credits

5) 15 credits (5 courses) in classes listed in LAS or cross-listed with LAS, 12 credits of which must be completed at the 300-level or higher  
(FRE, SPA, or POR 212 may count toward this requirement)  
15 credits

6) Senior Seminar (LAS501) or Independent Study (LAS494)  
3 credits

TOTAL 36 credits

**A C- or better for all major courses, with a GPA of 2.0

Latin American Studies Minor

The minor in Latin American Studies may be obtained by completing 15 or more credits in courses on Latin America, provided that they are selected from courses that fall outside the department of the student’s major. As part of the required 15 credits, students must successfully complete LAS501 or LAS494 to obtain a minor.

FILAS (Fellows in Latin American Studies)

In this highly selective Honors Program, students follow a rigorous, accelerated curriculum to complete a dual degree (B.A./M.A.) in Latin American Studies in five years. The program provides exciting collaborative research, travel, and work opportunities.

Working with UM’s world-class faculty in various academic disciplines, FILAS participants design individualized curricula. In addition to the regular general education course requirements of the College of Arts and Sciences, FILAS students choose one of three focus tracks for their most advanced courses: Social Sciences, Literature & Culture, or History. For broad-based, multi-disciplinary preparation, students choose courses that focus on Latin America from the following categories (at least ten of these courses must be taken at the Master’s level):

• One gateway seminar in Latin American Studies
• Two History courses
• Two International Studies courses
• Two Economics courses
• Three advanced Languages and Literatures courses
• Seven courses in Study Abroad
• Two courses as internship/co-op credits
• Three courses above the 300-level (third-year) in a range of disciplines
• Ten courses in one focus track

150 total credits

*FILAS* students also write a seminar paper/thesis based on an original research project. In addition, they present their findings in a meeting of the UM Center for Latin American Studies in their final semester.

**FILAS ADMISSION REQUIREMENTS**
- SAT1 composite score of 1360 or ACT 31.
- Top 10% of high school graduating class.
- Regular Application for Admission to the University of Miami. We recommend students submit their applications by November 15.
- Recommendations from three high school teachers.
- Statement of interest in *FILAS*, emphasizing prior language or area study
- To continue through the Master's level, students must maintain at least a 3.4 GPA.

Latin American Studies Course Listing

**MARINE AND ATMOSPHERIC SCIENCE PROGRAM**
http://mscservserver.cox.miami.edu

**MARINE SCIENCE - Dept. Code:  MSC**

Marine and Atmospheric Science is an interdisciplinary program dealing with the study of the 'worlds' oceans and atmosphere, their physical and biological constituents, the influence of oceanic resources on human society and the conservation and future development of those resources.

The Rosenstiel School of Marine and Atmospheric Science and the College of Arts and Sciences jointly offer a Bachelor of Science degree with majors in Marine Science/Biology, Marine Science/Chemistry, Marine Science/Geological Sciences, Marine Science/Physics and Marine Science/Computer Science. These programs constitute a full major in a basic science as well as a major in Marine Science.

The Bachelor of Science double major prepares students for admission to graduate programs and for careers in teaching and research as well as for technical careers in government and private industries concerned with the oceans. Each of the areas of concentration constitutes a rigorous program requiring 120-130 credits for graduation. Only those courses passed with a grade of C- or better may be applied to the major or minor.

All Marine Science majors are required to maintain a cumulative grade point average of 2.5 or better in order to graduate with a double major in Marine Science.
The required courses are:

**MARINE SCIENCE/BIOLOGY**
- Marine Science 111, 215, 216, 230, 232,* 301, and 5 credits of elective in Marine Science
- Biology 150, 151, 160, 161, 235, 236, 250, 255, 265 and 12 credits of elective as described for Biology majors
- (Marine Science 230 and one advanced biology course may fulfill requirements in both Biology and Marine Science)
- Chemistry 111, 112, 113, 114, 201, 202, 205, 206
- Geological Sciences 110 and 114
- Mathematics 111-112, one semester of a computer or statistics course. The following classes are approved to satisfy the computer/statistics requirement: BIL 311, Computer Science 120 or Mathematics 224, Industrial Engineering 124, Electrical and Computer Engineering 118, MSC 321, Psychology 204.
- Physics 205, 206, 207, and either 208 or 209; or Physics 101, 102, 106 and 108 (University Physics is recommended)

**MARINE SCIENCE/CHEMISTRY**
- Marine Science 111, 215, 216, 230, 232,* 301, and 5 credits of elective in Marine Science
- Biology 150, 151 or 160, 161
- Chemistry 111, 112, 113, 114, 201, 202, 205, 206, 304, 316, 360, 364, 365, and one of CHM 441, 520, 563 or BMB 401 or 502 as described for Chemistry majors
- Geological Sciences 110 and 114
- Mathematics 111-112, one semester of a computer or statistics course. The following classes are approved to satisfy the computer/statistics requirement: Chemistry 256 or Computer Science 120 or Electrical and Computer Engineering 118.
- Physics 205, 206, 207, and either 208 or 209

**MARINE SCIENCE/GEOLOGICAL SCIENCES**
- Marine Science 111, 215, 216, 230, 232,* 301, and 5 credits of elective in Marine Science
- Biology 150, 151 or 160, 161
- Chemistry 111, 112, 113, 114
- Geological Sciences 110, 111, 114, 260, 360, 380, 410 or 514, 440, 480, 482, 580.
- (One course in Geological Sciences may fulfill requirements in both Marine Science and Geology.)
• Mathematics 111-112, one semester of a computer or statistics course.

• Physics 205, 206, 207, and either 208 or 209

**MARINE SCIENCE/PHYSICS**

• Marine Science 111, 215, 216, 230, 232,* 301, and 5 credits of elective in Marine Science.

• Biology 150, 151 or 160, 161

• Chemistry 111, 112, 113, 114

• Geological Sciences 110 and 114

• Mathematics 111-112, 210, 312, and one semester of a computer or statistics course. The following classes are approved to satisfy the computer/statistics requirement: Computer Science 120, Electrical and Computer Engineering 118.

• Physics 205, 206, 207, 208, 209, 321, 340, 350, 351, 360, 362, 505, 506, 540, 560 as described for Physics majors

**MARINE SCIENCE/COMPUTER SCIENCE**

• Marine Science 111, 215, 216, 230, 232, 301, 321 and 3 credits of elective in Marine Science

• Biology 150 or 160

• Chemistry 111, 112, 113, 114

• Computer Science 120, 220, 314, 322, 531 and 6 credits of elective

• Geography 199

• Geological Sciences 110, and 114

• Mathematics 112 and 309

• Physics 205, 206, 207 and one semester of laboratory or Physics 101, 102, 106 and 108

Only those courses passed with a C- or better may be applied to the major or minor.

*Marine Biology and Fisheries 514 or MSC 231 may substitute for MSC 232.

**HONORS**

Honors in Marine Science may be earned by students who have a 3.4 GPA and have completed 6 credits of independent research and a senior thesis.

A Bachelor of Science minor in Marine Science requires the following courses:
Graduate courses in marine biology, marine geology, chemical oceanography, and physical oceanography are offered by the Rosenstiel School of Marine and Atmospheric Science (see Graduate Bulletin). Undergraduate students may be admitted to these courses with permission.

MARINE AFFAIRS
The ocean is acquiring an ever-increasing significance as an avenue of worldwide commerce and communication and as a source of food, energy, minerals and fuels. As nations and private concerns become more involved in the ocean, the need increases for qualified professionals to deal with the commercial and legal complexities of marine affairs. In order to meet this need, the Rosenstiel School of Marine and Atmospheric Science and the College of Arts and Sciences jointly offer a Bachelor of Arts degree with a major in Marine Affairs and a minor in Anthropology, General Business, Economics, Geography, Political Science, or Political Science General Business. Students in the School of Communication may include Marine Affairs as their required Arts and Sciences major. This program is designed for students who wish to prepare themselves for graduate studies and careers in ocean related areas of business policy, management, law, and communication.

5 YEAR BA/MA PROGRAM IN MARINE AFFAIRS
The Marine Science Program offers a 5 year BA/MA Program in Marine Affairs. This program enables qualified Marine Affairs students to earn a Bachelor of Arts degree in Marine Affairs in four years with the opportunity to earn a Master of Arts degree in Marine Affairs at the Rosenstiel School for Marine and Atmospheric Science in an additional year. Conditional acceptance to the graduate Marine Affairs Division is based on the ‘students’ GPA at the end of the sophomore year. Students must then apply for acceptance to the Graduate School at RSMAS during their junior year.

All Marine Affairs students must maintain a cumulative grade point average of 2.5 or better in order to remain in the Program.

Marine Affairs
The required courses are:
Biology 150, 160
Chemistry 111, 112, 113, 114
Marine Science 111, 215, 230, 313 or 314 and seven credits of approved electives in marine affairs.
Geological Sciences 110 and 114
Economics 211, 345
One course in computer programming or statistics

Marine Affairs courses offered through the Rosenstiel School of Marine and Atmospheric Science, may be taken by upperclass students with permission.

Marine Science Course Listing

METEOROLOGY
The College of Arts and Sciences and the Rosenstiel School of Marine and Atmospheric Science offer courses options leading to a Bachelor of Science degree. These options are designed to provide students with the flexibility needed to satisfy student interests and to maximize career opportunities in meteorology and related fields. Refer to the alphabetical listing of Meteorology under the COLLEGE OF ARTS AND SCIENCES listings.
MATHEMATICS - Dept. Code: MTH
www.math.miami.edu

MAJOR
The requirements of a major in mathematics vary according to the objectives of the student. The seven courses required of all mathematics majors are 111 or 131, 112 or 132, 210, 230, 310, 508 or 509 or 561, 533. An additional four courses are required, selected from one of the following options:

- **General Mathematics**: four of 510, 512, 531, 532, 534, 551, 562.
- **Applied Analysis**: 311, 512, 513-514 or 515-516 (course work in physics is desirable).
- **Computational Mathematics**: 320, 517, 520-521.
- **Probability and Statistics**: 224, 524-525, 528 or 542.
- **Secondary School Teaching**: 224, 309, and two of: 502, 504, 505 (this option is only for those obtaining a teaching credential).
- **Mathematical Economics**: MTH 524-525, ECO 512 or ECO 520 or ECO 521, ECO 533.

It would be useful for students planning to do graduate study in mathematics to complete the following courses: 531, 532, 533, 534, 561, 562.

Students interested in **actuarial science** should choose the Probability and Statistics option; for these students a finance minor is recommended.

Transfer students will be permitted to apply up to 14 transfer credits towards the major; however, the courses 508 (or 509 or 561) and 533 must be completed at the University of Miami.

MINOR
A minor in mathematics requires three of the following courses which must be taken in the Department of Mathematics, University of Miami: 210; 211 or 310 or 312; 224, 309, 311, 320; 500-level mathematics courses with departmental approval.

A grade of C- or better is required for each course applied toward the major or minor; the overall quality point average for the major or minor must be 2.5 or above.

DEPARTMENTAL HONORS
Requirements for departmental honors in Mathematics:
Three two-course sequences from 513-514, 515-516, 520-521, 524-525. 531-532. 533-534, 561-562; the student must attain at least a B in each course used to fulfill this requirement. In addition, the student must attain at least a 3.5 average overall all courses counted toward the mathematics major and an overall (university-wide) average of at least 3.3.
For requirements leading to the Master of Arts, Master of Science, Doctor of Arts, or Doctor of Philosophy degrees, with a major in mathematics, see the Bulletin of the Graduate School.

Mathematics Course Listing

METEOROLOGY
www.rsmas.miami.edu/divs/mpo

Undergraduate Curriculum Requirements
The College of Arts and Sciences and the Rosenstiel School of Marine and Atmospheric Science jointly offer a Bachelor of Science degree in Meteorology through the Undergraduate Program in Marine and Atmospheric Science.

Entrance Requirements
It is recommended that a student’s high school curriculum include at least three years of English and mathematics, and one year each of biology, chemistry, and physics. Freshman applications must have an SAT score of 1200 or higher, be in the top 25% of their graduating class, and have a minimum grade point average of 3.2 to be accepted into the Undergraduate Marine and Atmospheric Science Program. Transfer applicants must have earned at least twelve semester credits and have a minimum grade point average of 2.8 to be accepted into the program.

Course Requirements
Bachelor of Science in Meteorology
In addition to the General Education requirements for the College of Arts and Sciences, the following courses are required to obtain a Bachelor of Science degree.

Core Curriculum:
Marine and Atmospheric Science (28 credits):
MSC103, MSC111, MSC118, MSC243, MSC303, MSC305, MSC405, MSC406, MSC407, MSC409.

Mathematics (20 credits)*:
MTH111, MTH112, MTH210, MTH224, MTH310, and MTH311**
*Double majors in ECS and CBR must take either MTH224 or MTH311, but are not required to take both.
**Students may substitute MTH320 for MTH311.

Physics and Chemistry (14 credits):
PHY205, PHY206, PHY207, PHY208. CHM111, CHM113.

Computer Science (4 credits):
CSC120 or suitable elective.

Minor in Meteorology
To obtain a minor in Meteorology students must complete: MSC103, MSC118, MSC 220, MSC243, MSC303. Only those courses passed with a grade of “C-“ or higher may be applied to the major or minor.
MICROBIOLOGY AND IMMUNOLOGY - Dept. Code: MIC

MAJOR

A major in Microbiology and Immunology leading to a Bachelor of Science degree requires thorough preparation in chemistry, biology, biochemistry, physics, and mathematics.

Minimum requirements are:

A. A total of 24 credits in the following courses: MIC 301 and MIC 321 are required of all Microbiology and Immunology majors. Honors students must take both MIC 301 and 302. At least 17 credit hours must be earned from: MIC 322, 323, 434, 436, 441, 451-456, BIL 352, and BIL 554. BIL 250 or BIL 255 may also be used to fulfill the 17 credit hours.

B. Required courses are: Chemistry 111/113, 112/114, 201/205, 202/206; BIL 150, 151, and 160, 161; Biochemistry and Molecular Biology 401; Physics 101/106 and 102/108 or PHY 205, 206, 207, 208 and 209; Mathematics 111 and 112 and Computer Science or Statistics (CSC 120, MTH 224, PSY 204, SOC 211).

Transfer students seeking a Microbiology and Immunology major must earn at least 10 credits taken in residence at UM beyond MIC 301 in the courses listed above for majors under A.

MINOR

A minor in Microbiology and Immunology consists of MIC 301, MIC 321, and at least five additional credit hours in the courses listed above for majors under A.

Variations in the above programs may, in special cases, be approved by the Microbiology and Immunology undergraduate advisor and Director. All courses in Microbiology and Immunology to be credited toward a Microbiology and Immunology major or minor must be completed with a grade of C- or better with an overall GPA of 2.0.

MIC courses 451-456 must have department Director approval before registration.

HONORS PROGRAM

See HONORS PROGRAMS elsewhere in this Bulletin for minimal requirements. In addition to the grade point averages specified in the minimal requirements, the following program constitutes the Microbiology and Immunology Honors Program.

1. Six credits of Special Projects carried out under supervision of a member of the Microbiology and Immunology faculty, culminating in a senior thesis that includes 15 references.

Microbiology and Immunology Course Listing

DEPARTMENT of MILITARY SCIENCE – Dept. Code: MIS
www.as.miami.edu/armyrotc
The military science department's Reserve Officers Training Corps (ROTC) program of instruction qualifies the student for a commission in the United States Army, Army National Guard, or United States Army Reserve. The curriculum does not provide technical training in a job specialty nor does it emphasize vocational training; rather, it complements and provides a base for normal progression in the commissioned officers' educational program.

Leadership and management objectives are included in academic periods of instruction. Practical leadership experience is gained in a field training environment by attendance at a 31-day summer camp, normally between the junior and senior years. Nursing students may attend a nursing internship at Army hospitals following the normal summer camp. A leadership laboratory also provides experience in a range of leadership positions during the school year. The department offers both a four-year and a two-year program, each with its own special advantages. Students are invited to visit or write the Department of Military Science to obtain additional information.

Core Program

The program requires four years of military science courses which consist of a two-year basic course and a two-year advanced course. Students can begin the four-year program as a freshman or as a sophomore.

There is also a two-year ROTC program for those students with only two years of college remaining. The two-year course is designed for junior college and other non-ROTC college transfer students, but may be utilized by students who did not enroll in the basic course outlined below.

Graduate students may also qualify for enrollment in the two-year course. Additional information regarding eligibility requirements for the two-year program may be obtained by contacting the Department of Military Science.

Women are encouraged to enroll and will be commissioned as officers in the United States Army upon completion of the ROTC curriculum. Job opportunities for women officers in the Army are the same as those for men, excluding a few combat arms fields.

Basic Course

The basic course is normally taken as an elective subject by students in their freshman and sophomore years. The purpose of this instruction is to qualify students for entry into the advanced course by familiarizing them with the organization of the Army, military skills, and military tradition. Students do not incur any military obligation as a result of enrolling in the basic course. Enrollment in ROTC requires proof of a doctor's physical screening. Participation in regularly scheduled physical training is required. In addition to classroom instruction, a one and a half hour leadership laboratory period is required every other week.

Advanced Course

Instruction in the advanced course includes leadership and management, the exercise of command, military teaching methods, tactics, logistics, administration, history, and military justice. Leadership experience and command experience are provided by assigning advanced course students as cadet officers and noncommissioned officers. Participation in regularly scheduled physical training is a required part of the leadership training. Classroom instruction consists of two one and a quarter hour (75 minutes) periods each week and one and a half hour (90 minutes) leadership laboratory period every other week. Only students who have demonstrated a definite potential for becoming competent officers will be selected.
for the advanced course.

**Army Nurse Corps Option**

Students enrolled in the School of Nursing curriculum leading to the degree of Bachelor of Science in Nursing may simultaneously qualify for commissions as Second Lieutenants in the Army Nurse Corps. Nursing students qualify for entry into the Officer Development Course through satisfactory completion of either the General Military Course, the Basic Camp option or equivalent training. Nursing students participate in a summer Advanced Camp training program and an Army nurse training program. They provide practical and leadership experience in the clinical setting. The focus is to provide nursing cadets an experience which integrates clinical, interpersonal and leadership knowledge and skills. Emphasis is placed on practical experience under the direct supervision of an Army Nurse Corps Officer who acts as the cadet’s preceptor throughout the camp period.

**Professional Military Education**

In addition to basic and advanced ROTC courses, cadets must complete professional military education requirements consisting of one course in each of the following areas: written and oral communication skills, U.S. military history, and computer literacy. Students should consult with the professor of military science to determine those University courses suitable for fulfilling these requirements.

**Monetary Allowances**

Cadets selected for admission into the advanced course qualify for a nontaxable monetary allowance of $450–$500 per month for up to 20 months. Cadets may also qualify for the simultaneous membership program with the United States Army Reserve or National Guard, which can provide over $6,000 during the last two years of school. Both the United States Army Reserve and the National Guard offer additional monetary incentives for cadets who join their organizations.

**Army ROTC College Scholarship Program**

Financial assistance is available in the form of two- or three-year ROTC academic scholarships for selected students. Under the Army ROTC Scholarship Program, the students/cadets receive FULL Tuition and Fees. Additionally, Army scholarship recipients receive a flat-rate allowance of $900 per year for textbooks and other expenses and $350–$500 per month stipend for up to 10 months per year. During the 32-day advanced course summer training between the junior and senior years, Army ROTC also pays attending cadets $27 per day plus room and board. There are also numerous national and organizational scholarships that students may compete for as a member of Army ROTC.

**Uniforms and Textbooks**

All uniforms and items of insignia incident to membership in the Army ROTC Program are furnished by the Department of Military Science. Textbooks are provided at no cost to students/cadets enrolled in the basic course.

**Special Activities**
Cadets have the opportunity to join and participate in a number of military affiliated organizations and activities, both on a voluntary and a selective basis. The Pershing Rifle Society is a voluntary organization that functions as a military unit participating in military ceremonies and presenting the national colors at civic events. Cadets have the opportunity to qualify for and compete with cadets from other universities and colleges in a series of military events termed Ranger Challenge. Cadets may also join Scabbard and Blade, a military honors society comprising those cadets with qualifying grades that denote scholarship.

**Awards and Decorations**

Awards and decorations made available by national organizations, the University of Miami Army ROTC Alumni Association, and local and national military organizations, are presented to both basic and advanced officer course cadets each year. These plaques, trophies, medals, and ribbons symbolize superior achievement in Army ROTC and other University academic courses, and in outstanding campus and cadet corps leadership.

**Prerequisite for Admission to the Professional Officer Course**

1. Be at least 17 years of age at time of acceptance.
2. Be able to complete the professional officer course and graduate from the University of Miami prior to reaching the age of thirty (30) at the time of commissioning.
3. Selection by the professor of military science and acceptance by the University of Miami.
4. Execute a written agreement with the government to complete the professional officer course and accept an Army ROTC commission.
5. Enlist in the Army Reserve Component-ROTC (terminated upon receiving an Army officer commission).

Those students enrolled in the four-year Army ROTC program must complete the basic course or its equivalent, or have acceptable prior military service. Veterans and students with previous ROTC training are invited to write, visit, or call the Department of Military Science (305) 284-3329 or (305) 348-1619 to discuss their eligibility status.

Students desiring entry into the two-year Army ROTC program should contact the Department of Military Science one semester prior to the semester in which they wish to enroll in the professional officer course. This lead time is required to complete the application and a physical examination prior to enrollment in the professional officer course.

**Leadership Laboratory**

Leadership laboratory is open to students who are members of the Reserve Officer Training Corps or who are eligible to pursue a commission as determined by the professor of military science. Leadership laboratory is the formalized phase of leadership training conducted by the cadets. It is scheduled for one and one half (90 minutes) hours every other week for both the basic and advanced officer courses (non-contracted and contracted). All uniforms and equipment required for cadet activities are furnished.

[Military Science Course Listing](http://chroma.med.miami.edu/neuro/program_undergrad2.htm)

**NEUROSCIENCE Dept. Code (NEUX)**

[http://chroma.med.miami.edu/neuro/program_undergrad2.htm](http://chroma.med.miami.edu/neuro/program_undergrad2.htm)
Neuroscience (NEUX) is a rigorous, interdisciplinary major offered by the Departments of Biology and Psychology in conjunction with the Neuroscience Program at the School of Medicine. It is designed for students seeking a Bachelor of Science degree within the College of Arts and Sciences. Admission to this program is restricted to students who have a minimum score of 1300 score on the SAT or who have earned a 3.5 GPA after 24 credit hours at the University. Students transferring from another college or university must have a cumulative grade point average of 3.7 or above. This major is intended for students preparing for medical school or for graduate study in such fields as psychology, biology, neuroscience, ethology, or behavioral medicine.

Tracks in Neuroscience

There are two tracks available in the major.
- Psychobiology (NEUP) emphasizes cognitive functions and behavior.
- Neurobiology (NEUB) emphasizes cellular and molecular approaches to understanding nervous system functions.

The total number of credit hours in the major is 49, distributed between the Departments of Psychology and Biology (as indicated below). The total number of credits for the degree is 130.

Core Courses

All Neuroscience majors, regardless of track, must complete a set of core courses. These are BIL 150/151, BIL 160/161, BIL 250, BIL 255, BIL/PSY 403, PSY 110, PSY 204, and PSY 316. Students within each track then select courses particular to the track. The total number of credits for both tracks in the Neuroscience major is 49.

Psychobiology track (NEUP)

Students who choose the Psychobiology track must also take PSY 202, PSY 402, a Psychology elective at the 300-level or above, and three Biology electives (see below) at the 200-level or above. Each of these courses must be three credits.

Neurobiology track (NEUB)

Students who choose the Neurobiology track must take BIL 268, BIL 342, BIL 368, BIL 468, a Biology elective at the 200-level or above, a three credit Psychology or Biology elective (see below) at the 300-level or above.

Electives in both tracks

Electives in both the Neurobiology and Psychobiology tracks are limited to specific courses pertinent to the major. Choices in Psychology include PSY 305, PSY 332, PSY 352, PSY 420, PSY 440, and PSY 444. The Biology electives are limited to BIL 235, BIL 241, BIL 261, BIL 265, BIL 268, BIL 341, BIL 342, BIL 355, BIL 360, BIL 361, BIL 365, BIL 368, BIL 369, BIL 468, BIL 511, BIL 530, and BIL 540. Biochemistry, BMB 401 or BMB 506, may also be substituted and count as a Biology elective. (Note that for the Neurobiology track, BIL 268, BIL 342, BIL 368, and BIL 468 are requirements rather than electives.

In addition to the above courses in Biology and Psychology, all Neuroscience students must complete 16 credits in Chemistry including CHM 111/113 and CHM 112/114, and CHM 201/205 and CHM 202/206; MTH 111/112 or MTH 131/132; 10 credits in Physics including
PHY 101/106 and PHY 102/108. [The 200-level, calculus-based physics sequence (PHY 205/206/207/208/209) can be substituted for the 100 level physics sequence and is highly recommended for any student considering pursuing Neuroscience at the Ph.D. level.]

MINOR REQUIREMENTS

Neuroscience students automatically earn a Chemistry minor if they complete the year of Organic Chemistry (CHM 201 and CHM 202) with labs (CHM 205 and CHM 206) here at UM. Those who choose not to minor in Chemistry must choose a minor from among Biochemistry and Molecular Biology, Computer Science, Engineering, Geological Sciences, Mathematics, Microbiology and Immunology, or Physics. Note: There is no minor in Neuroscience.

Incoming freshmen

All entering freshmen who declare Neuroscience as a major, receive their advising as part of a year-long advising and orientation program known as FACT FORUM. Students will be placed (usually by mail registration) in a FACT section (Freshman Advising Contact Term) along with fifteen other students. This is a one credit general elective course that is designed to integrate freshmen into the major and the school by familiarizing them with the guidelines, opportunities, and responsibilities of a Neuroscience major. During the second semester, freshmen enroll in a FORUM section (Faculty Overview of Research and Undergraduate Mentoring). This one credit general elective course helps to put the curriculum in context, and stresses the importance of and opportunities for research.

Residency requirement

Neuroscience students will ordinarily complete all of the upper division courses in the major at UM. Exceptions may be made upon appeal to the Director or the Advisor

Research course credit limit

Research course credits may be applied to general electives, as warranted.

Honors in Neuroscience

Students wishing to graduate with Honors in Neuroscience should speak with the Director or Advisor.

Graduation

To graduate with a major in Neuroscience, students must complete a total of 130 credits. All of the required courses must be completed with a minimum grade of C-. The major GPA must be at least 2.5. All Neuroscience majors must also complete the College of Arts and Sciences Requirements for Graduation for the Bachelor of Sciences listed in this Bulletin.

MINOR

There is no minor in Neuroscience.

PHILOSOPHY - Dept. Code: PHI

www.as.miami.edu/phi

MAJOR
A major in philosophy consists of a minimum of ten courses, each passed with a grade of C- or higher, with an overall GPA of 2.0. Elective courses may be chosen to fit individual needs. Required courses for the major are Philosophy 210, either 271 or 272, twelve credits at the 300 level (including one course from 330-332 and two courses from 340-345), and six credits at the 500 level.

MINOR

A minor in philosophy consists of a minimum of five courses, each passed with a grade of C- or higher with an overall GPA of 2.0. At least three of the courses must be at the 200 level or above, and at least one of these three courses must be at the 300 level or above.

The major and the minor should be planned with the advice of the department.

HONORS

A program of work toward graduation with Honors in Philosophy is available for qualified students. Interested students should consult the Departmental Director of Undergraduate Studies during their sophomore or junior years. Further information may be found under the section entitled HONORS PROGRAM.

For requirements leading to the Master of Arts and Ph.D. degree, see the Bulletin of the Graduate School.

Philosophy Course Listing

PHYSICAL SCIENCES - Dept. Code:  PSC

Physical Science 101 is an interdisciplinary physical science course designed primarily for the non-science major. It may be used to satisfy a physical science requirement in some degree programs. Students should consult the degree requirements listed elsewhere in the Bulletin as well as their advisors for the appropriateness of this course for their programs. See also under PHYSICS 110, 160.

Physical Sciences Course Listing

PHYSICS - Dept. Code:  PHY

The requirements for a major or minor in the Department of Physics are flexible and may be adapted to the needs of the individual student:

1. Pure Physics

This sequence is recommended for those intending to enter a graduate school in Physics. It consists of a minimum of 34 credits in Physics at or above the 200 level, including four credits of laboratory and the courses PHY 205, 206, 207 (or 205, 210); 360, 362; 340, 321; 350, 351; 540, 560. The physics minor consists of University Physics, two credits of laboratory work, PHY 360, and three more credits at the 300-level or above.
2. Marine Science/Physics

This is one of the interdisciplinary majors offered in conjunction with RSMAS. It includes 31 credits from the core physics courses through PHY 560 together with a group of marine science and other courses detailed in the section of this Bulletin on MARINE SCIENCE.

3. Applied Physics

This sequence is available for those intending careers in applied physics, and consists of 22 credits in Physics plus nine credits of Engineering and Computer Science courses with prior approval of the Department of Physics. The Physics courses must be at or above the 200 level and include three credits of laboratory. The major includes PHY 205, 206, 207 (or 205, 210), 208, 209, 340, 350, 360.

4. Dual Physics Majors

Physics requirements: PHY 205, 206, 207 (or 205, 210), 208, 209, 360 and at least two of the following: PHY 321, 340, 350, 351. In the total of 22 credits of physics, 2 or 3 credits of advanced lab may be included, or another lecture course.

Students will have the full, normal major in Biology or Chemistry and provided that among those courses certain specific ones are included, they will also be able to have the dual major in physics. The specific courses are

**Biology – Physics**

Three of the courses BIL 358, 359, 554, CHM 360, 365

**Chemistry – Physics**

Three of the courses CHM 360, 365, 565, BIL 358, 359.

Note: Depending on the selection of the Physics courses in the Biology and Chemistry dual majors, more mathematics beyond two semesters of calculus is required for most of the physics courses.

5. Students in the College of Engineering who want a dual major in physics should consult the Physics Department Chairman. A major tailored to the student’s needs will be arranged. The minimum number of physics credits is the same as for the Applied Physics major.

In order to complete any Physics major sequence in four years, the student should begin elementary calculus in the first semester. The recommended mathematics sequence is MTH 110 or 111, 112 (or 131, 132); 312, 311; 210; (230, 533, 534 also recommended).

A grade of C- or better is required in all courses counted toward the major or minor with an overall GPA of 2.0. Any lecture course in the Physics department may be passed by means of a proficiency examination.

Requirements for the Master of Science and Doctor of Philosophy degrees will be found in the Bulletin of the Graduate School.

[Physics Course Listing](#)
POLITICAL SCIENCE  
www.bus.miami.edu

The Department of Political Science offers a wide selection of courses and activities adapted to the needs of students who contemplate careers in law, government, and public service at various levels. These courses will also benefit those in related vocations.

MAJOR

The major in the Department of Political Science consists of at least 30 credits for students enrolled in the College of Arts and Sciences; for those in the School of Business Administration, the major is at least 27 credits. Students in the School of Communication and Education may also major (double major) in Political Science (at least 30 credits). Six credits must be taken in departmental core courses, namely, POL 211 and 212. At least 21 of these must be taken in residence. The remaining credits must meet the following distributional requirements:

1. Six of the credits must come from the following designated courses:

   POL 510  Political Analysis  
   POL 522  Introduction to Graduate Public Administration  
   POL 531  Global Environmental Politics  
   POL 535  Courts as Political Institutions  
   POL 537  The Law and Politics of Sports  
   POL 540  Problems in American Foreign Policy  
   POL 541  Philosophy of Law  
   POL 542  American Constitutional Development  
   POL 543  Urban Politics  
   POL 544  Chinese Foreign Policy  
   POL 545  Environmental Policymaking  
   POL 546  Public Policy  
   POL 547  Congressional Representation  
   POL 551  Productivity in the Public and Non-Profit Sectors  
   POL 553  The Environmental Movement: Groups, Beliefs and Values  
   POL 554  Social Welfare Policy  
   POL 555  Total Quality Public Service Management: Achieving High Performance Government  
   POL 580  The Politics of Post-Communist Transitions  
   POL 581  Comparative Political Economy of Post-Industrial Democracies  
   POL 582  Political Economy of Latin American Development  
   POL 584  Contemporary Latin American Politics  
   POL 585  Political Movements in Latin America  
   POL 586  Conflict in the Middle East and Africa  
   POL 588  Politics in China  
   POL 591  Problems in International Politics and Organization  
   POL 592  International Political Economy  
   POL 593  International Relations of the Middle East  
   POL 595  North-South Relations

2. At least one course must be taken in three of the following four principal sub-fields of political science: American Politics, Comparative Politics, International Relations, and Public
Administration, Policy, and Law. These can include courses used to fulfill requirement 1 above.

For the purposes of fulfilling these distribution requirements, sub-fields are defined as follows:

• American Politics:
  
  POL 314 Legislative Process
  POL 315 American Presidency
  POL 332 Politics and the Media
  POL 334 Campaigns
  POL 335 Local Government
  POL 342 State and Local Government and Politics
  POL 343 Government in Metropolitan Areas
  POL 349 U. S. Defense Policy
  POL 351 Public Opinion
  POL 352 Political Parties and Pressure Groups
  POL 510 Political Analysis
  POL 520 Internship
  POL 521 Public Affairs Internship
  POL 535 Courts as Political Institutions
  POL 543 Urban Politics
  POL 547 Congressional Representation
  POL 553 The Environmental Movement: Groups, Beliefs and Values

• Comparative Politics:
  
  POL 380 Comparative Political Analysis
  POL 381 European Governments and Politics
  POL 382 Government and Politics of the Federal Republic of Germany
  POL 383 Government and Politics of the United Kingdom
  POL 384 Soviet and Russian Politics
  POL 385 Politics and Society in Latin America
  POL 387 Politics of the Middle East
  POL 388 Politics of Israel
  POL 531 Global Environmental Politics
  POL 580 The Politics of Post-Communist Transitions
  POL 581 Comparative Political Economy of Post-Industrial Democracies
  POL 582 Political Economy of Latin American Development
  POL 584 Contemporary Latin American Politics
  POL 585 Political Movements in Latin America
  POL 588 Politics in China

• International Relations:
  
  POL 337 International Law
  POL 345 The United States and Asia
  POL 346 U. S.-Latin American Relations
  POL 347 American Foreign Policy
  POL 348 United States Relations with the Middle East
  POL 349 U. S. Defense Policy
POL 391 Introduction to International Relations
POL 392 International Terrorism
POL 531 Global Environmental Politics
POL 540 Problems in American Foreign Policy
POL 544 Chinese Foreign Policy
POL 586 Conflict in the Middle East and Africa
POL 591 Problems in International Politics and Organization
POL 592 International Political Economy
POL 593 International Relations of the Middle East
POL 595 North-South Relations

• Public Administration, Policy, and Law:

POL 305 Introduction to Political Theory
POL 321 Public Policy and Administration
POL 322 Environmental Politics and Policy
POL 336 Politics of Crime
POL 337 International Law
POL 372 Introduction to Criminal Justice
POL 373 Constitutional Law I
POL 374 Constitutional Law II
POL 375 Supreme Court Issues
POL 376 Discrimination and the Law
POL 377 Constitutional Law III
POL 397 Policy for Urban Systems
POL 501 Budget and Financial Management and Administration
POL 521 Public Affairs Internship
POL 522 Introduction to Graduate Public Administration
POL 535 Courts as Political Institutions
POL 537 The Law and Politics of Sports
POL 541 Philosophy of Law
POL 542 American Constitutional Development
POL 545 Environmental Policymaking
POL 546 Public Policy
POL 551 Productivity in the Public and Non-Profit Sectors
POL 554 Social Welfare Policy
POL 555 Total Quality Public Service Management: Achieving High Performance Government

The following courses cannot be used to fulfill the 6-credit requirement at 500 level, although they do count toward the major and minor:

POL 501 Budget and Financial Management and Administration
POL 520 Internship
POL 521 Public Affairs Internship
POL 563 Senior Honors Thesis (I)
POL 564 Senior Honors Thesis (II)
POL 599 Directed Readings

NOTE: POL 213 does not count toward the major or minor.
The minor consists of at least 15 credits, at least 9 of which must be taken in residence.

To count toward a major or minor, each course must be completed with a grade of C- or higher, with an overall GPA of 2.0 or higher.

A special curriculum for students specializing in public administration enables them to complete the requirements for Bachelor's and Master's degree in Public Administration in five years.

For graduate work in Political Science, see the Bulletin of the Graduate School. Courses at the 600 level are not open to undergraduates.

**HONORS**

The Political Science Department participates in the General Honors and Departmental Honors Programs. Interested students are requested to contact the Department Chair for details about these programs.

[Political Science Course Listing](#)

**PSYCHOLOGY - Dept. Code: PSY**

[www psy.miami.edu](http://www.psy.miami.edu)

Students enroll in Psychology courses for various reasons:

1. To meet general education requirements in the Social Sciences (People and Society) or to serve as free electives.

2. In pursuit of a major or minor in Psychology
   
   a. as part of a broad liberal arts education.
   
   b. in fulfillment of the requirement of a second major in the School of Communication or the School of Education.
   
   c. as preparation for postgraduate study in Psychology or a related field including such diverse areas as medicine and law.

For curricular advice and for course and transfer approval etc., students should consult the Office of Undergraduate Academic Services for Psychology, Flipse 508, (305) 284-3303. Additional information may be found at [www.psy.miami.edu](http://www.psy.miami.edu).

**The Major in Psychology**

While most majors sample broadly from among the Departments offerings, students wishing to focus on a specific sub-area may select courses to provide a strong (though unofficial) specialization. There are, for instance, clusters of courses in child development, research methodology, the brain-behavior relationship, and pre-industrial/organizational that provide a basis for such a specialized major. For more information, contact an advisor in the Office of Undergraduate Academic Services for Psychology.
The following Departmental requirements are in addition to those specified by the College of Arts and Sciences:

**The Minor in Psychology**

The minor requires 15 credits in Psychology, with a grade of C- or better and a GPA of 2.0 or better for these 15 credits. No more than 3 of these credits may be in courses having no prerequisite, and no more than 3 credits may be in research courses (e.g., PSY 367). Of the 15 credits, 9 must have been completed at U.M.; with prior approval, 3 credits of these 9 may be taken through the U.M. Study Abroad Program.

**Grades Required to Declare and Continue**

A student must have an overall GPA of at least 2.3 to transfer from another major to Psychology, to declare Psychology as a second major, to change from Undeclared status to a Psychology major, or to transfer as a Psychology major from another institution. Students are strongly advised not to continue as Psychology majors if they, having completed 15 credits in Psychology, have a Psychology GPA of less than 2.3.

**Grades Required to Graduate**

A grade of C- or better is required in all courses applied to the Psychology major, and the GPA in these courses must be at least 2.3.

**Residency Requirement**

As part of a major in Psychology, students must complete at least 15 upper division (300 level and above) Psychology credits in residence at U.M. With prior Departmental approval, 6 of these 15 may be completed through the U.M. Study Abroad Program.

**Research Courses**

No more than 6 research credits (e.g., PSY 367) may count toward the major. PSY 498 does not count toward the major or minor.

**B.A. Degree Requirements**

The B.A. with a major in Psychology entails 30 credits in Psychology, including PSY 110. Students must also successfully complete a course in research design/statistics either PSY 204 (which counts toward the major and serves as a prerequisite for advanced methods courses), or SOC 210 or MAS 201 (which do not count toward the major or serve as prerequisites). Also required are 9 Psychology credits at the 300 level or higher and 6 additional credits at the 400 level or higher.

Students wishing to pursue careers in business, education, law, human resources, religion, social work, or other related fields often choose the B.A. degree. When it includes research-oriented courses such as PSY 204 and PSY 316, PSY 418, and research experience, the B.A. is also appropriate for students aspiring to graduate study in many areas within Psychology.

Students in the Schools of Communication and Education for which Psychology is a second major typically follow B.A. requirements.

**B.S. Degree Requirements**
The B.S. Psychology major entails 33 credits in Psychology, including PSY 110, PSY 204, PSY 316, and PSY 403 or PSY 418, plus 3 additional credits at the 300 level or higher and 6 additional credits at the 400 level or higher.

Psychology majors aspiring to graduate study in Psychology and related fields often pursue the B.S. degree, as do students planning to attend medical school. As with all College of Arts and Sciences B.S. majors, students pursuing the B.S. with a major in Psychology must elect a minor from among the following: Biochemistry, Biology, Chemistry, Computer Science, Geological Sciences, Engineering, Mathematics, Microbiology and Immunology, or Physics.

**Psychobiology Major**

The major in Psychobiology has become one of two tracks in the major entitled NEUROSCIENCE. Neuroscience is an interdisciplinary Bachelor of Science program offered through the Departments of Psychology and Biology in the College of Arts and Sciences in conjunction with the faculty from the Neuroscience Program in the School of Medicine.

For details, consult the program description listed under NEUROSCIENCE.

**General Policies**

**Research Participation**

As an introduction to behavioral science, students enrolled in PSY 110 may be required to gain research experience by participating as subjects in research studies being conducted by faculty and/or graduate students, or by reading and writing about selected research reports. For details, consult the course syllabus and/or contact the Department’s Research Participation Office. This requirement is not sufficient for students interested in attending graduate school in psychology. Students seeking course credit for working in the laboratory of a psychology faculty member should see the Director of Undergraduate Studies and sign up for PSY 367 or PSY 368.

**Course Prerequisites**

Most courses beyond the 100-level require students to have taken introductory or foundation courses. Students who have not taken a prerequisite course (or who have taken it and obtained a D or F) may not enroll in the course for which it is a prerequisite. Students without prerequisites may be dropped from the class roll.

**Transfer**

Transfer students wanting courses taken elsewhere to count as Psychology courses at U.M. must obtain written Departmental approval during their first semester at U.M. This is a separate process from the Admissions Evaluation of Transfer Credit.

Regularly enrolled students wishing to take a Psychology course elsewhere (e.g., during the summer) must obtain prior Departmental approval if they wish it to be counted in place of a U.M. Psychology course. In some cases, transfer courses not approved as part of the major or minor may still meet other distribution or elective requirements.

**Freshmen**
All freshmen receive their advising as a part of a year long advising and orientation program known as FACT FORUM. All freshmen declared as Psychology majors in the College of Arts and Sciences will be placed in a Freshman Experience section of FACT (Freshman Advising Contact Term). This is a one credit general elective course that is designed to integrate freshmen into the Department by familiarizing them with the guidelines, opportunities and responsibilities of a Psychology major. During the second semester, freshmen enroll in a FORUM section (Faculty Overview of Research and Undergraduate Mentoring). This one credit general elective course helps to put the curriculum in context, and stresses the importance of and opportunities for research.

**Honors and Distinction**

**Departmental Honors**

Any Psychology major may graduate with Departmental Honors in Psychology by attaining an overall GPA of at least 3.3 and a Psychology GPA of at least 3.5 and by completing PSY 204, PSY 316, and PSY 498/499. Thus, Departmental Honors entails both excellence in regular classes and completion of a Senior Honors Thesis.

Preparation for the Senior Honors Thesis should begin prior to the senior year and usually involves enrolling in PSY 367/8 during the sophomore or junior year. Permission to enroll in PSY 498 (Senior Thesis) is given only to students who have completed at least 18 credits in Psychology (including PSY 316) and whose overall and Psychology GPAs are at the levels required for graduation with Departmental Honors. To enroll in PSY 498, students must obtain written approval from both the faculty mentor who will supervise the thesis and the Department’s Director of Undergraduate Studies. These faculty members also assess the adequacy of the thesis upon completion. Students are expected to complete the Thesis course sequence; no grade is given for PSY 498 until the PSY 499 is complete and approved. Students who opt for a Senior Thesis often find that not all their credits in research courses count toward the major and that they thus might have more than the minimum number of Psychology credits upon graduation.

**Departmental Honors with Distinction**

To be eligible for this status, the student majoring in Psychology must also be in good standing in the University’s Honors Program and must complete the requirements of that program. Such students may earn Departmental Honors with Distinction by (a) fulfilling the above requirements for Departmental Honors, (b) completing 16 Psychology honors credits, including PSY 110, PSY 204, PSY 498 and PSY 499, completing one additional Psychology course at the 400 level or higher, and (d) completing all Psychology courses with a grade of B or better. Departmental Honors with distinction is a departmental designation. Students will receive a certificate of completion, but the designation will not be noted on the transcript or the diploma.

[Psychology Course Listing](www.as.miami.edu/religion)

**RELIGIOUS STUDIES - Dept. Code: REL**

[www.as.miami.edu/religion](www.as.miami.edu/religion)
The University regards the academic study of religion as an integral part of liberal, humane learning and seeks to assist students in understanding the role religion plays in human existence and culture. Instruction in the Department of Religious Studies is non-sectarian and seeks an open analysis of all points of view. Courses are designed to provide a general orientation to the academic study of religion for the undergraduate student, as well as more advanced exposure for those who wish to pursue professional careers where a study of religious ideas and institutions would be helpful, such as in psychology, sociology, history, journalism, teaching, law, medicine, the fine arts, religious education, the ministry, and the rabbinate.

The Department sponsors a Religious Studies Colloquium. It has enriched the existing curriculum by bringing to the campus such outstanding scholars as Elizabeth Kübler-Ross, Joachim Jeremias, Alvin Plantinga, Harry M. Orlinsky, Anson Rainey, Abraham J. Malherbe, Alan Segal, William May, Robert Segal, Douglas Allen, Marvin Sweeney, Martin Hengel, Martin E. Marty, and Juergen Moltmann.

MAJOR

A major in Religious Studies leading toward the B.A. degree requires 24 credits in Religious Studies, passed with a grade of C- or higher, and a GPA in the major of 2.0. At least 12 credits must be earned in courses numbered 300 or above, and six credits must be taken in each of two of the three following subject areas: 1) Religious Texts; 2) Historical Traditions; 3) Contemporary Issues. An undergraduate minor requires 12 credits, passed with a grade of C- or higher, and a GPA in the minor of 2.0. At least six credits must be earned in courses numbered 300 or above, and at least three credits must be taken in each of two of the three subject areas. Religious Studies 101 is required of all majors and minors.

Transfer students who major in Religious Studies must complete at least 12 credits in departmental courses numbered 300 or above in residence at the Coral Gables Campus. Transfers who wish to minor in the field must complete at least 6 credits in the same manner.

Majors, minors, and other students who meet certain academic criteria are eligible for membership in Theta Alpha Kappa, the National Honor Society for Religious Studies and Theology. Theta Alpha Kappa sponsors events that enhance the academic and social life of the department.

The Department of Religious Studies is also the home for the Society for the Study of Religions and Cultures (SSRC). This is a student group whose mission is to increase students’ knowledge and understanding of the world’s religions and the cultures in which they exist. The society’s events cover issues beyond what students learn in the classroom. Among other activities, field trips to different religious centers in the area provide first-hand experience with various religions and cultures. SSRC is open to all students.

Religious Studies Course Listing

SOCIOLOGY - Dept. Code: SOC
www.as.miami.edu/sociology

Course work in this department is designed to provide scientific training for understanding the organization and patterns of change in contemporary society, in addition to the
influence of social processes and culture on both individuals and groups. Sociology courses have several objectives, including:

a. general education

b. undergraduate preparation for pursuing careers in such fields as law and society, social gerontology, health and society, human resources management, and social planning.

c. preparation for graduate study in sociology.

MAJOR

A major in Sociology requires: a minimum of 31 credits, including Sociology 101, 210, 211, 212, 501, and one of the following courses: SOC 301, Social Organization; SOC 302, Social Psychology: Sociological Perspective; SOC 303, Social Inequalities. Students who wish to find employment in occupations related to sociology, or who are planning to pursue graduate studies in this field should also take GEG 481 or PSY 204. All courses taken for major credit must be passed with a grade of C- or higher with an overall GPA of 2.0.

MINOR

A minor in sociology consists of 15 credits in Sociology, including SOC 101 and at least six credits of which must be in courses at the 300 level or above. All courses taken for minor credit must be passed with a grade of C- or higher with an overall GPA of 2.0.

CRIMINOLOGY

The major in Criminology prepares students to assume roles of leadership in this critical area of modern society. Courses are designed to review theory, research, and applications of knowledge regarding delinquency and crime, in addition to understanding the manner in which offenders are processed. Detailed analyses are made of the functions of the law, police, courts, and correctional systems and the ways in which these are linked to broader aspects of society. The Criminology major requires a minimum of 31 credits in Sociology including: SOC 101, 210, 211, 212, 371, 470 and five additional Sociology or Criminology courses.

A minor in Criminology consists of 15 credit hours, including SOC 101 and SOC 371. A student majoring in Sociology may not minor in Criminology.

Sociology Course Listing

THEATRE ARTS - Dept. Code: THA

www.as.miami.edu/theatrearts

The University of Miami Department of Theatre Arts offers a pre-professional conservatory-based theatre training program leading to a Bachelor of Fine Arts degree in either performance, musical theatre, stage management, theatre management, or design/production. The Department also offers a liberal arts program leading to a Bachelor of Arts degree in theatre.

The Department also produces a season of plays and musicals at the Jerry Herman Ring Theatre as well as workshops and student projects in the Studio Theatre.
THE BACHELOR OF ARTS DEGREE
All students seeking a Bachelor of Arts degree in Theatre Arts must take the following courses with a grade of C- or higher in all Theatre Arts classes.

All Bachelor of Arts Candidates will take ALL FIVE of the following core courses:
THA 101, 141/143, 142/144, 481, and 482.

All Bachelor of Arts candidates will then choose SEVEN elective courses from the following list:

A minor in Theatre Arts consists of 15 credits of Theatre Arts classes with a minimum grade of C- in each course and an overall GPA of 2.0 or above.

The State of Florida recognizes the Bachelor of Arts and Bachelor of Fine Arts Degrees as meeting the Theatre Arts subject area requirements for teaching at the secondary level. In addition to earning the BA or BFA degree in Theatre, students desiring to teach in the field of Theatre Arts should complete the required education credits in order to be certified by the state.

THE BACHELOR OF FINE ARTS DEGREE
In addition to the general requirements for admission to the University, the student seeking admission to the BFA program must meet the following requirements of the Department of Theatre Arts:

1. Submission of a special supplementary application to the Department of Theatre Arts. (This form is in Part II of the University application).

2. An audition or interview/portfolio review to determine acceptance into the program. These audition/reviews will be held three times on the University of Miami campus as well as in major cities throughout the United States.

3. Design/technical production, stage management and theatre management students will be accepted into these programs on a probationary basis following an interview/portfolio review. Permanent acceptance into these programs will be made at the end of the freshman year by a thorough examination of the student’s portfolio.

Transfer students must follow the same entering procedures as freshmen and should realize that placement into the program will be determined by the Theatre Arts faculty. Candidates cannot transfer into the design/technical production, stage management and theatre management BFA degree program beyond their sophomore year. Transfer students are not allowed into the performance or musical BFA degree programs unless they are willing to begin on the freshman level in their conservatory curriculum.

The candidates for the degree of Bachelor of Fine Arts must satisfy the College of Arts and Sciences distribution requirements.

Each BFA student will be evaluated by the faculty at the end of each semester. This evaluation will determine if the student is invited to continue in the program. Additional evaluations will take place each time a student is involved in a project.
In Theatre Arts Department courses a 2.7 grade point average is required to remain in the BFA program. A Theatre Arts major must maintain a minimum grade of C- or higher in each required course outside the theatre. Failure to maintain satisfactory academic standing may result in the student being placed on academic probation by the Department.

Theatre Arts courses are progressive in nature and students must successfully complete each course in sequence. Failure to pass the requirements of any particular class in the conservatory may result in the student’s dismissal from the program.

Production activities and discipline within the Department will be governed by a student handbook, which will be supplied to the student in the summer prior to his/her freshman year and is available on the Department website (www.miami.edu/tha).

Students will be admitted to the Bachelor of Fine Arts degree program only in the fall of each academic year.

The following pages specify the course requirements for each area of the BFA program.

**DESIGN/TECHNICAL PRODUCTION CURRICULUM**

### FRESHMAN YEAR

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<td>THA 142 Introduction to Theatre Crafts II (Lecture)</td>
</tr>
<tr>
<td>THA 141 Introduction to Theatre Crafts I (Lecture)</td>
<td>THA 144 Introduction to Theatre Crafts II (Lab)</td>
</tr>
<tr>
<td>THA 143 Introduction to Theatre Crafts I (Lab)</td>
<td>THA 244 Drawing for the Theatre</td>
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<td>THA 243 Drawing for the Theatre</td>
<td>ENG 106 English Composition II</td>
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<td>THA 251 Intermediate Acting I</td>
<td>Liberal Arts</td>
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<tr>
<td>THA 365 Principles of Stage Management</td>
<td>Liberal Arts/Math</td>
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<tr>
<td>CIS 120 Introduction to Computer Information Systems</td>
<td>THA 266 Introduction to Producing and Managing Theatre</td>
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### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>THA 241 Advance Theatre Crafts I</td>
<td>THA 242 Advanced Theatre Crafts II</td>
</tr>
<tr>
<td>THA 343 Introduction to Design I</td>
<td>THA 344 Introduction to Design II</td>
</tr>
<tr>
<td>THA 385 History of Decor</td>
<td>THA 386 History of Fashion</td>
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<tr>
<td>THA 381 Play Analysis I</td>
<td>THA 382 Play Analysis II</td>
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<tr>
<td>THA 481 Theatre History I</td>
<td>THA 482 Theatre History II</td>
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### JUNIOR YEAR

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<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>THA 441 Design Studio IA</td>
<td>THA 442 Design Studio IB</td>
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<td>Liberal Arts/Language</td>
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<td>Liberal Arts</td>
<td>Liberal Arts</td>
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<td>THA 461 Play Direction I</td>
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### SENIOR YEAR

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<th>Second Semester</th>
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<tbody>
<tr>
<td>Design Studio II A</td>
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<tr>
<td>THA 401 Internship</td>
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<tr>
<td>THA 402 Internship</td>
<td>Liberal Arts</td>
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<td>Theatre elective</td>
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</tbody>
</table>

Notes:
1. Studio classes will be held in the student’s major interests, i.e., Design = Scenery, Costume, Lighting or Sound. Technical Production = Technical Direction, Production Management, or Costume Management.
2. All Design/Technical Production majors are required to participate in one show per semester for all four years.

3. THA 341 and 346 may be substituted for Design Studio with permission of advisor.

## MUSICAL THEATRE CURRICULUM

### FRESHMEN YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>THA 111 Acting I-A</td>
<td>THA 112 Acting I-B</td>
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<tr>
<td>THA 113 Movement I-A</td>
<td>THA 114 Movement I-B</td>
</tr>
<tr>
<td>THA 116 Dance I-A</td>
<td>THA 117 Dance I-B</td>
</tr>
<tr>
<td>THA 120 Freshman Studio I</td>
<td>THA 121 Freshman Studio II</td>
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<tr>
<td>THA 141 Introduction to Theatre Crafts I (Lecture)</td>
<td>THA 142 Introduction to Theatre Crafts II (Lecture)</td>
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<tr>
<td>THA 143 Introduction to Theatre Crafts I (Lab)</td>
<td>THA 144 Introduction to Theatre Crafts II (Lab)</td>
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<tr>
<td>THA 198 Voice and Speech (BFA only)</td>
<td>THA 196 Singing for the Stage (BFA only)</td>
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<tr>
<td>THA 198 Voice and Speech (BM only)</td>
<td>THA 198 Voice and Speech (BM only)</td>
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<td>MKP 102 Class Piano II OR</td>
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<tr>
<td>MKP 121 Class Piano/MTR Majors only (Level I)</td>
<td>MKP 122 Class Piano/MTR Majors Only (Level II)</td>
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<tr>
<td>MTC 111 Music Theory I</td>
<td>MTC 112 Music Theory II</td>
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<tr>
<td>MVP 105 Solfege</td>
<td>MTC 121 Music Theory Laboratory I</td>
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<tr>
<td>MVP VOA Voice</td>
<td>MVP VOB Voice</td>
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<tr>
<td>MKP 103 Class Piano III OR</td>
<td>MTP 221 Music Theory Laboratory III</td>
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<tr>
<td>MKT 123 Class Piano/MTR Majors Only (Level III)</td>
<td>ENG 106 English Composition II</td>
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<td>MTC 211 Music Theory III</td>
<td>MTH 101 Algebra for College Students</td>
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<tr>
<td>ENG 105 English Composition I</td>
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### SOPHOMORE YEAR

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<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>THA 211 Acting II-A</td>
<td>THA 212 Acting II-B</td>
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<tr>
<td>THA 216 Dance II-A</td>
<td>THA 217 Dance II-B</td>
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<tr>
<td>THA 296 Singing for the Stage II-A</td>
<td>THA 297 Singing for the Stage II-B</td>
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<tr>
<td>THA 298 Voice and Speech II-A</td>
<td>THA 299 Voice and Speech II-B</td>
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<tr>
<td>THA 347 Make-Up</td>
<td>THA 348 Voice and Speech II-B</td>
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<tr>
<td>MVP VOC Voice</td>
<td>THA 349 Voice and Speech II-B</td>
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<tr>
<td>MKP 103 Class Piano III OR</td>
<td>MTP 221 Music Theory Laboratory III</td>
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<tr>
<td>MKP 121 Class Piano/MTR Majors only (Level I)</td>
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<td>MTH 101 Algebra for College Students</td>
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<td>MTC 112 Music Theory Laboratory II</td>
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<td>ENG 105 English Composition I</td>
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### JUNIOR YEAR

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<td>THA 311 Acting III-A</td>
<td>THA 312 Acting III-B</td>
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<td>THA 313 Movement III-A</td>
<td>THA 314 Movement III-B</td>
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<td>THA 316 Dance III-A</td>
<td>THA 317 Dance III-B</td>
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<td>THA 397 Singing for the Stage III-B</td>
<td>THA 398 Voice and Speech III-B</td>
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<td>THA 398 Voice and Speech III-A</td>
<td>THA 482 Theatre History II</td>
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<tr>
<td>THA 481 Theatre History I</td>
<td>MVP VOI Voice</td>
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<td>MVP VOA Voice</td>
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### SENIOR YEAR

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<tr>
<td>THA 431 Musical Theatre Styles I</td>
<td>THA 432 Musical Theatre Styles II</td>
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<td>*THA 411 Acting IV-A</td>
<td>*THA 412 Acting IV-B</td>
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<tr>
<td>THA 415 Auditioning-I</td>
<td>THA 416 Auditioning-II</td>
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<tr>
<td>*THA 461 Play Direction I</td>
<td>THA 414 Movement III-B Stage Combat</td>
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<tr>
<td>THA 413 Movement III-A Stage Combat</td>
<td>THA 420 Senior Studio</td>
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<td>MVP VOG Voice</td>
<td>MVP VOH Voice</td>
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149
# Performance Curriculum

## Freshman Year

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<td>THA 114 Movement I-B</td>
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<td>THA 120 Freshman Studio I</td>
<td>THA 121 Freshman Studio II</td>
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<td>THA 141 Introduction to Theatre Crafts I (Lecture)</td>
<td>THA 142 Introduction to Theatre Crafts II (Lecture)</td>
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<td>THA 143 Introduction to Theatre Crafts I (Lab)</td>
<td>THA 144 Introduction to Theatre Crafts II (Lab)</td>
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<td>THA 198 Voice and Speech I-A</td>
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<td>THA 112 Acting I-B</td>
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<tr>
<td>THA 298 Voice and Speech II-B</td>
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<td>THA 347 Make-Up</td>
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<td>THA 381 Play Analysis I</td>
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## Sophomore Year

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<tr>
<td>THA 211 Acting II-A</td>
<td>THA 212 Acting II-B</td>
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<td>THA 298 Voice and Speech II-A</td>
<td>THA 299 Voice and Speech II-B</td>
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<tr>
<td>THA 347 Make-Up</td>
<td>THA 382 Play Analysis II</td>
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<tr>
<td>THA 381 Play Analysis I</td>
<td>Theatre Requirement or Theatre Elective</td>
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<tr>
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## Junior Year

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<td>THA 313 Movement III-A</td>
<td>THA 314 Movement III-B</td>
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<td>THA 398 Voice and Speech III-A</td>
<td>THA 399 Voice and Speech III-B</td>
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<td>THA 481 Theatre History I</td>
<td>THA 482 Theatre History II</td>
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## Senior Year

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<tbody>
<tr>
<td>THA 411 Acting IV-A</td>
<td>THA 412 Acting IV-B</td>
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<td>THA 413 Movement III-A (Stage Combat)</td>
<td>THA 414 Movement III-B (Stage Combat)</td>
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<td>THA 415 Auditioning-I</td>
<td>THA 416 Auditioning-II</td>
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<tr>
<td>THA 461 Play Direction I</td>
<td>THA 420 Senior Studio</td>
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<td>Theatre Requirement</td>
<td>Theatre Requirement or Elective</td>
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<td>Theatre Elective</td>
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<tr>
<th>Requirements</th>
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<tr>
<td>CBR 233 Television Performance</td>
<td>THA 101</td>
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<tr>
<td>CBR 315 Acting for the Camera OR</td>
<td>THA 115 Beginning Dance and/or</td>
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<td>Another approved dance class</td>
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<tr>
<td>THA 456 Improvisational Acting</td>
<td>THA 194 Singing for Actors I</td>
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<tr>
<td>THA 465 Theatre Management</td>
<td>THA 195 Singing for Actors I</td>
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<td>THA 195 Singing for Actors I</td>
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<td>THA 251 and/or 252 Scene Study</td>
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<td>THA or MVP 294 Singing for Actors II-A1</td>
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<td>THA or MVP 295 Singing for Actors II-B1</td>
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<td>THA 352 Singing for the Musical Theatre</td>
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<td>OR</td>
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<td>THA 432 Musical Theatre Styles II</td>
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<td>THA 455 Acting for the Camera</td>
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<td>THA 462 Directing for the Stage</td>
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<td>THA Playwriting</td>
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<td>CBR 592 Special Topics in Broadcasting</td>
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<td>Other approved courses</td>
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* indicates recommended
### STAGE MANAGEMENT CURRICULUM

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>THA 365 Principles of Stage Management 3</td>
<td>THA 463 Advanced Stage Management I 3</td>
</tr>
<tr>
<td>THA 141 Introduction to Theatre Crafts I (Lecture) 2</td>
<td>THA 142 Introduction to Theatre Crafts II (Lecture) 2</td>
</tr>
<tr>
<td>THA 143 Introduction to Theatre Crafts I (Lab) 1</td>
<td>THA 144 Introduction to Theatre Crafts II (Lab) 1</td>
</tr>
<tr>
<td>ENG 105 English Composition I 3</td>
<td>(Independent Study – Music/Score Reading)</td>
</tr>
<tr>
<td>CIS 120 Introduction to Computer Information Systems 3</td>
<td>ENG 106 English Composition II 3</td>
</tr>
<tr>
<td>Liberal Arts/MTC 110 Fundaments of Music 3</td>
<td>THA 266 Introduction to Producing and Managing Theatres 3</td>
</tr>
<tr>
<td>Liberal Arts 3</td>
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#### SOPHOMORE YEAR

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<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>THA 459 Stage Management Practicum ** 3</td>
<td>THA 459 Stage Management Practicum * 3</td>
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<tr>
<td>THA 243 Drawing for the Theatre 3</td>
<td>THA 244 Drawing for the Theatre II 3</td>
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<tr>
<td>THA 481 Theatre History I 3</td>
<td>THA 482 Theatre History II 3</td>
</tr>
<tr>
<td>THA 381 Play Analysis I 3</td>
<td>THA 382 Play Analysis II 3</td>
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<tr>
<td>THA 105 Introduction to Acting 3</td>
<td>Liberal Arts 3</td>
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#### JUNIOR YEAR

<table>
<thead>
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<tbody>
<tr>
<td>THA 464 Advanced Stage Management II 3</td>
<td>THA 459 Stage Management Practicum 3</td>
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<td>THA 242 Advanced Theatre Crafts II 3</td>
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<td>THA 461 Play Direction I 3</td>
<td>THA – Management Course TBD OR</td>
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<tr>
<td>THA Elective 3</td>
<td>MGT 304 Organizational Behavior 3</td>
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<td>Liberal Arts/Math 3</td>
<td>THA 344 Introduction to Design I (Lighting) 3</td>
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<td>PSY Course TBD 3</td>
<td>THA 462 Play Direction II 3</td>
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<td>Liberal Arts 3</td>
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#### SENIOR YEAR

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<tr>
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<tbody>
<tr>
<td>THA 459 Stage Management Practicum 3</td>
<td>THA 420 Senior Studio 3</td>
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<td>THA 561 Advanced Directing 3</td>
<td>THA 401 Internship 3</td>
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<td>Liberal Arts 3</td>
<td>THA 402 Internship 3</td>
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<td>THA Elective* 3</td>
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* THA Elective – must be a 200 level or above course  
** Offered both semesters but only taken for one.

**NOTE:**

1. All Stage Management majors are required to participate in a production capacity in one show per semester for all four semesters.

2. All Stage Management majors are required to stage manage or assistant stage manage one show in each year in their Sophomore, Junior and Senior year. This management assignment doubles as their production assignment for that particular semester.

3. THA 459 Stage Management Practicum can be repeated for a maximum of 12 credits.

### THEATRE MANAGEMENT CURRICULUM

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>THA 141 Introduction to Theatre Crafts I (Lecture) 2</td>
<td>THA 142 Introduction to Theatre Crafts II (Lecture) 2</td>
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<tr>
<td>THA 143 Introduction to Theatre Crafts I (Lab) 1</td>
<td>THA 144 Introduction to Theatre Crafts II (Lab) 1</td>
</tr>
<tr>
<td>THA Elective 3</td>
<td>THA 266 Introduction to Producing and Managing Theatre 3</td>
</tr>
<tr>
<td>ENG 105 English Composition I 3</td>
<td>ENG 106 English Composition II 3</td>
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<td>CAP 116 Introduction to Public Relations in Society 3</td>
<td>THA 244 Drawing for the Theatre II 3</td>
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<tr>
<td>CIS 120 Introduction to Computer Information</td>
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### Sophomore Year

<table>
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<th>First Semester</th>
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<tbody>
<tr>
<td>THA 105 Introduction to Acting</td>
<td>THA 367 Theatre Management Practicum</td>
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<td>THA 366 Theatre Management Practicum</td>
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<td>THA 381 Play Analysis I</td>
<td>BSL 212 Introduction to Business Law</td>
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<tr>
<td>ACC 211 Principles of Financial Accounting</td>
<td>CIS 316 Microcomputer Business Applications</td>
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<td>CAP 202 Graphics for Promotional Media</td>
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### Junior Year

<table>
<thead>
<tr>
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<tr>
<td>THA 401 Internship</td>
<td>THA 402 Internship</td>
</tr>
<tr>
<td>THA 461 Play Direction I</td>
<td>THA 467 Theatre Management III</td>
</tr>
<tr>
<td>THA 465 Theatre Management I</td>
<td>MKT 301 Marketing Foundations</td>
</tr>
<tr>
<td>COS 333 Business Communication</td>
<td>MGT 307 Advanced Organizational Behavior</td>
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<td>MGT 304 Organizational Behavior</td>
<td>Liberal Arts</td>
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<td>Liberal Arts</td>
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### Senior Year

<table>
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<td>THA 403 Internship</td>
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<tr>
<td>THA 463 Advanced Stage Management I</td>
<td>THA 482 Theatre History II</td>
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<td>THA 466 Theatre Management II</td>
<td>THA 468 Theatre Management IV</td>
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<td>THA 481 Theatre History I</td>
<td>MGT 353 The Organization and Operation of the</td>
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### Theatre Arts Course Listing

### Women's and Gender Studies

**www.as.miami.edu/wgs**

The Program in Women's and Gender Studies at the University of Miami seeks to encourage the rigorous investigation of gender as a significant issue in all areas of human experience. It reaches across disciplines to draw on a range of methods, theories, and perspectives that help us to understand how ideas and structures based on gender shape our lives. The program's core objective is to foster the examination, open discussion, and lively debate of gender issues among faculty and students from all fields of study, enriching the undergraduate curriculum and the university's academic mission through greater communication across disciplines and colleges. Its aim is to broaden, deepen, and transform the learning community at UM and beyond.

The undergraduate curriculum in Women's and Gender Studies explores the ways in which ideas about gender and sexuality shape social roles and identities, as well as the ways in which race, ethnicity, class, and nationhood influence the perception and experience of gender and sexuality within particular cultures. The curriculum is informed by recent scholarship that recognizes gender and sexuality as crucial components of human experience in social, cultural, economic, political, religious, and legal contexts. It includes courses that introduce students to feminist theory and scholarship, engaging ethical and political issues of equality and justice. The program encourages students to question their assumptions about the possible meanings of female and male through the comparative study of how different societies and historical periods have viewed manhood, womanhood, and relations between women and men. Courses in Women's and Gender Studies enable
students to acquire critical and analytical skills that they can then apply in other aspects of
their educational experience at UM and beyond the university in their careers and personal
development.

REQUIREMENTS FOR MAJOR AND MINOR IN WOMEN'S AND GENDER STUDIES

MAJOR

A major in Women's and Gender Studies consists of at least 30 credits in Women's and
Gender Studies courses (core, co-listed, and cross-listed) with a grade of C- or better in
each course, with a cumulative GPA of at least 2.0 in WGS courses. These credits must
include at least 18 at the 300 level or above. All majors must complete WGS 201:
Introduction to Women's and Gender Studies, WGS 301: Feminist Inquiries, and at least two
other WGS core courses.

All majors must complete WGS 501: Senior Research Project, which will take the form of an
individual research project with a faculty member of the student's choice; the student is
responsible for finding an appropriate faculty member who is available to supervise the
project and then must seek formal approval from the program director before proceeding
with the project. The student must produce a substantial written report or research paper,
the format of which will vary according to the nature of the project.

Women's and Gender Studies majors with a cumulative GPA of at least 3.5 in WGS courses
and an overall GPA of at least 3.0 may earn departmental honors by completing WGS 505:
Honors Thesis instead of the senior research project. Candidates for departmental honors
are responsible for finding a faculty member who is willing to serve as thesis adviser and
then must complete a thesis proposal of approximately 400 words which must be approved
by the thesis adviser and then the program director. The format and length of the thesis will
vary according to the nature of the project. Most students writing an honors thesis as part
of their WGS major will take WGS 505 twice (for a total of 6 credits).

MINOR

A minor in Women's and Gender Studies consists of at least 15 credits in Women's and
Gender Studies courses (core, co-listed, and cross-listed) with a grade of C- or better in
each course, with a cumulative GPA of at least 2.0 in WGS courses. These credits must
include at least 9 at the 300 level or above. All minors must complete WGS 201:
Introduction to Women's and Gender Studies, WGS 301: Feminist Inquiries and at least one
other WGS core course.

Women’s and Gender Studies Course Listing
The School of Business Administration offers courses leading to the degrees of Bachelor of Business Administration (BBA) and Bachelor of Science (BS). Undergraduate degrees in business are administered by the Associate Dean, Undergraduate Programs.

MISSION

The mission of the University of Miami School of Business is to provide an environment in which the creation and dissemination of business knowledge can flourish. The School will build on its competitive advantages of cultural diversity, geographic location, and outstanding faculty, to continually improve its programs and become nationally recognized as a premier school of business.

ACCREDITATION

The Bachelor of Science and the Bachelor and Master of Business Administration as well as the undergraduate and graduate Accounting programs are fully accredited by the AACSB – International, Association to Advance Collegiate Schools of Business, International.

ACADEMIC POLICIES

Student Responsibilities

- Students in the School of Business are responsible for planning their own programs and for meeting degree requirements.
- It is the student’s responsibility to understand fully, and to comply with all the provisions of this Bulletin and written changes to their program of study.
- Students are provided assistance by advisors and faculty members.
- Requests for deviation from department, program, or school requirements are granted only by written approval from the respective chairperson or dean.
- Students who are in violation of the provisions of this Bulletin may be withdrawn unilaterally by appropriate School officials from classes, deleted as Business students or have a stop placed upon their future enrollment.
- Information regarding appeal procedures and special requests relative to academic matters is available in Merrick 104, Office of Undergraduate Business.

Admission to Lower and Upper Level Study

Admission to the University for undergraduate study as a freshman is sufficient to be granted admission to the School. All students with fewer than 60 semester hours (lower level) may select an intended major and minor(s). Students who do not state an intended major are listed as undeclared in business. Students in the lower level are not permitted to take 300 or higher level courses in Accounting, Finance, Management and Marketing. In order to continue in the School with more than 60 semester hours, individuals must seek and be granted upper level status.

The School accepts only those lower level students for upper level that meet the following requirements. Admission to upper level status depends upon an individual having:

1. Successfully completed at least 60 semester hours.
2. a. For Bachelor of Business Administration: Successfully completed Accounting 211, 212, Business Law 212, Economics 211, 212, English 105, 106, Management Science 110, 201, 202 and Political Science 211.
   b. For Bachelor of Science: Successfully completed Accounting 211, 212, Business Law 212, Economics 301, 302, English 105, 106, Mathematics 111, 112, Management Science 311, 312, and Political Science 211.

3. Made satisfactory progress toward graduation and not be on academic warning or probation.

4. Made formal application for admission to upper level. Timetables and application procedures are available from the Office of Undergraduate Business. Students applying for upper level status must also list the major(s) and minor(s) to be completed while in the upper level.

Applicants denied admission to upper level in the School of Business Administration may apply to another School or College in the University. However, students denied admission to upper level who are accepted by another School or College in the University are not permitted to re-enter the School of Business Administration at a later date to complete Business School undergraduate degree requirements.

Transfer Students

Requirements for admission with advanced standing are the same for all those transferring from accredited institutions whether it is a two-year or four-year institution.

- The applicant must present a satisfactory academic record in compliance with the standards of the Office of Admission.
- All previous college work must be from an accredited institution, and the student must be in good academic standing at all the institutions previously attended.
- Students who will have earned 45 or more credits at matriculation must have received college credit [B or higher] for a calculus course.
- Students who will have earned fewer than 45 credits at matriculation must have received college credit [B or higher] for at least a pre-calculus course.
- Upper Level Courses in advanced business subjects required by the School and taken in baccalaureate institutions in the junior and senior year will be accepted as equivalent if the school is AACSB accredited. If the school is not accredited, the courses will be accepted subject to oral or written examinations for equivalency.
- Upper level business courses taken in the freshman or sophomore year at a two-year or four-year institution will be accepted as other electives. Students who feel these courses are equivalent to UM upper level business courses may request validation from the individual major department.
- The Dean of the School of Business Administration determines which transferred courses may be counted toward meeting the Bachelor of Business Administration and Bachelor of Science graduation requirements.
- Transfer courses with quality points lower than 2.0 are not accepted toward requirements.
- Students who transfer to undergraduate study in the School of Business must take the courses appropriate to their programs of study as required by the School of Business if they have not had equivalent courses in the schools from which they transfer.
- Transfer students must complete at least one half of the Business Core Curriculum at the University of Miami.
- One half of the major and minor courses must be completed at the University of Miami with a minimum quality point average of 2.0 (or higher depending on major) regardless of the number of major or minor courses transferred.
Academic Progress and Probation

- The School of Business Administration will review each student’s record at the end of each semester.
- When a student’s semester or cumulative average is less than 2.0, or progress toward degree completion is unsatisfactory, the student will be placed on academic probation or warning in accordance with University policies and procedures.
- Full-time business students who are not completing sufficient courses to graduate after ten regular semesters of enrollment are deemed not to be making satisfactory academic progress.
- The extent to which a student’s record is below a 2.0 average determines the severity of the sanction, i.e., warning or academic probation.
- Students on probation are not permitted to enroll in more than 13 semester hours and may have a STOP placed upon their future enrollment until grades for work-in-progress are reviewed.

Academic Dismissal

- Business students are dismissed by University Dismissal Standards.
- Additionally, a student in the School of Business Administration whose quality point average or progress toward degree completion falls below the level of the minimum standards of the School may be dismissed.
- Students may also be precluded from continuing their studies in a major or courses if they do not have the specified grades for the major or courses.
- A student who is precluded from continuing as an undergraduate business student because of failure to satisfactorily complete the required lower level courses or to attain a high enough grade point average is not considered as having been academically dismissed from the University. Accordingly, such students may apply to another School or College and if accepted, continue as students at the University of Miami.

Freshman Repeat Rule (FRR)

The following procedures are applied specifically to Business students using the University’s Freshman Repeat Rule (FRR).

The student’s academic standing is based upon the current grades being counted as credits attempted or earned.

- Students who repeat a course not under the provisions of the FRR are administered using the University General Repeat Rule.
- Students desiring to implement FRR must complete the FRR Request Form which is available in the Office of Undergraduate Business.
- The summer sessions are not counted as a semester in computing the two semesters in which a student may elect to repeat a course with a D or F grade. Additionally, a student who initially enters the University in the spring semester may repeat courses with a D or F grade taken in the summer sessions following initial enrollment without having the summer sessions count as one of the first two semesters.
• For additional information about the FRR, consult an Undergraduate Business Academic Advisor.

Readmission

• Business students withdrawing from the University must complete the “Complete Withdrawal” procedure through the Office of the Registrar.
• A student who has not been enrolled at the University of Miami for at least one full semester must apply for readmission through the Office of the Registrar.
• A student who is out of the School for more than two years returns under the provisions of the Bulletin in effect at the time of readmission.
• Students requesting readmission who were previously dismissed for academic reasons or who had below a 2.0 quality point average must present adequate evidence that the conditions and/or factors that caused their prior poor academic performance have changed sufficiently and that there is a reasonable expectation of satisfactory performance if they are permitted to resume study in the School.
• Additionally, students with prior unsatisfactory academic records who are readmitted may have conditions associated with their readmission.
• Failure to satisfactorily accomplish the stated conditions may result in the student not being permitted to register for future semesters.

Changes to Academic Requirements

The School reserves the right to change academic requirements to include course offerings to ensure that students are receiving the latest knowledge. Changes are transmitted to students by written notice or by academic advisors and mentors.

REQUIREMENTS FOR GRADUATION

Residence Requirements: A candidate for the B.B.A. or B.S. degree must earn the last 45 credits consecutively and exclusively in degree-seeking status in residence at the School of Business, University of Miami, as well as meet the graduation requirements listed in Academic Program below. Credit by examination may not be used to meet the residency requirements.

Age of Credits: Credits more than 12 years old are not normally recognized for degree purposes.

Grade Point Average: In addition to a minimum of 120 semester hours, students must have an overall quality point average of at least 2.0 on all undergraduate courses and a quality point average of at least 2.0 on all undergraduate courses taken at the University of Miami. Some majors require a higher quality point average.

Percentage of credits at UM required: At least fifty percent of the Business Foundation, fifty percent of the Upper Level Business Core and fifty percent of the Major and Minor credit hours must be completed at the University of Miami.

Application for Graduation: Failure to apply for graduation in a timely manner will result in the student not being officially graduated until the end of a later semester or summer session.
ACADEMIC PROGRAM FOR BACHELOR OF BUSINESS ADMINISTRATION

All Bachelor of Business Administration majors complete areas A, B, C, D, and E as listed below:

Areas of Study: (All courses except “other elective courses” must be taken for a graded credit.):

A. REQUIRED GENERAL EDUCATION:
(Approved Freshman Seminars may be used to satisfy some of the General Education requirements.)

1. English (9 Semester Hours)
   a. ENG 105 and ENG 106
   b. Select one course from ENG 306, ENG 330, ENG 331 or COS 333

2. Arts and Humanities (12 Semester Hours)
   Select one from each of first three areas
   a. Fine Art
      Any fine art course such as: art, art appreciation, music or music appreciation or theory, theater or theater appreciation, architecture or architecture appreciation, 200 level dance or dance appreciation, survey of motion pictures, creative writing, public speaking.
   b. English Literature
      Any literature course in the English language. May be at the 200 level or above.
   c. Philosophy of Religion
      Any course in philosophy or religion.
   d. A second course from any of the above fields – or – a graded course in a foreign (not native or heritage) language at level 102 or above.

3. Quantitative Foundation (9 Semester Hours)
   MAS 110 and MAS 201 and MAS 202

4. Natural World (6 Semester Hours)
   a. One course in life science, e.g.: biology, ecosystems, physical anthropology
   b. One course in physical science, e.g.: physics, chemistry, geology, physical geography, acoustics, marine science, physical science

5. People and Society (21 Semester Hours)
   a. ECO 211, ECO 212, ECO 302, POL 211, POL 213
   b. Any course from the department of history
   c. One behavioral social science course, e.g.: psychology, sociology, anthropology, also courses in educational psychology, geography, architecture (urban planning), social foundations of education, interdisciplinary studies, e.g.: Africana, American, communications, Judaic, women’s.

6. Writing Across the Curriculum- All students must complete a minimum of five courses (15 semester hours) designated as writing (W) courses to qualify for graduation.

7. General Education Elective (3 Semester Hours): Choose one course (not less than 3 semester hours) from a department outside the School of Business Administration
   Note: MAS 105, if required by placement, may be used to satisfy this General Education Requirement
B. BUSINESS FOUNDATION REQUIREMENTS
   1. ACC 211 and ACC 212 (6 Semester Hours)
   2. BSL 212 (3 Semester Hours)

C. UPPER LEVEL BUSINESS CORE
   1. CIS 410 (3 Semester Hours) CIS majors will take CIS 465
   2. FIN 302 (3 Semester Hours) MAY ONLY BE TAKEN AFTER
      ADMISSION TO UPPER LEVEL
   3. MGT 303 and MGT 304 (6 Semester Hours) MAY ONLY BE TAKEN
      AFTER ADMISSION TO UPPER LEVEL
   4. MGT 401 (3 Semester Hours) MUST BE TAKEN IN THE LAST
      SEMESTER BEFORE GRADUATION
   5. MKT 301 (3 Semester Hours) MAY ONLY BE TAKEN AFTER
      ADMISSION TO UPPER LEVEL
   6. One course (3 Semester Hours) from a functional area of Business
      (ACC, FIN, MGT, MKT). MAY ONLY BE TAKEN AFTER ADMISSION TO
      UPPER LEVEL.

D. MAJOR/MINOR REQUIREMENTS
All students must complete the requirements for at least one major in one of
the areas of specialization. Additionally, students may elect to complete a
minor in an area of specialization other than their major. The minor may be in
an area of specialization offered by the School of Business Administration or
by another school or college of the University. The major and minor
requirements are specified by each department. All specialization
(major/minor) requirements must be taken for a grade and completed with a
grade of C- or higher with an overall grade point average in all major and
minor courses attempted of at least a 2.0 unless a higher average is
prescribed for a specific major or minor.

Dual Majors are also possible, pending proper scheduling. The only specialized
courses that can be counted toward two majors or a major and a minor are
those courses specifically listed by number as required for both majors and
minors. The elective business departmental courses required for one major or
minor may not be utilized to satisfy requirements for a second major or
minor. Business students desiring another major outside the School of
Business must complete all requirements for both degrees and majors.
Students in other colleges and schools desiring a major in the School of
Business must complete all requirements for both degrees and majors.

Students are required to finalize their majors and minors prior to the start of
their senior year and advise the Office of Undergraduate Business. Students
are advised that it often takes more than the minimum 120 semester hours to
complete a minor or second major.

For Bachelor of Business Administration Majors

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<thead>
<tr>
<th>Areas of Major Specialization are</th>
<th>Responsible Department</th>
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<tbody>
<tr>
<td>1. Accounting (ACC)</td>
<td>ACC</td>
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<tr>
<td>2. Business Management and Organization (BMO)</td>
<td>MGT</td>
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<tr>
<td>3. Computer Information Systems (CIS)</td>
<td>CIS</td>
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</tbody>
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4. Economics (ECO)  
5. Entrepreneurship (ENT)  
6. Finance (FIN)  
7. Human Resource Management (HRM)  
8. International Finance and Marketing (IFM)  
9. Legal Studies (LST)  
10. Marketing (MKT)  
11. Political Science (POLB)

For Bachelor of Business Administration Majors

Areas of Minor Specialization in business are:  
Responsible Department:
1. Accounting (ACCB)  
   Responsible Department: ACC  
2. Business Management and Organization (BMOB)  
   Responsible Department: MGT  
3. Computer Information Systems (CIS)  
   Responsible Department: CIS  
4. Economics (ECOB)  
   Responsible Department: ECO  
5. Finance (FIN)  
   Responsible Department: FIN  
6. International Business (IBU)  
   Responsible Department: FIN  
7. Legal Studies (BSL)  
   Responsible Department: BSL  
8. Management Science (MAS)  
   Responsible Department: MAS  
9. Marketing (MKTB)  
   Responsible Department: MKT  
10. Political Science (POLB)  
    Responsible Department: POL

Areas of Minor Specializations offered by other colleges and schools
Please see the college, school, or department section within the Bulletin.

E. OTHER ELECTIVES (as required to achieve 120 semester hours)
All undergraduate courses offered by the University may be used as other electives with the following exceptions. Not more than eight credits in applied music including band can be used. Courses taken in the following subjects require prior approval of the Dean: athletic, physical and recreational activity courses offered in Exercise and Sport Sciences, Paralegal Studies, Vocal Performance and Teaching and Learning. Additionally, ENG 103, Basic Writing Skills and MTH 099, Intermediate Algebra are offered not for credit toward graduation. Other electives may be taken for Credit Only.

ACADEMIC PROGRAM FOR BACHELOR OF SCIENCE
All Bachelor of Science majors in the School of Business complete areas A, B, C, D, and E as listed below:

Areas of Study: (All courses except “other elective courses” must be taken for a graded credit.):

A. REQUIRED GENERAL EDUCATION:
(Approved Freshman Seminars may be used to satisfy some of the General Education requirements.)
1. English (9 Semester Hours)
   a. ENG 105 and ENG 106  
   b. Select one course from ENG 306, ENG 330, ENG 331 or COS 333
2. Arts and Humanities (12 Semester Hours)
   Select one from each of first three areas
a. Fine Art
   Any fine art course such as: art or art appreciation, music or music
   appreciation or theory, theater or theater appreciation, architecture
   or architecture appreciation, 200 level dance or dance appreciation,
   survey of motion pictures, creative writing, public speaking.

b. English Literature
   Any literature course in the English language. May be at the 200
   level or above.

c. Philosophy or Religion
   Any course in philosophy or religion.

d. A second course from any of the above fields – or – a graded
   course in a foreign (not native or heritage) language at level 102 or
   above.

3. Quantitative Foundation (14 Semester Hours)
   a. MTH 111 and MTH 112
   b. MAS 311 and MAS 312

4. Natural World (8 Semester Hours)
   Science courses to total at least 8 credits

5. People and Society (15 Semester Hours)
   a. One People and Society course such as anthropology, history,
      psychology, sociology, or ECO 211.
   b. ECO 301, ECO 302
   c. POL 211, POL 213

6. Writing Across the Curriculum- All students must complete a minimum of
   five courses (15 semester) hours designated as writing (W) courses to qualify
   for graduation.

7. General Education Elective (2-3 Semester Hours): Choose one course from
   a department outside the School of Business Administration. MASS majors
   use MTH 210 as general education elective.

B. BUSINESS FOUNDATION REQUIREMENTS
   1. ACC 211 and ACC 212 (6 Semester Hours)
   2. BSL 212 (3 Semester Hours)

C. UPPER LEVEL BUSINESS CORE
   1. CIS 410 (3 Semester Hours) CISS majors will take CIS 465
   2. FIN 302 (3 Semester Hours) MAY ONLY BE TAKEN AFTER
      ADMISSION TO UPPER LEVEL
   3. MGT 303 and MGT 304 (6 Semester Hours) MAY ONLY BE TAKEN
      AFTER ADMISSION TO UPPER LEVEL
   4. MGT 401 (3 Semester Hours) MUST BE TAKEN IN THE LAST
      SEMESTER BEFORE GRADUATION
   5. MKT 301 (3 Semester Hours) MAY ONLY BE TAKEN AFTER
      ADMISSION TO UPPER LEVEL
   6. One course (3 Semester Hours) from a functional area of Business
      (ACC, FIN, MGT, MKT). MAY ONLY BE TAKEN AFTER ADMISSION TO
      UPPER LEVEL.

D. MAJOR/MINOR REQUIREMENTS
   All students must complete the requirements for at least one major in one of
   the areas of specialization. Additionally, students may elect to complete a
minor in an area of specialization other than their major. The minor may be in an area of specialization offered by the School of Business Administration or by another school or college of the University. The major and minor requirements are specified by each department. All specialization (major/minor) requirements must be taken for a grade and completed with a grade of C- or higher with an overall grade point average in all major and minor courses attempted of at least a 2.0 unless a higher average is prescribed for a specific major or minor.

Dual Majors are also permitted, pending proper scheduling. The only specialized courses that can be counted toward two majors or a major and a minor are those courses specifically listed by number as required for both majors and minors. The elective business departmental courses required for one major or minor may not be utilized to satisfy requirements for a second major or minor. Business students desiring another major outside the School of Business must complete all requirements for both degrees and majors. Students in other colleges and schools desiring a major in the School of Business must complete all requirements for both degrees and majors.

Students are required to finalize their majors and minors prior to the start of their senior year and advise the Office of Undergraduate Business. Students are advised that it often takes more than the minimum 120 semester hours to complete a minor or second major.

For Bachelor of Science Majors

**Areas of Major Specialization are:**

| 1. Accounting (ACCS)      | ACC   |
| 2. Business Management and Organization (BMOS) | MGT   |
| 3. Computer Information Systems (CISS)      | CIS   |
| 4. Economics (ECOS)      | ECO   |
| 5. Entrepreneurship (ENTS)     | MGT   |
| 6. Finance (FINS)          | FIN   |
| 7. Human Resource Management (HRMS)         | MGT   |
| 8. International Finance and Marketing (IFMS) | FIN   |
| 9. Legal Studies (LSTS)       | BSL   |
| 10. Management Science (MASS)    | MAS   |
| 11. Marketing (MKTS)         | MKT   |
| 12. Political Science (POLS)     | POL   |

For Bachelor of Science Majors

**Areas of Minor Specialization in business are:**

| 1. Accounting (ACCB)      | ACC   |
| 2. Business Management and Organization (BMOB) | MGT   |
| 3. Computer Information Systems (CIS)      | CIS   |
| 4. Economics (ECOB)      | ECO   |
| 5. Finance (FIN)          | FIN   |
| 6. International Business (IBU)         | FIN   |
| 7. Legal Studies (BSL)       | BSL   |
| 8. Management Science (MAS)    | MAS   |
| 9. Marketing (MKTB)         | MKT   |
| 10. Political Science (POLB)     | POL   |
Areas of Minor Specialization offered by other colleges and schools
Please see the college, school, or department section within the Bulletin.

MINORS IN BUSINESS ADMINISTRATION (9-18 Semester Hours for Minor)

The School of Business Administration cooperates with other schools and colleges of the University by offering minors in:

Business Administration
Business Law
Computer Information Systems
Economics
Finance
Management
Management Science
Marketing
Political Science

The International Business minor and the Accounting minor are offered only to undergraduate business students.

Students interested in completing a minor offered by the School of Business Administration should consult with the academic advisor in the school or college of their major to determine if a minor in business is acceptable. The student must also consult with an academic advisor in the Office of Undergraduate Business for assistance in planning the minor. All courses within the minor must be taken for a grade and completed with a C- or higher grade with an overall grade point average of at least 2.0 in all minor courses unless a higher grade or grade point average is prescribed by the department. All courses in the minor department in which the student enrolls will count toward the minor grade point average.

The minor in Business Administration (BUA) consists of four courses (12 semester hours). The required courses for the minor in Business Administration are:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>Accounting 211</td>
<td>3 semester hours</td>
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<tr>
<td>Management 304</td>
<td>3 semester hours</td>
</tr>
<tr>
<td>Finance 300</td>
<td>3 semester hours</td>
</tr>
<tr>
<td>Marketing 301</td>
<td>3 semester hours</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12 semester hours</strong></td>
</tr>
</tbody>
</table>

NOTE: A student must have 30 earned credits before enrolling in ACC 211. Additionally, a student must have 60 earned credits before enrolling in a FIN, MGT, or MKT course. It is recommended that ACC 211 is the first course taken for the BUA minor.

For a listing of the course requirements for other minors, consult the Bulletin section for the department that offers the minor.

GENERAL HONORS PROGRAM IN THE SCHOOL OF BUSINESS

Students who have demonstrated superior performance may receive academic advantages, certain privileges, and recognition by participation and successful completion of the General Honors Program of the School of Business Administration.
The core for the SBA General Honors is 15 credits:

BSL 212 Introduction to Business Law
MKT 301 Marketing Foundations
FIN 302 Fundamentals of Finance
MGT 304 Organizational Behavior
MGT 401 Strategic Management

In addition, nine hours of courses outside of Business that are designated “Honors” will also be taken. The honors student who maintains a 3.5 grade point average will receive the notation, “General Honors in Business” on the transcript.

GRADUATION HONORS

• Students who qualify based on their grade point average and who desire to graduate with graduation honors, Magna cum laude or Summa cum laude Honors must complete approved independent study, senior thesis or other designated courses and successfully complete an approved thesis or project.

• Students planning to accomplish these requirements must consult with the department chairperson for their major prior to their senior year of study.

• For details consult the Office of Undergraduate Business and the Office of the Honors Program.

HONOR SOCIETIES

Beta Alpha Psi (Accounting)
Beta Gamma Sigma (Business)
Omicron Delta Epsilon (Economics)
Pi Sigma Alpha (Political Science)
Hyperion Council (School of Business)

ACADEMIC PROGRAMS

ACCOUNTING - Dept. Code: ACC

EDUCATIONAL OBJECTIVES
The objective of the program of studies in accounting is to prepare students to make a smooth transition from college into a successful and meaningful career in the professional practice of accounting, whether it be in public, private, or governmental accounting. Because of the professional aspects of accounting, equal emphasis is placed upon general education in the arts and humanities and the functioning of business enterprises, as well as the basic underlying concepts of accounting.

MAJOR IN ACCOUNTING
The undergraduate curriculum consists of 24 semester hours of Accounting and three semester hours of Business Law beyond the business course requirements. The following courses are required:

ACC 301
ACC 303
ACC 306
ACC 311
ACC 312
ACC 402
ACC 404
BSL 301

Additionally, students must select one of the 500-level courses in accounting (exclusive of ACC 550). To continue as an accounting major, a student must have a cumulative grade point average of 2.5 or higher before enrolling in ACC 312.

**MINOR IN ACCOUNTING**
The Department of Accounting allows business students to earn a Business minor in accounting. In addition to the general requirements for all business minors, business students wishing to minor in accounting must complete ACC 301, 303 and 311.

**FLORIDA CPA EXAM**
Persons who apply to sit for the CPA exam in Florida and most other states are required to complete at least 30 semester hours beyond the baccalaureate degree. Accordingly, many of our graduates satisfy the 30 semester hours requirement for the CPA by continuing on for a fifth year during which time they also can complete the requirements for either the Master of Professional Accounting or Master of Science in Taxation degree. Students interested in these programs should consult with the Director of Graduate Programs within the Department.

It is possible to satisfy the 30-additional hour requirement for the CPA exam without completing a graduate degree or by pursuing another degree program. However, students planning to do so should plan their program of studies in consultation with a faculty member of the Accounting Department.

Accounting Course Listing

**BUSINESS LAW - Dept. Code: BSL**

**EDUCATIONAL OBJECTIVES**
The modern manager faces increasing legal implications in daily operations and in formulating business policy. Effective decision-making requires an appreciation of the social, ethical, and political basis of law as it relates to business. Business law courses provide the student with insight into legal institutions, the nature of legal language, the regulatory environment as well as substantive principles of contracts, sales, business organizations and commercial relationships. Business law courses feature the use of problem-solving techniques that aim to develop the analytical decision-making capacity of the students.

**MAJOR IN BUSINESS LAW**
A student may major in Legal Studies. This course of study facilitates the interaction between legal counsel and the business manager.
A major in Legal Studies includes:
BSL 212 (required)
BSL 485 (required)

and

Twelve additional credits taken from the BSL Departmental offerings.

**MINOR IN BUSINESS LAW**
Students in the School of Business Administration as well as students in the other Schools and Colleges of the University of Miami may minor in Legal Studies.

Twelve credits are required for the minor including BSL 212, BSL 485 plus six additional credits taken from the BSL Departmental offerings.

[Business Law Course Listing](#)

**COMPUTER INFORMATION SYSTEMS - Dept. Code: CIS**

The Computer Information Systems Department serves the University as the focus for employing Information Technology (IT) in the efficient solution of the entire range of business problems. The courses and degree programs are described below.

The administration and management of today’s business and government organizations rely heavily upon Information Technology for the efficient achievement of their goals. Collection, storage, and retrieval of data by computers are involved in the wide range of business activities including daily operations, management decision-making, and long-range planning. As the dependence of management on Information Technology grows, so does the need for Information Technology specialists.

The Computer Information Systems major is designed to provide the student with the key Information Technology skills needed in today’s business environment, plus a firm grounding in the major business areas in which these skills will be applied. Graduates of the program may qualify for entry-level positions as programmers, systems analysts, consultants, user support analysts, or other Information Technology positions.

**MAJOR IN COMPUTER INFORMATION SYSTEMS**

**REQUIRED CORE: 24 credits**
CIS 320: Introduction to Programming
CIS 324: Object-Oriented Programming in Java
CIS 360: Analysis of Information Systems
CIS 361: Design of Information Systems
CIS 430: Business Telecommunications
CIS 465: Applied Software Project Development
CIS 496: Web Application Technologies
CIS 523: Database Management Systems

**TECHNICAL ELECTIVES: 3 credits**
CIS323: Objected-Oriented Programming in C++
CIS 390-399. Topics in Computer Information Systems (with Departmental approval)
CIS 490-498. Topics in Computer Information Systems (with Departmental approval)
CIS 499. Directed Study in Computer Information Systems (with Departmental approval)
CIS 550. Computer Information Systems Internship (with Departmental approval)
CIS 590-599. Topics in Computer Information Systems (with Departmental approval)
Note: All major courses must be completed with a grade of C- or better. In addition, an overall GPA of 2.5 or higher is required for all courses in the major.

MINOR IN CIS
The minor in Computer Information Systems consists of:
CIS 320
CIS 360
and two of the following:
CIS 323
CIS 324
CIS 361
CIS 430
CIS 496
CIS 523

Computer Information Systems Course Listing

ECONOMICS – Dept Code: ECO

Economics uses the idea of maximizing behavior to provide a unified framework for studying human action. The economics curriculum is designed to give students an understanding of economic theory and its application to a wide range of human behavior. The program provides excellent preparation for careers in business, in government, and in international agencies. It is particularly recommended for students planning graduate study or professional training in fields such as law, business, international studies, public administration, and economics.

MAJOR
The major in economics consists of at least 24 credits, which must include:
ECO 211
ECO 212
ECO 301
ECO 302

MINOR
Business students may also minor in economics by taking nine credits in addition to the business core courses of ECO 211, 212, and 302.

Non-business students in any School may minor in economics. Non-business students should consult the listing in the College of Arts and Sciences section or contact the department for the requirements for a minor.

Note: All courses submitted for the major or minor must be completed with a grade of C- or higher and with an overall grade point average of C or higher.

DEPARTMENTAL HONORS
Academically qualified students may elect to take courses from the Department’s curriculum for Honors credit.

Members of the Department are prepared to counsel students in the selection of courses and in other matters relating to the preparation for careers.
Economics may be the major of a candidate for the Master of Arts and Doctor of Philosophy degrees. General requirements for these are listed in the Bulletin of the Graduate School.

Economics Course Listing

FINANCE - Dept. Code: FIN

The following majors are offered by the Finance Department:
Finance
International Finance and Marketing

Requirements for each major are listed below. All majors are required to take FIN 302, Fundamentals of Finance.

FINANCE MAJOR (18 credits)
Important Note: To major in finance, a student must earn a grade of B or better in FIN 302, and have a cumulative UM GPA of 2.5 or higher, after having completed FIN 302.

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 303 Intermediate Financial Management</td>
<td>FIN 302</td>
</tr>
<tr>
<td>FIN 320 Investment and Security Markets</td>
<td>FIN 302</td>
</tr>
</tbody>
</table>

Note: Students are strongly encouraged to take FIN 303 and FIN 320 during the same semester.

Plus four elective courses from the following list (at least two 400 or 500 level);

<table>
<thead>
<tr>
<th>Course</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 330 International Finance</td>
<td>FIN 302</td>
</tr>
<tr>
<td>FIN 340 Real Estate Principles</td>
<td>FIN 300 or FIN 302</td>
</tr>
<tr>
<td>FIN 344 Real Estate Investment Analysis</td>
<td>FIN 302, FIN 340</td>
</tr>
<tr>
<td>FIN 401 International Business Analysis</td>
<td>FIN 330 or MKT 360, Sr. Standing</td>
</tr>
<tr>
<td>FIN 404 Applications in Corporate Finance</td>
<td>FIN 302, FIN 303, FIN 320</td>
</tr>
<tr>
<td>FIN 405 Analysis with Finance Software</td>
<td>FIN 302, FIN 303, FIN 320</td>
</tr>
<tr>
<td>FIN 410 Financial Institutions and Markets</td>
<td>FIN 302, FIN 303, FIN 320</td>
</tr>
<tr>
<td>FIN 411 Commercial Bank Management</td>
<td>FIN 302, FIN 303, FIN 320</td>
</tr>
<tr>
<td>FIN 421 Investment Portfolio Management</td>
<td>FIN 302, FIN 303, FIN 320</td>
</tr>
<tr>
<td>FIN 422 Speculative Markets and Derivatives</td>
<td>FIN 302, FIN 303, FIN 320</td>
</tr>
<tr>
<td>FIN 425 Business and Security Valuation</td>
<td>FIN 302, FIN 303, FIN 320</td>
</tr>
<tr>
<td>FIN 431 International Financial Management</td>
<td>FIN 302, FIN 330</td>
</tr>
<tr>
<td>FIN 476 Pure Risk Management</td>
<td>FIN 302, FIN 303, FIN 320</td>
</tr>
<tr>
<td>FIN 499 Special Topics in Finance</td>
<td>FIN 302, FIN 303, FIN 320</td>
</tr>
<tr>
<td>FIN 599 Directed Study</td>
<td>Dept. approval, FIN 302, FIN 320</td>
</tr>
</tbody>
</table>

MINOR IN FINANCE (12 credits)
A minor in Finance consists of 12 credits as follows:

FIN 302
FIN 303
FIN 320

Plus one additional finance course at the 300, 400, or 500 level (but not FIN 300).

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DEPARTMENTAL HONORS

Students can qualify for departmental honors on their diploma by meeting the following requirements:

1) Have an overall GPA above of 3.65 (as defined by the university for the purpose of honors determination), and
2) Enroll in, and successfully complete, an honors section of a 400-level course in the last semester before graduating.

To achieve cum laude, magna cum laude or summa cum laude designations, a student must meet the University’s requirements.

Finance Course Listing

INTERNATIONAL FINANCE AND MARKETING (IFM) MAJOR
INTERNATIONAL BUSINESS (IB) MINOR

Created to meet the needs of students who want to pursue a career in international business, finance and/or marketing, the International Finance and Marketing Major in the Business School prepares you for the most critical areas of decision making in international business. It is a comprehensive curriculum based on a strong program of international courses, with opportunity for access to multinational companies and the international business community.

IFM MAJOR

The International Finance and Marketing major consists of a minimum of 21 credits: The following courses are required:

Finance 320 - Investment and Security Markets
Finance 330 - International Finance
Finance 431 - International Financial Management (Note: Finance 330 is a pre-requisite)
Marketing 360 - International Marketing
Marketing 302 - Marketing Research and Market Analysis
Marketing 469 - International Marketing Management (Note: Marketing 360 is a pre-requisite)

Plus one course from the following:

Accounting 401/Marketing 401/Finance 401, International Business Analysis
Accounting 523 - International Accounting and Taxation
Business Law 412 - International Business Law
Economics 441 - International Trade
Finance 303 - Intermediate Financial Management
Management 349 - International Business
Management 359 - Comparative Management
Management 459 - International and Multinational Management

Notes: FIN 330 is a pre-requisite for FIN 431.
MKT 360 is a pre-requisite for MKT 469.
International Finance and Marketing majors must earn a grade of C- or higher in FIN 302 and MKT 301.
IB MINOR
The International Business minor provides business students an interdisciplinary perspective of international business to augment their studies in other areas of specialization. The International Business minor consists of 12 semester hours as follows:

Core Courses - Choose two, three or four courses from
ACC 523,  
FIN 330,  
MGT 349,  
MGT 459 or  
MKT 360.

Breadth Elective Courses - Choose one or two courses to equal 12 total semester hours for the IB minor from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Course</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSL 412</td>
<td>POL 346</td>
<td>POL 391</td>
</tr>
<tr>
<td>ECO 351</td>
<td>POL 347</td>
<td>POL 392</td>
</tr>
<tr>
<td>ECO 371</td>
<td>POL 348</td>
<td>POL 544</td>
</tr>
<tr>
<td>ECO 441</td>
<td>POL 380</td>
<td>POL 582</td>
</tr>
<tr>
<td>ECO 442</td>
<td>POL 381</td>
<td>POL 585</td>
</tr>
<tr>
<td>FIN 431</td>
<td>POL 384</td>
<td>POL 588</td>
</tr>
<tr>
<td>MGT 359</td>
<td>POL 385</td>
<td>POL 591</td>
</tr>
<tr>
<td>MKT 469</td>
<td>POL 387</td>
<td>POL 593</td>
</tr>
</tbody>
</table>

The IB Minor may not be taken by students with the IFM major.

Student must complete all prerequisite courses before enrolling in required IB courses.

DEPARTMENTAL HONORS
Graduation with departmental honors in the International Finance and Marketing major requires the following:

1) An overall Grade Point Average of 3.5
2) A Grade Point Average in Finance 302, Marketing 301 and the courses in the major of 3.5, and
3) Completion of Honors Coursework in either Finance 431 or Marketing 469.

Honors Coursework is designated by the course professor and is typically similar to the extra work required of participants in the General Honors Program who are “pink sheeting” the class.

MANAGEMENT - Dept. Code: MGT
The Department of Management (MGT) is the largest of the nine academic departments in the School of Business Administration at the University of Miami. The department offers a wide range of courses in human resources, health administration, operations management, international business, leadership, teams, small business/entrepreneurship, organizational behavior, and strategic management. The department supports the School, and the University as a whole, with faculty in key administrative positions, and through traditional service courses such as strategic management.

Courses in this department are restricted to those students having a minimum of 60 credits (Junior standing).
Note: All major/minor courses in the MGT Department must be completed with a grade of C or higher; cumulative GPA must be 2.5 or higher.

The Department of Management offers the following three majors:

**BUSINESS MANAGEMENT AND ORGANIZATION MAJOR**
This major will prepare students for future careers in all areas of management, including small business and corporate levels. The BMO major provides a solid preparation for students interested in pursuing other graduate degree programs, particularly in law and business.

A major in Business Management and Organization consists of at least 21 credits, but not more than 27, in departmental courses completed with a grade of C or higher. All majors must include:

- MGT 302
- MGT 303
- MGT 304
- MGT 307 [prerequisite MGT304]

Plus nine hours of management (excluding MGT 401)

**MINOR**
A minor in this area for business students consists of 12 credits in MGT courses beyond the required MGT courses for the BBA degree.

A minor in this area for non-business students consists of 12 credits and must include the following courses:

- MGT 302
- MGT303
- MGT 304
- MGT 307 [prerequisite MGT304]

**ENTREPRENEURSHIP MAJOR**
The ENT major is primarily designed for students who intend to start and/or manage their own business. The required curriculum is a total of 18 semester hours and includes:

- MGT 353 (must be taken during junior year for sequencing; FIN302 must be taken prior to or concurrently with MGT353)
- MGT 553 [prerequisites MGT353, MGT554]
- MGT 554 [prerequisite MGT353]
- MGT elective (choose one from MGT302, MGT307, MGT360, or MGT422 [MGT304 is prerequisite for MGT307/360/422])
- FIN elective (choose one from FIN303, FIN320, FIN410, or FIN425 [check prerequisites])
- MKT elective (choose one from MKT302, MKT310, MKT320, or MKT340 [check prerequisites]); MKT340 is recommended.

**HUMAN RESOURCE MANAGEMENT MAJOR**
The HRM major is for students who intend to pursue a career in human resources/personnel. The total major requirement is 15 semester hours and requires:

- MGT 302 (must be taken during junior year for sequencing)
- MGT 307 [prerequisite MGT304] and
  Nine semester hours from the following courses:
    - MGT 308 Training and Development [prerequisite MGT302]
    - MGT 360 Effective Leadership [prerequisite MGT304]
MGT 428 Wage and Salary Administration [prerequisite MGT302]
MGT 480 Organizational Development and Change [prerequisites MGT302, MGT304]
MGT 422 Leading Teams [prerequisite MGT304]
MGT 550 MGT Internship
PSY 332 Tests and Measurements [check prerequisites]

Management Course Listing

MANAGEMENT SCIENCE - Dept. Code: MAS

The Management Science Department serves the University in the general areas of applied statistics and operations research. Management Science emphasizes quantitative problem definition, modeling, solution, analysis, and implementation. A Management Science concentration prepares students to apply mathematics, statistics, and computer models to problems of business, industry and government. Application areas of special interest include manufacturing, the environment, urban planning, law enforcement, transportation, education, and health care delivery. Emphasis is placed on the consideration of the overall system under study from the viewpoint of its goals, the various means of achieving these goals, and finally, the quantitative evaluation of the effectiveness of the proposed solution alternatives. Thus, while the unifying theme of the program is methodology, the primary objective is the analysis of real problems. A major or minor in Management Science is recommended to qualified students as preparation for graduate work and for direct entry into the field of Management Science.

Management Science offers a major and minor for students pursuing a B.S. in Business. All courses in a major or minor in Management Science must be completed with a grade of "C-" or higher and have a cumulative GPA of 2.5 or higher in the Management Science major or minor course work. The coursework for obtaining a major or a minor in Management Science is as follows:

MANAGEMENT SCIENCE MAJOR (18 credits)

Required Core (15 credits)
MAS 441 Deterministic Models in Operations Research
MAS 442 Stochastic Models in Operations Research
MAS 452 Systems Analysis Methodology and Applications
MAS 547 Computer Simulation Systems
CIS 320 Introduction to Programming

Elective – One of the following (3 credits)
CIS 323 Object-Oriented Programming in C++
CIS 324 Object-Oriented Programming in Java
CIS 360 Analysis of Information Systems
MAS 548 Systems Dynamics Modeling and Analysis

MANAGEMENT SCIENCE MINOR (9 credits)

MAS 441 Deterministic Models in Operations Research
MAS 442 Stochastic Models in Operations Research
MAS 452 Systems Analysis Methodology and Applications
DEPARTMENTAL HONORS

• Students interested in having departmental honors entered on their diploma must meet the general requirements outlined by the School of Business Administration and the departmental course requirements with a grade of A or B.

• Students interested in having departmental honors must also complete a three-hour thesis/project under MAS 499 Directed Study, as part of their electives. This project must be approved by the Department Chair by the end of the student’s junior year (90 credits) of study.

• Students wishing to be considered for graduation Magna Cum Laude or Summa Cum Laude are required to write an honors thesis. These students must confer with the department chairman to select a thesis topic at the end of their junior year (90 credits) of study.

MANAGEMENT SCIENCE COURSE LISTING

MARKETING – Dept. Code: MKT

Rapidly increasing global competition, emergence of new markets, and technological advancements make today’s marketplace a highly dynamic and challenging environment for companies. Effective marketing is therefore crucial for organizations to survive and prosper in such an environment. Marketing is the process through which organizations develop and distribute products and services that satisfy the needs of customers. Customer satisfaction is critical to the profitable operations and growth of organizations and, as such, an integral component of modern-day marketing.

MARKETING MAJOR

The Marketing major provides students with an understanding of the basic concepts of marketing with an emphasis on emerging techniques and technologies. This major prepares students to practice marketing in a changing competitive environment. Specifically the major covers the 4 Ps of marketing (i.e., product/service, price, promotion and place/distribution) from a managerial perspective. Additionally, the marketing major is flexible, allowing students to concentrate on specific areas of professional pursuit such as sales management, advertising, retailing, or marketing research.

A program of study in marketing offers students a comprehensive understanding of such topics as:

• Marketing’s critical role within organizations.
• Identification of markets for products and services through better understanding and analysis of consumers’ wants and needs.
• The nature of global competition and identification of viable competitive strategies.
• Methods used in planning and implementing marketing strategies.
• Legal and ethical responsibilities of marketers.

The program of study for Marketing majors involves:

MKT 301. Marketing Foundations (Required)
Minimum grade of B (g.p.a. of 3.0 or higher) must be attained in MKT 301 to continue the major (or minor).

MKT 302. Marketing Research and Market Analysis (Required)
Prerequisite: MKT 301, MAS 201, MAS 202
MKT 303. Marketing Management (Required)  
Prerequisite: MKT 301, FIN 302 and completion of or currently enrolled in MKT 302

Plus nine other credit hours from any of the courses listed below:

MKT 310. Consumer Behavior and Marketing Strategy  
Prerequisite: MKT 301

MKT 320. Retailing  
Prerequisite: MKT 301

MKT 340. Professional Selling  
Prerequisite: MKT 301

MKT 360. International Marketing  
Prerequisite: MKT 301

MKT 386. Advertising Management  
Prerequisite: MKT 301

MKT 469. International Marketing Management  
Prerequisite: MKT 301, MKT 360

There are two grade requirements for a major in Marketing:
1. A grade of B (grade point average of 3.0) or higher in MKT 301.
2. The overall grade point average in all Marketing courses taken should be 2.5 or higher. All Marketing courses in which a student taking a Marketing major enrolls will count toward the major.

MARKETING MINOR
A minor in Marketing for business majors consists of at least 12 credits of marketing courses and must include the following: MKT 301, with a grade of B (grade point average of 3.0) or higher, plus any three electives as long as the prerequisite courses are taken. The overall grade point average in all Marketing courses taken is required to be 2.5 or higher. All Marketing courses in which a student taking a Marketing minor enrolls will count toward the minor.

MINOR for NON-BUSINESS MAJORS
A minor in Marketing for non-business majors consists of at least 12 credits of Marketing courses and must include the following: MKT 301 with a grade of B (grade point average of 3.0) or higher, plus three electives. Students may choose between MKT 310, 320, 340, 360 or other electives with the permission of the instructor. The overall grade point average in all Marketing courses taken is required to be 2.5 or higher. All Marketing courses in which a student taking a Marketing minor enrolls will count toward the minor.

Marketing Course Listing

POLITICAL SCIENCE - Dept. Code: POL

The Department of Political Science offers a wide selection of courses and activities adapted to the needs of students who contemplate careers in law, government, and public service at various levels. These courses will also benefit those in related vocations.

POLITICAL SCIENCE MAJOR
The major in Political Science consists of at least 27 credits for students in the School of
Business Administration.

For those in the College of Arts and Sciences, the major consists of at least 30 credits. At least 21 credits of these must be earned at the University of Miami.

Students in the schools of Communication and Education may also major (double major) in Political Science (at least 30 credits).

Six credits must be taken in departmental core courses, namely, POL 211 and 212. The remaining credits must meet the following distributional requirements:

1. Six of the credits must come from the following designated courses:

   POL 510   Political Analysis
   POL 522   Introduction to Graduate Public Administration
   POL 531   Global Environmental Politics
   POL 535   Courts as Political Institutions
   POL 537   The Law and Politics of Sports
   POL 540   Problems in American Foreign Policy
   POL 541   Philosophy of Law
   POL 542   American Constitutional Development
   POL 543   Urban Politics
   POL 544   Chinese Foreign Policy
   POL 545   Environmental Policymaking
   POL 546   Public Policy
   POL 547   Congressional Representation
   POL 551   Productivity in the Public and Non-Profit Sectors
   POL 553   The Environmental Movement: Groups, Beliefs and Values
   POL 554   Social Welfare Policy
   POL 555   Total Quality Public Service Management: Achieving High Performance Government
   POL 580   The Politics of Post-Communist Transitions
   POL 581   Comparative Political Economy of Post-Industrial Democracies
   POL 582   Political Economy of Latin American Development
   POL 584   Contemporary Latin American Politics
   POL 585   Political Movements in Latin America
   POL 586   Conflict in the Middle East and Africa
   POL 588   Politics in China
   POL 591   Problems in International Politics and Organization
   POL 592   International Political Economy
   POL 593   International Relations of the Middle East
   POL 595   North-South Relations

2. At least one course must be taken in three of the following four principal sub-fields of political science:

   American Politics
   Comparative Politics
   International Relations
   Public Administration, Policy, and Law

   These can include courses used to fulfill requirement 1 above.
For the purposes of fulfilling these distribution requirements, sub-fields are defined as follows:

1. **American Politics:**
   - POL 314 Legislative Process
   - POL 315 American Presidency
   - POL 332 Politics and the Media
   - POL 334 Campaigns
   - POL 335 Local Government
   - POL 342 State and Local Government and Politics
   - POL 343 Government in Metropolitan Areas
   - POL 349 U. S. Defense Policy
   - POL 351 Public Opinion
   - POL 352 Political Parties and Pressure Groups
   - POL 510 Political Analysis
   - POL 520 Internship
   - POL 521 Public Affairs Internship
   - POL 535 Courts as Political Institutions
   - POL 543 Urban Politics
   - POL 547 Congressional Representation
   - POL 553 The Environmental Movement: Groups, Beliefs and Values

2. **Comparative Politics:**
   - POL 380 Comparative Political Analysis
   - POL 381 European Governments and Politics
   - POL 382 Government and Politics of the Federal Republic of Germany
   - POL 383 Government and Politics of the United Kingdom
   - POL 384 Soviet and Russian Politics
   - POL 385 Politics and Society in Latin America
   - POL 387 Politics of the Middle East
   - POL 388 Politics of Israel
   - POL 531 Global Environmental Politics
   - POL 580 The Politics of Post-Communist Transitions
   - POL 581 Comparative Political Economy of Post-Industrial Democracies
   - POL 582 Political Economy of Latin American Development
   - POL 584 Contemporary Latin American Politics
   - POL 585 Political Movements in Latin America
   - POL 588 Politics in China

3. **International Relations:**
   - POL 337 International Law
   - POL 345 The United States and Asia
   - POL 346 U. S.-Latin American Relations
   - POL 347 American Foreign Policy
   - POL 348 United States Relations with the Middle East
   - POL 349 U. S. Defense Policy
   - POL 391 Introduction to International Relations
   - POL 392 International Terrorism
   - POL 531 Global Environmental Politics
   - POL 540 Problems in American Foreign Policy
The following courses cannot be used to fulfill the 6-credit requirement at 500 level, although they do count toward the major and minor:

POL 501  Budget and Financial Management and Administration
POL 520  Internship
POL 521  Public Affairs Internship
POL 563  Senior Honors Thesis (I)
POL 564  Senior Honors Thesis (II)
POL 599  Directed Readings

NOTE: POL 213 does not count toward the major or minor.

POLITICAL SCIENCE MINOR

The minor consists of at least 15 credits, of which at least 9 credits must be earned in residence.

To count toward a major or minor, each course must be completed with a grade of C- or higher, with an overall GPA of 2.0 or higher.
FIVE YEAR PROGRAM – BACHELOR and MASTERS in PUBLIC ADMINISTRATION

A special curriculum for students specializing in public administration enables them to complete the requirements for Bachelor’s and Master’s degree in Public Administration in five years.

HONORS

The Political Science Department participates in the General Honors and Departmental Honors Programs. Interested students are requested to contact the Department Chair for details about these programs.

GRADUATE STUDIES

For graduate work in Political Science, see the Bulletin of the Graduate School. Courses at the 600 level are not open to undergraduates.

Political Course Listing
SCHOOL OF COMMUNICATION - UNDERGRADUATE
www.miami.edu/com

The School of Communication offers courses in seven Programs of Study leading to the degree Bachelor of Science in Communication. The programs are Advertising, Public Relations, Journalism, Motion Pictures, Communication Studies, Broadcasting and Broadcast Journalism, and Visual Communication. The School also offers a Bachelor of Fine Arts in Communication in Visual Communication. The degrees Master of Arts, Master of Fine Arts, and Doctor of Philosophy are available in the School; these degrees are under the supervision of the Dean of the Graduate School and the Faculty Council on Graduate Studies.

The objectives of the School are to develop the student’s understanding and appreciation of communication theory, art, and science; to improve the student’s awareness of the pervasive role of communication in society; and to enhance the student’s communication skills.

Classroom and laboratory studies are supplemented by practical experience. On-campus television, radio, cable, motion picture studios and multimedia labs are available for academic and extra-curricular student projects. Visual communication students utilize contemporary digital imaging technology. Motion picture camera, editing, recording, and mixing facilities are available. Broadcasting and Broadcast Journalism students use studio and remote technology. New media technology is incorporated throughout the curriculum and the school houses several computer labs and digital classrooms.

Under Communication faculty supervision, students use the University’s cable TV studio facilities and its Cable Channel, and may gain experience with the Coral Gables cable TV system. The University’s FM stereo radio station and student newspapers and magazines offer additional opportunities for career development. Cosford Cinema, a 250-seat motion picture theatre, supports the motion picture program and offers programming for the community in connection with the newly acquired Raymond J. Regis Motion Picture Archive consisting of over 2000 original prints of classic motion pictures.

The School’s Center for the Advancement of Global Communication supports innovative research and development dedicated to the broadest spectrum of interdisciplinary communication study. The Center has produced a variety of special projects including documentary motion pictures, specialized research and global issue oriented faculty/student initiatives.

The School sponsors a nationally competitive intercollegiate debate team, which annually produces several members of the All American Debate team.

Internships in professional settings are available to Communication students at the junior and senior levels. Professionals at daily and weekly newspapers, magazines, news bureaus, cable systems, radio and television stations, and motion picture studios cooperate in the faculty-supervised internships. Executives of city and county governments, advertising agencies, public relations counseling firms, and private business and nonprofit organizations join in providing internship opportunities.

SCHEDULES
Fifteen or sixteen credits constitute a normal semester schedule in the School of Communication. Students who wish to register for more than sixteen credits must obtain prior approval. Students who are on academic probation will be limited to a maximum of thirteen credits.

**ACADEMIC POLICIES**

**Bachelor of Science in Communication**

**Admission to Major**

A student entering the School of Communication as a freshman or as a transfer will enroll in Communication pre-major status. Candidates for the Bachelor of Science in Communication who have achieved sophomore standing and have satisfactorily completed the entrance requirements of one of the Communication majors (see Program Statements) may apply for admission to major status in a specific program of the School.

**Internal Transfer into the School of Communication**

A student enrolled at the University of Miami in a school or college other than the School of Communication may apply for admission into the School of Communication. Applications are accepted every fall and spring semester. A minimum overall grade point average of 2.5 is necessary for consideration. Applications are available in the Admissions, Academic & Alumni Services Office of the School of Communication and must be submitted prior to the end of classes in either the fall or spring semester. Admission decisions will be made promptly after semester grades are final. Students will be notified in writing of the School's decision.

**Transfer Students**

A transfer student must complete in residence a minimum of 15 credits toward a Communication major or a minimum of 9 credits toward a Communication minor. Courses taken elsewhere in Communication or related disciplines are not automatically accepted for a major at the University of Miami. However, courses not accepted in a Communication major may be considered as elective credit counting toward the 120-credit University graduation requirement. Students who have obtained the written approval of the head of a Communication major to use transfer credit to satisfy one or more requirements of that major may be required to complete additional courses in residence at the University before being admitted to that major. Students should consult a School of Communication advisor to determine whether the transfer of Communication courses will increase beyond 120 the total number of credits required for a degree. In general, transfer credit will not be accepted to satisfy requirements for any course in any major or minor at the 300 level or above. In addition, transfer credits will not be accepted to satisfy requirements for CNJ 216 News Reporting and Writing. Student petitions to transfer credit from ACEJMC-accredited or other accredited programs will be considered on an individual basis.

Transfer credit may not be used to satisfy requirements for any major in Communication without the written approval of the heads of the programs concerned.

**Academic Progress & Probation/Dismissal**
Students must maintain a quality point average of 2.5 or higher in courses taken in residence and submitted for their School of Communication major. Following the first semester in which any student’s average in the major falls below a 2.5, the School may issue a warning to that student that his or her work does not meet School expectations. Should that student’s QPA in the major be below a 2.5 in any subsequent semester, he or she may be placed on Academic Probation. The School may dismiss from the University any student who is on probation a total of two semesters (not necessarily consecutive). A student who has completed 60 University credits while enrolled in the School of Communication but who has not demonstrated computer competence by passing CIS 120, GEG 199, the major’s computer competency requirement, or the appropriate test administered by the Computer Information Systems Department will be dismissed from the School. A student who has completed 45 University credits while enrolled in the School but who has not been admitted to one of the Communication majors may be dismissed from the School. A student who has completed 60 University credits while enrolled in the School but who has not been admitted to one of the Communication majors will be dismissed from the School. A student who has been dismissed from the School may apply for admission to one of the other Schools or Colleges within the University but will not later be readmitted to the School of Communication. Those who wish to appeal their probation or dismissal must do so in writing to the Dean within 30 days of the notice of probation or dismissal. See also GOOD ACADEMIC STANDING, WARNING, PROBATION, AND DISMISSAL, in this Bulletin.

**Bachelor of Fine Arts in Visual Communication**

**Admission to Major**

The Bachelor of Fine Arts program is designed for those students who seek artistic professional careers in the visual use of the electronic and film media. Admission is limited to students who demonstrate superior aptitude in appropriate Communication courses.

Before applying for admission to the B.F.A. program, the student should complete:

- COM 101
- COM 110
- CBR 102 or CMP 103
- CMP 126 or CMP 226 or CBR 201
- CMP 222 or CBR 245

all with grades of C (C- is not acceptable) or higher and with a minimum cumulative grade point average of 3.3.

The appropriate time to apply for the B.F.A. is during the second semester of the sophomore year or the first semester of the junior year. Follow this procedure:

1. Obtain an application from the School of Communication Admissions, Academic & Alumni Services Office. Complete the application and return it to the Schools B.F.A. Coordinator.

2. As soon as possible after submitting the application, arrange for an interview with the B.F.A. Coordinator. The purpose of the interview is to clarify the objectives and requirements of the program, and to select a faculty committee for the proposed candidate.

3. Prior to the completion of the first year in the B.F.A. program, the student will arrange his or her senior presentation with the committee. The purpose of the senior presentation is to provide the student with the opportunity to demonstrate particular expertise in the chosen area of concentration.
Transfer

A transfer student from another university or another division of the University of Miami may apply for the B.F.A. program at the beginning of his or her junior year. Transfer students will be advised that the completion of B.F.A. requirements may entail an additional semester or more of course work to satisfy requirements.

REQUIREMENTS FOR GRADUATION

The Bachelor of Science Degree in Communication

Internship Credit

Students will be permitted no more than three credits in School of Communication Internship toward their 39- or 45-credit majors or toward their 120-credit University degree.

Credit Hours and Advanced Placement Credit

Credits may be earned through Advanced Placement, CLEP Examinations, and Advanced Placement by Proficiency Examinations. These credits may be applied to the appropriate Required Areas of Study or as electives except: (1) where prohibited by a specific program area; or (2) if the course is remedial (e.g., ENG 103, MTH 099); or (3) as limited by the following: To earn credit toward the 66 credits required in the College of Arts and Sciences, and toward the 120 credits required for graduation, each student must pay a recording fee and have exempted course credits entered on his or her University transcript. An exemption may be granted for ENG 105 by the Department of English, but this exemption will not earn credit to be applied toward the 66 credits required in the College of Arts and Sciences or toward the 120 University credits required for graduation.

Grade Point Average

A candidate for the B.S. in Communication must complete the credit hours and achieve the quality point average specified for students in the University at large as stated in the section titled ACADEMIC PROCEDURES AND INFORMATION, subject to additional requirements specified in School and Program sections of this Bulletin.

Areas of Study

In applying these requirements to his or her course of study, each student must carefully read School of Communication program and major requirements that follow. In many cases, these requirements will be more restrictive and more specific in describing how each of these Required Areas of Study is to be satisfied.

Required University General Education Requirements

A. AREAS OF PROFICIENCY
Proficiency requirements are intended to ensure that students either already possess, or will develop at the University, the ability to express themselves effectively, to use mathematics with facility, and to reason cogently. Superior scores on the SAT or ACT examinations may waive students from ENG 105 (requirement 1) and superior placement test scores administered by the Department of Mathematics may waive students from MTH 101 (requirement 2), but not from requirement 3.

1. **English Composition** 3 credits
   Students fulfill this requirement by satisfactorily completing English 105 and English 106 or its equivalent. Appropriate Advanced Placement (AP) or International Baccalaureate (IB) scores in English composition may be used to satisfy the English 105/106 requirement. An appropriate score on the SAT or ACT verbal examination may earn a student exemption from, but not credit in, ENG 105.

   Appropriate scores on other tests determined by the Department of English may earn a student exemption from, but not credit in, English 105.

   Courses satisfying the English Composition requirement may not be used to fulfill the Writing Across the Curriculum Required Area of Study.

2. **Mathematics** 3 credits
   Students fulfill this requirement by satisfactorily completing a course in mathematics numbered above MTH 101 (excluding MTH 107 and MTH 119), or MAS 110, or an approved course in statistics. Exemption from the mathematics requirement or placement in prerequisite courses is based on any of the following tests: AP, IB, or an examination administered by the Department of Mathematics during orientation.

3. **Writing Across the Curriculum (W)** 5 courses
   Courses satisfying this requirement are those designated as involving a substantial amount of writing and the preparation of papers that are corrected for diction, syntax, style, and content. Some courses satisfying this Writing Across the Curriculum requirement will simultaneously fulfill a requirement under B. Areas of Knowledge (below).

B. **Areas of Knowledge**
These requirements are designed to help students understand and appreciate the intellectual achievements in major areas of human inquiry and creative endeavor. In satisfying these requirements students will explore the natural world, examine human development and behavior, and appreciate creative expression in the arts, literature, and philosophy.

**No more than six credit hours may be taken in any one department to satisfy the areas of knowledge requirement.** Most courses above the 100-level require pre-requisites.

**Natural World (6 credits)** Courses in the following areas: Biology; Chemistry; Ecosystems Science and Policy; Geological Sciences; Marine Science; Physics; Physical Science; and the following courses: Anthropology 203; Geography 120; First Year Seminars in the Natural Sciences 190-199.
People and Society (6 credits) Courses in the following areas: African American Studies; American Studies (AMS); Anthropology except APY 203); Economics; Educational Psychology; Geography (except GEG 120); History; International Studies; Judaic Studies (JUS); Political Sciences; Psychology; Sociology; Teaching and Learning; Women’s Studies (WOS), and the following courses: CBR 102; COM 101; COM 110; COS 112; COS 336; COS 472; First Year Seminars in the Social Sciences.

Arts and Humanities (12 credits) Courses in the following areas: American Studies (AMH); Architecture; Music; Art and Art History; Judaic Studies (JUH); Motion Pictures; Theatre Arts; English (200-level or above); Foreign Languages and Literatures (300-level or above); Philosophy; Religious Studies; Women’s Studies (WHO); and the following courses: COS 211; DAN 250; First Year Seminars in the Arts and Humanities FFA 190-199. Students who do not have a separate foreign language requirement may use foreign language courses numbered at the 100 or 200 level to satisfy part of the arts and humanities requirement, if the language differs from the student’s native language and if, when beginning with a 101-level course, they also take the 102-level course in the same language.

Majors/Minors

Students majoring or minoring in the School of Communication must complete a School of Communication course with a grade of C or higher (a grade of C- or lower is not acceptable) before taking another course for which the first course is a prerequisite.

Major/Minor Requirements

The major in the School of Communication 39 to 45 credits

A major in the School of Communication leading to a Bachelor of Science in Communication requires 39 or 45 credits in School of Communication courses specified in Program statements (below). Each course within the 39- or 45-credit major must be completed with a grade of C or higher (a grade of C- or lower is not acceptable). In addition, students must maintain a quality point average of 2.5 or higher in courses taken in residence and submitted for their School of Communication 39- or 45-credit majors.

Students majoring in Advertising, Public Relations, Journalism, Visual Communication, Broadcasting, Broadcast Journalism, and Media Management will be permitted no more than 30 credits in all these areas and in Motion Pictures, whether earned at the University of Miami or elsewhere, toward their 120-credit University degrees. Courses in these areas hereafter designated Mass Communication courses in this Bulletin, do not include COM 101, COM 110 or COM 250.

Students majoring in Motion Pictures or Video-Film will be permitted no more than 36 credits in Mass Communication courses, whether taken at the University of Miami or elsewhere, toward their 120-credit University degrees.

Students majoring in Communication Studies will be permitted no more than 36 credits of courses in these areas of study, whether taken at the University of Miami or elsewhere, toward their 120-credit University degrees.
Students who exceed the 30 or 36-credit limits set forth above must complete a like number of credits more than the 120 credits normally required for a University degree.

**The second major**

24 to 40 credits

Each Communication student, in addition to completing requirements for a Communication major (below), must choose a second major field in the University curriculum. To find the requirements for such a major, consult this Bulletin and confer with the appropriate department representative. School of Communication Advisors will aid students in identifying the appropriate representative. The candidate for a Communication degree may choose from among any of the disciplines offering majors for which they may qualify and complete the major’s requirements.

The choice of the second major should be made no later than the beginning of the junior year and must be approved by the discipline concerned. Each Communication student will be required, by the time he or she has earned 72 credits, to submit to his or her Communication advisor a statement of courses and other requirements for the chosen major. This statement must be signed by the second major’s program head concerned, or by the head’s representative. Any student making unsatisfactory progress in the second major subject may be required to change majors or to relinquish candidacy for the Communication degree.

Unless Communication Program statements otherwise restrict, a maximum of six credits may count toward both a second major and the Required Areas of Study in the School of Communication (above); see Program Statements.

**Minors**

A minor is not required for a Bachelor of Science degree candidate in the School of Communication. A student who wishes to complete a minor offered by any program in the University in addition to the major in Communication and second major must consult the School of Communication Admissions, Academic & Alumni Services Office. A student who wishes to take a minor as well as a major in Communication must take into account the credit limits in area courses specified above.

**Upper Division Credits**

Minimum of 36 credits

In earning a Bachelor of Science in Communication or a Bachelor of Fine Arts in Visual Communication, each School of Communication student must complete a minimum of 36 credits of course work at the 300 level or above. Upper division courses taken in Required Areas of Study, in the School of Communication major, in the second major, and as general electives will count toward this 36-credit minimum requirement. Upper division transfer credits also apply.

**Electives**

Only Free Elective courses may be taken under the University’s Credit Only option (see CREDIT ONLY OPTION, this Bulletin). Free Electives are defined as courses not taken to fulfill the requirements of the major within the School of Communication, of the second major, or of the School’s Required Areas of Study (i.e., General Distribution requirements). Free Electives are Courses taken not to meet any of the above requirements or their prerequisites, but taken solely to meet the requirement of a total of 66 credits in Arts and Sciences or the requirement of a total of 120 credits for the degree.
General electives  Sufficient for a minimum total of 120 credits

Electives in the University must be completed sufficient for a minimum total of 120 credits. Electives may be chosen from any courses offered by the University except certain unapproved courses such as Dance 101, 102, 103; and activity courses offered by the School of Education; students should consult a School of Communication advisor before selecting elective courses. General electives may be taken in any Arts and Sciences program and in Communication courses, taking into account the credit limits in area courses specified above. Because specific courses are required in some School of Communication majors, students are advised to read Program statements carefully and seek the advice of a School of Communication advisor prior to taking general University electives.

Electives in the Liberal Arts and Sciences  Sufficient for a total of 66 College credits

Students must earn a total of 66 credits in the liberal arts and sciences, including those credits earned in Required Areas of Study, in the second major, in electives in the College of Arts and Sciences, in courses in the departments of Economics and Political Science, in courses in the School of Music, and in COM/COS courses 110, 211, and 333. Some majors require specific courses; see Program Statements.

Double Counting

No course may be used to satisfy the requirements of more than one major or of a major and a minor. Three Communication core courses (see Program Statements) but no other courses submitted for a student’s Communication major may be used also to satisfy School of Communication Required Areas of Study requirements. Unless Communication Program statements otherwise restrict: (a) a course taken to satisfy Additional Requirements of a student’s major (and which appears on the list of courses accepted in satisfaction of School Required Areas of Study) may also be used to satisfy a School Required Areas of Study requirement; and (b) a maximum of six credits may count toward both a second major and the School Required Areas of Study. The foregoing notwithstanding, any course designated as a Writing course, whether taken to fulfill a major, minor, Additional Requirements, or Required Areas of Study requirement, or as an elective, may also be applied to the Writing Across the Curriculum requirement.

First Year Seminars

An approved First Year Seminar may satisfy one of the School Required Areas of Study requirements. Consult the School of Communication Academic Services Office.

Aerospace Studies and Military Science

A maximum of six credits of Aerospace Studies and Military Science courses at the 300 level or above may count toward the 120-credit University degree but only as general elective credit and not as general Arts and Sciences credit or for School Required Areas of Study credit.

Additional program requirements
Most programs in the School require a student, in order to obtain the School’s Bachelor of Science degree, to complete specified courses in addition to those 13 or 15 courses that comprise the majors. These courses may, in some cases, fulfill requirements in Required Areas of Study or in the second major, or may be electives in the College of Arts and Sciences or general electives in the University. In completing these additional course requirements, passing grades (D or better) are usually acceptable. If a grade of C or better is required in any additional course or courses beyond the 39- or 45-credit School of Communication major, program statements will so state. Read program statements carefully. Do not register for courses without a program advisor’s signed approval.

The Bachelor of Fine Arts in Visual Communication

To be awarded the Bachelor of Fine Arts degree, the candidate must fulfill the following requirements:

1. Complete School of Communication requirements including:
   - Courses in The Required Areas of Study
   - The second major, and
   - Electives sufficient for a total of 66 credits in the College
   - The minimum number of credits required of a student by the B.F.A. program is 126

2. Maintain a cumulative 3.3 average in all courses taken in the School of Communication.

3. Working independently, or in an approved group, produce a senior presentation that must be submitted to the committee, for approval.

4. Complete the following courses:
   **Core (10 courses - 30 credits)**
   - COM 101 Mass Media Communication in Society
   - COM 110 Communication Theory
   - COM 250 Freedom of Expression and Communication Ethics
   - CBR 102 Introduction to Broadcasting and Cable
   - CMP 103 Survey of Motion Pictures
   - CMP 126 Introduction to Scriptwriting or CMP 226 Writing for Series Television or
   - CBR 201 Writing for the Electronic Media
   - CNJ 206 Graphics for Communication Media or CAP 202 Graphics for Promotional Media
   - CVC 221 Still Photography I
   - CMP 222 Motion Picture Techniques
   - CBR 245 Introduction to Electronic Media Production

   **Electives (2 courses from each group below - 18 credits)**
   **GROUP 1**
   - CMP 306 What Is Cinema?
   - CMP 356 Cinematography or CMP 357 Editing
   - CMP 352 Motion Picture Workshop II
   - CMP 551 Animation and Motion Graphics
   **GROUP 2**
   - CBR 233 Television Performance
   - CBR 301 Measurement and Analysis of Broadcast and Cable Audiences
   - CBR 302 Social Control of Broadcast and Cable Media
   - CBR 345 Intermediate Electronic Media Production
   **GROUP 3**
   - CVC 331 Still Photography II
CVC 361 Photojournalism and Editing  
CAP 384 Advanced Advertising: Writing and Design  

**Additional Program Requirements (6 credits)**  
CMP 204 History of Motion Pictures (1895-1940) or  
CMP 205 History of Motion Pictures (1941-Present) or  
CVC 107 History of Photography  
COM 598 Special Topics in Communication  

**Project (2 courses - 6 credits)**  
CMP 451 Motion Picture Practicum - I and CMP 452 Motion Picture Practicum - II  
OR  
CBR 445 Advanced Electronic Media Production and CBR 599 Advanced Projects and Directed Research  
OR  
CVC 435 Seminar in Visual Storytelling and CVC 499 Projects and Directed Research  

**Senior Presentation**  
During the Senior year, each B.F.A. candidate must make a presentation of a major creative project to which he or she has made a significant contribution. Before the project is started, the candidate must present a one-page statement of objective to the B.F.A. Coordinator. Upon approval by faculty members in the candidate’s major and minor areas, the B.F.A. Coordinator will place the statement of objective together with a signed approval to begin the presentation project with the candidate’s records in the School’s Admissions, Academic & Alumni Services Office.  

**ACADEMIC PROGRAMS**  

**ADVERTISING and PUBLIC RELATIONS**  
**Dept. Code:** CAP  
[http://com.miami.edu/undergraduate/Advertising.htm](http://com.miami.edu/undergraduate/Advertising.htm)  

Majors and minors are offered in Advertising Communication or Public Relations.  

Each candidate for the degree of Bachelor of Science in Communication will complete School of Communication requirements including courses in the Required Areas of Study, the second major, and electives sufficient for a total of 66 credits in the Liberal Arts and Sciences. Courses in the Required Areas of Study are specified in the statements of majors below.  

A Bachelor of Science student in Advertising or Public Relations will be permitted a maximum of 30 credits in Mass Communication courses (excluding COM 101, COM 110 and COM 250) toward the 120-credit University degree.  

**Admission to a major**  
Before admission as an Advertising Communication (CAD) or Public Relations (CPR) major, a student must:  

A) Achieve sophomore standing;  

B) Complete CIS 120 or GEG 199, or the appropriate test administered by the Computer Information Systems Department; and
C) Complete the five Core courses listed below, in residence at the University, all with grades of C or higher (C- is not acceptable).

Students who have obtained the written approval of the director of the Advertising Communication or Public Relations major to use transfer credit to satisfy one or more requirements of that major may be required to complete additional courses in residence at the University before being admitted to that major.

Upon completion of a student’s first 45 University credits while enrolled in the School of Communication, all University credits earned toward the major will be used in computing a student’s major cumulative quality point average; only those students with a cumulative average of 2.5 or higher will be admitted to a major.

A student who has completed 45 credits while enrolled in the School of Communication but who has not been admitted to one of the Communication majors may be dismissed from the School. A student who has completed 60 University credits while enrolled in the School but who has not been admitted to one of the Communication majors will be dismissed from the School. See PROBATION AND DISMISSAL.

**THE ADVERTISING COMMUNICATION MAJOR**

**CORE COURSES**
- COM 101 Mass Media Communication in Society
- COM 110 Communication Theory
- CAP 114 Introduction to Advertising in Society
- CAP 232 Promotional Writing
- COM 250 Freedom of Expression and Communication Ethics

**OTHER REQUIRED COURSES**
- CAP 202 Graphics for Promotional Media
- CNJ 303 Mass Media Law
- CAP 311 Research Methods for Promotional Communication
- CAP 388 Advertising: Media Planning and Sales
- CAP 434 Advertising Campaigns

Three additional courses in a concentration (9 additional credits) must be selected, with the prior approval of an Advertising advisor. Examples of such concentrations might be International Advertising, Graphics, Mass Communication, etc.

**THE PUBLIC RELATIONS MAJOR**

**CORE COURSES**
- COM 101 Mass Media Communication in Society
- COM 110 Communication Theory
- CAP 116 Introduction to Public Relations in Society
- CAP 232 Promotional Writing
- COM 250 Freedom of Expression and Communication Ethics

**OTHER REQUIRED COURSES**
- CAP 202 Graphics for Promotional Media
- CNJ 303 Mass Media Law
- CAP 311 Research Methods for Promotional Communication
- CAP 346 Advanced Public Relations Writing and Design
CAP 436 Public Relations Campaigns

Three additional courses in a concentration (9 additional credits) must be selected, with the prior approval of a Public Relations advisor. Examples of such concentrations might be International Public Relations, Graphics, Mass Communication, etc.

ADDITIONAL REQUIREMENTS FOR THE ADVERTISING COMMUNICATION/PUBLICRELATIONS MAJORS

For the School’s People and Society requirement, students must complete ECO 211 and POL 211.

Students must complete COS 211, and MKT 301 plus three additional 300-level- or above credits in the School of Business Administration chosen with the prior approval of an Communication advisor.

Students seeking a Marketing Minor from the School of Business Administration must complete MKT 301, 310, 340, and 360 with a cumulative quality point average of 2.0 or higher.

MINOR

The minor in Advertising Communication requires passing CAP 114, 202, 232, 311, 388, and 434.


Advertising and Public Relations Course Listing

BROADCASTING, BROADCAST JOURNALISM, MEDIA MANAGEMENT, and VIDEO-FILM - Dept. Code: CBR
http://com.miami.edu/undergraduate/Broadcasting.htm
http://com.miami.edu/undergraduate/Broadcast_Journalism.htm
http://com.miami.edu/undergraduate/Media_Management.htm
http://com.miami.edu/undergraduate/Video_Film.htm

Majors are offered in Broadcasting, Broadcast Journalism, Media Management, and Video-Film and a minor is available in Broadcasting.

Each candidate for the degree of Bachelor of Science in Communication will complete School of Communication requirements including courses in the Required Areas of Study, the second major, and electives sufficient for a total of 66 credits in the Liberal Arts and Sciences.

A Bachelor of Science student in Broadcasting, Broadcast Journalism or Media Management will be permitted a maximum of 30 credits in Mass Communication courses (excluding COM 101, COM 110, and COM 250) toward the 120-credit University degree.

A Bachelor of Science student in Video-Film will be permitted a maximum of 36 credits in Mass Communication courses (excluding COM 101, COM 110 and COM 250) toward the 120-credit University degree.
A Bachelor of Fine Arts degree in Visual Communication is also available. See degree requirements in the School of Communication B.F.A. section of this Bulletin.

**Admission to a major**

Before admission as a Broadcasting (CBR), Broadcast Journalism (CBJ), Media Management (CMM), or Video-Film (CVF) major, a student must:

A) Achieve sophomore standing;

B) Complete CIS 120 or GEG 199, or the appropriate test administered by the Computer Information Systems Department; and

C) Complete the five Core courses listed below, in residence at the University, all with grades of C or higher (C- is not acceptable).

Students who have obtained the written approval of the director of the Broadcasting, Broadcast Journalism, Media Management, or Video-Film major to use transfer credit to satisfy one or more requirements of that major may be required to complete additional courses in residence at the University before being admitted to that major.

Upon completion of a student’s first 45 University credits while enrolled in the School of Communication, all University credits earned toward the major will be used in computing a student’s major cumulative quality point average; only those students with a cumulative average of 2.5 or higher will be admitted to a major.

A student who has completed 45 credits while enrolled in the School of Communication but who has not been admitted to one of the Communication majors may be dismissed from the School. A student who has completed 60 University credits while enrolled in the School but who has not been admitted to one of the Communication majors will be dismissed from the School. See PROBATION AND DISMISSAL.

**THE BROADCASTING MAJOR**

**CORE COURSES**
- COM 101 Mass Media Communication in Society
- CBR 102 Introduction to Broadcasting and Cable
- COM 110 Communication Theory
- CBR 201 Writing for the Electronic Media
- COM 250 Freedom of Expression and Communication Ethics

**OTHER REQUIRED COURSES**
- CBR 245 Introduction to Electronic Media Production
- CBR 301 Measurement and Analysis of Broadcast and Cable Audiences
- CBR 302 Social Control of Broadcast and Cable Media

- Students must choose one of the following courses:
  - CBR 313 Broadcast Sales
  - CBR 314 Broadcast and Cable Programming

- Three additional credits in a Broadcasting course at the 400 level or above. This excludes Internships, Projects and Directed Research, and Practicums; and
• Nine additional credits in Broadcasting chosen with the prior approval of a Broadcasting advisor.

A minimum of 18 credits at the 300 level or above is required within the 39-credit major.

ADDITIONAL REQUIREMENTS FOR THE BROADCASTING MAJOR

Students majoring in Broadcasting must also complete COS 211 or COS 333.

THE BROADCAST JOURNALISM MAJOR

CORE COURSES
COM 101 Mass Media Communication in Society
CBR 102 Introduction to Broadcasting and Cable
COM 110 Communication Theory
CNJ 111 Introduction to News Media Writing
COM 250 Freedom of Expression and Communication Ethics

OTHER REQUIRED COURSES
CNJ 216 News Reporting and Writing
CBR 245 Introduction to Electronic Media Production
CBR 301 Measurement and Analysis of Broadcast and Cable Audiences
CBR 302 Social Control of Broadcast and Cable Media
CBR 317 Broadcast Journalism
CBR 417 Advanced Broadcast Journalism

Six additional credits in Broadcasting, chosen with the prior approval of a Broadcast Journalism advisor.

A minimum of 18 credits at the 300 level or above is required within the 39-credit major.

ADDITIONAL REQUIREMENTS FOR THE BROADCAST JOURNALISM MAJOR

Students majoring in Broadcast Journalism are required to complete the following:
COS 211 or COS 333;
POL 211 and six additional credits in Political Science, History, or Economics.

THE MEDIA MANAGEMENT MAJOR

CORE COURSES
COM 101 Mass Media Communication in Society
COM 110 Communication Theory
COM 250 Freedom of Expression and Communication Ethics
CBR 102 Introduction to Broadcasting and Cable

One of the following writing courses:
CNJ 111 Introduction to News Media Writing
CBR 201 Writing for the Electronic Media
CAP 232 Promotional Writing

OTHER REQUIRED COURSES
CBR 301 Measurement and Analysis of Broadcast and Cable Audiences
or
CAP 311 Research Methods for Promotional Communication
CBR 302 Social Control of Broadcast and Cable Media
or
CNJ 303 Mass Media Law
CBR 314 Broadcast and Cable Programming
CAP 388 Advertising: Media Planning and Sales
CBR 402 Broadcast and Cable Management
CBR 535 Telecommunication Systems

Six additional credits in School of Communication courses chosen with the prior approval of a School of Communication advisor.

ADDITIONAL REQUIREMENTS FOR THE MEDIA MANAGEMENT MAJOR

For the School’s People and Society requirement, Media Management students must complete ECO 211 or ECO 212.

Media Management students must complete MKT 301 plus six additional credits in the School of Business Administration chosen with the prior approval of a School of Communication advisor. Three of these six credits must be at the 300-level or above.

Students majoring in Media Management must also complete COS 333 or COS 418.

THE VIDEO-FILM MAJOR

CORE COURSES
COM 101 Mass Media Communication in Society
CMP 103 Survey of Motion Pictures
COM 110 Communication Theory
CMP 126 Introduction to Scriptwriting
or
CMP 226 Writing for Series Television
or
CBR 201 Writing for the Electronic Media
COM 250 Freedom of Expression and Communication Ethics

OTHER REQUIRED COURSES
CBR 102 Introduction to Broadcasting and Cable
CMP 204 History of Motion Pictures (1895-1940)
or
CMP 205 History of Motion Pictures (1941-Present)
CMP 222 Motion Pictures Techniques
CBR 245 Introduction to Electronic Media Production
CBR 345 Intermediate Electronic Media Production
CMP 352 Motion Picture Workshop II

Twelve additional credits in Broadcasting or Motion Pictures chosen with the prior approval of a Video-Film advisor. A minimum of 18 credits at the 300 level or above is required within the 45-credit major.

MINOR
The minor in Broadcasting requires CBR 102, 301, 302, and six additional credits in Broadcasting, three of which must be at the 300 level or above, chosen with the prior approval of the program director.

Broadcasting Course Listing

COMMUNICATION STUDIES - Dept. Code: COS
http://com.miami.edu/undergraduate/Communication_Studies.htm

This area of study focuses on theory and research in human communication, and applications of the results to human problems in interpersonal, intercultural and corporate settings.

A major and minor are offered in Communication Studies.

Each candidate for the degree of Bachelor of Science in Communication will complete School of Communication requirements including courses in the Required Areas of Study, the second major, and electives sufficient for a total of 66 credits in the Liberal Arts and Sciences.

A Bachelor of Science student in Communication Studies will be permitted a maximum of 39 credits in Communication courses (excluding COM 101, COM 110, and COM 250) toward the 120-credit University degree.

Admission to a major

Before admission as a Communication Studies (COS) major, a student must:

A) Achieve sophomore standing;

B) Complete CIS 120 or GEG 199, or the appropriate test administered by the Computer Information Systems Department; and

C) Complete the five Core courses listed below, in residence at the University, all with grades of C or higher (C- is not acceptable).

Students who have obtained the written approval of the director of Communication Studies major to use transfer credit to satisfy one or more requirements of that major may be required to complete additional courses in residence at the University before being admitted to that major.

Upon completion of a student’s first 45 University credits while enrolled in the School of Communication, all University credits earned toward the major will be used in computing a student's major cumulative grade point average; only those students with a cumulative average of 2.5 or higher will be admitted to a major.

A student who has completed 45 credits while enrolled in the School of Communication but who has not been admitted to one of the Communication majors may be dismissed from the School. A student who has completed 60 University credits while enrolled in the School but who has not been admitted to one of the Communication majors will be dismissed from the School. See PROBATION AND DISMISSAL.

THE COMMUNICATION STUDIES MAJOR
CORE COURSES
COM 101 Mass Media Communication in Society
COM 110 Communication Theory
COS 112 Interpersonal Communication
COM 250 Freedom of Expression and Communication Ethics
COS 210 Writing for Communication Studies

OTHER REQUIRED COURSES
Students majoring in Communication Studies must complete at least one course from both the Interpersonal Communication listing and the Communication Management listing below (6 credits):

**Interpersonal Communication**
COS 316 Small Group Communication
COS 318 Nonverbal Communication
COS 343 Introduction to Intercultural Communication

**Communication Management**
COS 211 Public Speaking
COS 377 Argumentation and Critical Thinking
COS 472 Persuasion

In addition all Communication Studies majors are required to complete COS 442 (Communication Research Methods and Analyses) and COS 479 (Capstone for Communication Studies), plus six additional credits in Communication Studies chosen with the prior approval of a Communication Studies advisor. A minimum of 15 credits at the 300-level or above is required within the 33-credit major.

MINOR

The minor in Communication Studies for students also majoring in the School of Communication requires nine additional credits in Communication Studies beyond the School’s core (COM 101, COM 110 and COM 250), at least six of which must be at the 300-level or above. The additional credits must be chosen with the prior approval of a Communication Studies area advisor.

The minor in Communication Studies for students not majoring in the School of Communication requires COM 110, plus twelve additional credits in Communication Studies, at least six of which must be at the 300-level or above. The additional credits must be chosen with the prior approval of a Communication Studies area advisor.

Communication Studies Course Listing

JOURNALISM - Dept. Code: CNJ
[http://com.miami.edu/undergraduate/Journalism.htm](http://com.miami.edu/undergraduate/Journalism.htm)

A major and minor are offered in Journalism.

Each candidate for the degree of Bachelor of Science in Communication will complete School of Communication requirements including courses in the Required Areas of Study, the second major, and electives sufficient for a total of 66 credits in the Liberal Arts and Sciences.
A Bachelor of Science student in Journalism will be permitted a maximum of 30 credits in Mass Communication courses (excluding COM 101, COM 110, and COM 250) toward the 120-credit University degree.

**Admission to a major**

Before admission as a Journalism (CNJ) major, a student must:

A) Achieve sophomore standing;

B) Complete CIS 120 or GEG 199, or the appropriate test administered by the Computer Information Systems Department; and

C) Complete the five Core courses listed below, in residence at the University, all with grades of C or higher (C- is not acceptable).

Students who have obtained the written approval of the director of the Journalism or Visual Communication major to use transfer credit to satisfy one or more requirements of that major may be required to complete additional courses in residence at the University before being admitted to that major.

Upon completion of a student’s first 45 University credits while enrolled in the School of Communication, all University credits earned toward the major will be used in computing a student’s major cumulative quality point average; only those students with a cumulative average of 2.5 or higher will be admitted to a major.

A student who has completed 45 credits while enrolled in the School of Communication but who has not been admitted to one of the Communication majors may be dismissed from the School. A student who has completed 60 University credits while enrolled in the School but who has not been admitted to one of the Communication majors will be dismissed from the School. See PROBATION AND DISMISSAL.

**THE JOURNALISM MAJOR**

**CORE COURSES**

- COM 101 Mass Media Communication in Society
- CNJ 111 Introduction to News Media Writing
- COM 110 Communication Theory
- COM 250 Freedom of Expression and Communication Ethics
- CNJ 319 History of Journalism

**OTHER REQUIRED COURSES**

- CNJ 216 News Reporting and Writing
- CNJ 303 Mass Media Law
- CNJ 461 Seminar in News Ethics and Problems

Students must select one of the following 15-credit tracks of specialization:

**A. The NEWSPAPER Track**

- CAP 202 Graphics for Promotional Media
- CVC 221 Still Photography I
- CNJ 381 Newspaper Editing and Layout
CNJ 444 Public Affairs Reporting  
CNJ 513 Computer-Assisted Reporting  

B. The MAGAZINE Track  
CAP 202 Graphics for Promotional Media  
CVC 221 Still Photography I  
CNJ 382 Magazine Planning and Editing  
CNJ 513 Computer-Assisted Reporting  
CNJ 544 Feature Writing  

C. The INTERNATIONAL Track  
CNJ 510 International Mass Communication  
CNJ 595 Special Topics in Journalism  
CNJ 599 Directed Research  

Six additional credits from the School of Communication are required at the 300 level or higher, chosen with the prior approval of a Journalism advisor. Students are encouraged to complete their second major in International Studies. Students must complete at least a minor in International Studies.  

D. The PUBLICATION DESIGN Track  
CAP 202 Graphics for Promotional Media  
CVC 221 Still Photography I  
CNJ 381 Newspaper Editing and Layout  
or  
CNJ 382 Magazine Planning and Editing  
CNJ 414 Publication Design Seminar  

Three additional credits from the School of Communication are required at the 300 level or higher, chosen with the prior approval of a Journalism advisor.  

E. The NEWS DIGITAL Track  
CAP 202 Graphics for Promotional Media  
CNJ 513 Computer-Assisted Reporting  
CNJ 515 Reporting and the Internet  
CBR 535 Telecommunication Systems  

Three additional credits from the following courses, chosen with the prior approval of a Journalism advisor:  
CVC 106 Computers in Communication  
CVC 309 Web Design I  
CVC 409 Multimedia I  
CVC 419 Advanced Web Production  

F. The CUSTOM Track  

Fifteen additional credits from the School of Communication are required, nine of them at the 300 level or higher, chosen with the prior approval of a Journalism advisor.  

ADDITIONAL REQUIREMENTS FOR THE JOURNALISM MAJOR  

Students majoring in Journalism will be required to complete the following six credits that will be in addition to the credits required by the School in People and Society:
Three credits in History
Three credits in Political Science

Journalism students must complete COS 211 as a general University elective.

**MINOR** The minor in Journalism requires:
COM 101
CNJ 111
CNJ 216
CNJ 303 and CNJ 381 or CNJ 382

One of the following courses is also recommended: CAP 202, CNJ 319, CNJ 401, CNJ 444, CNJ 461, or CNJ 544.

[Journalism Course Listing](http://com.miami.edu/undergraduate/Motion_Pictures.htm)

**MOTION PICTURES - Dept. Code: CMP**

A major is offered in Motion Pictures.

Each candidate for the degree of Bachelor of Science in Communication will complete School of Communication requirements including courses in the Required Areas of Study, the second major, and electives sufficient for a total of 66 credits in the Liberal Arts and Sciences.

A Bachelor of Science student in Motion Pictures will be permitted a maximum of 36 credits in Mass Communication courses (excluding COM 101, COM 110, and COM 250) toward the 120-credit University degree.

A Bachelor of Fine Arts degree is also available through the Program. See degree requirements in the School of Communication B.F.A. section of this Bulletin.

**Admission to a major**

Before admission as a Motion Pictures (CMP) major, a student must:

A) Achieve sophomore standing; and

B) Complete the five Core courses listed below, in residence at the University, all with grades of C or higher (C- is not acceptable).

Students who have obtained the written approval of the director of the Motion Pictures major to use transfer credit to satisfy one or more requirements of that major may be required to complete additional courses in residence at the University before being admitted to that major.

Upon completion of a student’s first 45 University credits while enrolled in the School of Communication, all University credits earned toward the major will be used in computing a student’s major cumulative quality point average; only those students with a cumulative average of 2.5 or higher will be admitted to a major.
A student who has completed 45 credits while enrolled in the School of Communication but who has not been admitted to one of the Communication majors may be dismissed from the School. A student who has completed 60 University credits while enrolled in the School but who has not been admitted to one of the Communication majors will be dismissed from the School. See PROBATION AND DISMISSAL.

THE MOTION PICTURE MAJOR

CORE COURSES
COM 101 Mass Media Communication in Society
CMP 103 Survey of Motion Pictures
COM 110 Communication Theory
CMP 126 Introduction to Scriptwriting
COM 250 Freedom of Expression and Communication Ethics

OTHER REQUIRED COURSES
1) CMP 204 History of Motion Pictures (1895-1940)
2) CMP 205 History of Motion Pictures (1941-Present)
3) CMP 222 Motion Picture Techniques
4) CMP 306 What is Cinema?
5) CMP 503 Film Directors
   or
CMP 506 American Movie Genres
   or
CMP 507 Film, Society, and Culture
   or
CMP 529 Nonfiction Film
6) CMP 509 Legal Aspects of Motion Pictures
   or
CMP 552 Motion Picture Making and Distribution
   or
CMP 555 Producing the Motion Picture

Twelve additional credits in Motion Pictures chosen with the prior approval of a Motion Picture advisor. A minimum of 18 credits at the 300 level or above is required within the 45-credit major.

Participation in CMP 352 requires a cumulative quality point average of 3.0 or higher in CMP 103, 204 or 205, 222, and either 356, 357, or 558, and the written consent of the Director of the Motion Pictures Program.

MINOR

The minor in Motion Pictures requires CMP 103, 204 or 205, 222, 306, and one of the following: 503, 506, or 507.

The minor in Motion Pictures Film Studies requires CMP 204, 205, 306, and two of the following: 503, 506, 507, or 529.

Motion Pictures Course Listing
A major is offered in Visual Communication.

Each candidate for the degree of Bachelor of Science in Communication will complete School of Communication requirements including courses in the Required Areas of Study, the second major, and electives sufficient for a total of 66 credits in the Liberal Arts and Sciences.

A Bachelor of Science student in Visual Communication will be permitted a maximum of 30 credits in Mass Communication courses (excluding COM 101, COM 110, and COM 250) toward the 120-credit University degree.

Visual Communication majors who select ART as their Arts and Sciences second major may choose any ART area of specialization except Photography.

**Admission to a major**
Before admission as a Visual Communication (CVC) major, a student must:

A) Achieve sophomore standing; and

B) Complete the five Core courses listed below, in residence at the University, all with grades of “C” or higher ("C-" is not acceptable).

Students who have obtained the written approval of the director of the Visual Communication major to use transfer credit to satisfy one or more requirements of that major may be required to complete additional courses in residence at the University before being admitted to that major.

Upon completion of a student’s first 45 University credits while enrolled in the School of Communication, all University credits earned toward the major will be used in computing a student’s major cumulative quality point average; only those students with a cumulative average of 2.5 or higher will be admitted to a major.

A student who has completed 45 credits while enrolled in the School of Communication but who has not been admitted to one of the Communication majors may be dismissed from the School. A student who has completed 60 University credits while enrolled in the School but who has not been admitted to one of the Communication majors will be dismissed from the School. See PROBATION AND DISMISSAL.

**THE VISUAL COMMUNICATION MAJOR**

**CORE COURSES**
COM 101 Mass Media Communication in Society  
CVC 106 Computers in Communication  
COM 110 Communication Theory  
COM 250 Freedom of Expression and Communication Ethics  

One of the following writing courses:
- CNJ 111 Introduction to News Media Writing  
- CMP 126 Introduction to Scriptwriting  
- CAP 232 Promotional Writing  
- CBR 201 Writing for the Electronic Media
OTHER REQUIRED COURSES
(21 credits from the following list. At least 15 credits must be at the 300 level or higher and at least 3 credits must be at the 400 level or higher.)
CAP 202 Graphics for Promotional Media
CVC 221 Still Photography I
CVR 245 Introduction to Electronic Media Production
CVC 309 Web Design I
CVC 331 Still Photography II
CVR 345 Intermediate Electronic Media Production
CVC 361 Photojournalism and Editing
CNJ 381 Newspaper Editing and Layout
or
CAP 384 Advertising Writing and Design
CVC 409 Multimedia I
CAP 410 Advanced Promotional Design
CVC 419 Advanced Web Production
CVC 422 The Photographic Essay
CVR 445 Advanced Electronic Media Production
CVC 496 Internship in Visual Communication
CNP 551 Graphic and Animated Film
CVC 596 Special Topics in Visual Communication

REQUIRED CAPSTONE CLASS
CVC 419 Portfolio Design
or
CVC 435 Seminar in Visual Storytelling

ADDITIONAL REQUIREMENTS FOR THE VISUAL COMMUNICATION MAJOR
Students majoring in Visual Communication must also complete COS 211.

COMMUNICATION MINORS
The School offers minors for students enrolled in the College of Arts and Sciences and for other students who require minors in their programs.
- A student minoring in the general area of Communication must complete 15 credits at least six of which must be at the 300 level or above.
- Courses taken for this minor must be approved in advance through the School’s advising system in the office of Admissions, Academic & Alumni Services.
- Other minors are in Advertising Communication, Public Relations, Journalism, Motion Pictures, Communication Studies, and Broadcasting; see Program statements.
- Each course submitted for a Communication minor must be completed with a grade of C or higher (a grade of C- or lower is not acceptable).

SCHOOL HONORS PROGRAM
School of Communication students may graduate with School Honors in Communication noted upon their diplomas and transcripts. Students should contact the School’s Office of Admissions, Academic & Alumni Services (2037 Wolfson Building) for details.

Students may receive recognition as graduates cum laude, magna cum laude, or summa cum laude if they meet the requirements set forth under GRADUATION HONORS in this Bulletin.

Visual Communication Course Listing
DIVISION OF CONTINUING AND INTERNATIONAL EDUCATION (DCIE)
www.miami.edu/cstudies

The mission of the DCIE is to provide educational programs to meet the needs of non-traditional students, including adults, pre-college students, part-time students, international students, and UM students who wish to study abroad.

Our primary goal is to promote the academic excellence of the University of Miami and the expertise of the faculty through outreach programs. By developing, marketing, and administering short courses, seminars, workshops, lectures, and special events, Continuing and International Education is able to provide access to the public at large as well as to degree seeking students. In addition, Continuing and International Education coordinates weekend credit courses, administers the Summer Session and Intersession, and provides counseling and advising services for returning adult students. Continuing and International Education is an agent for University outreach in the community and serves the corporate world with professional continuing education and workforce training.

The Division has three centers: Allen Hall, on the Coral Gables Campus is the administrative headquarters for the DCIE and the location for the Intensive Language Institute, International Education and Exchange Programs, programs for adults returning to school and preparing for career advancement and youth programs. The University’s downtown center, together with the City of Miami’s 5,000-seat auditorium and exhibition hall, and the Hyatt Regency Hotel, comprise the University of Miami/James L. Knight International Center. The Koubek Center, located in Little Havana between Coral Gables and downtown Miami, has served the local community since 1960, offering courses and certificates in espanol. The Division also has a site at IMG Academies in Bradenton, Florida providing educational opportunities for the Bradenton/Sarasota/Tampa area and for young athletes training at the IMG facility and their families.

BACHELOR OF GENERAL STUDIES DEGREE PROGRAM

Under the leadership of Collegiate Studies, the DCIE offers the Bachelor of General Studies (BGS) degree program, which provides a solid and rigorous, interdisciplinary academic experience for adult, part-time students. It is designed specifically for adults who have previously attended college but have not yet completed their undergraduate degrees, as well as for those who have never had the opportunity to pursue post-secondary studies. You are eligible for admission if you have graduated from high school at least four years ago, have not attended the University of Miami during the past calendar year, have a minimum of 2.0 grade-point average on previous college work, and are a U.S. citizen or permanent resident.

The BGS curriculum allows an individual the flexibility to design an area of concentration to enhance professional or personal goals. The core of the BGS is its interdisciplinary colloquia. Designed to strengthen critical thinking and writing skills of the students, each course is taught by exceptional University of Miami faculty who are committed to the adult student.

Advisors offer personalized attention in career exploration and academic advising and discuss educational alternatives with potential students. Every effort is made to ensure that the process - from admission to registration - is efficient and convenient. Students may attend day, evening, or weekend classes to complete their educational goals.
To underscore its commitment to the adults in our community, the University offers a special tuition to students in the Bachelor of General Studies program which enables the adult, part-time student to pursue this degree at an affordable tuition rate.

The admission process takes into consideration that one’s grade-point average, while significant, is only one factor in determining an applicant’s qualification for acceptance. Therefore, an admissions interview with an advisor from the DCIE will be scheduled to supplement the information you provide on the BGS application form, which may be obtained by calling Collegiate Studies at (305) 284-2727 or at www.miami.edu/bgsdegree.

REQUIREMENTS FOR GRADUATION

I. Candidates for the Bachelor of General Studies (BGS) degree must complete the required credit hours and achieve the quality point average specified for students in the University at large as stated in the section Academic Regulations and Procedures. Exempted is interpreted to refer exclusively to those exemptions provided under the following headings:
   A. Advanced Standing and Placement (Credit Granted);
   B. Credit by Examination;
   C. Advanced Placement (by proficiency examination);

II. Except where a required course is one designated to correct a deficiency in his/her college preparation, the student may apply the credit hours of any required course from which he is exempted toward the hours for that subject as a general requirement for graduation, toward the 120 credits required for graduation. (See Departmental Proficiency Examinations.) An exemption may be granted for English 105, but these credits may not be applied towards the 120 required for graduation.

III. Credit Only
    Only free electives may be taken under this option. Courses which satisfy the major, the distributions of the School, the General Education Requirements of the University or any course for which a C or better is required may not be taken for credit only.

IV. Required Areas of Study
   A. English Composition 3-6 credits
      Students must take English 105 and 106 (or their equivalent) during the first year of enrollment in the School.

   Foreign Languages 3-9 credits
      Students must earn at least 3 credits of foreign language at the 200 course level or higher.

   B. People and Society (History/Social Sciences) 15 credits
      BGS degree candidates must earn 6 credits in a single two-semester History survey sequence. In addition, BGS degree candidates must earn 9 credits in courses taught by at least two of the following disciplines: African American Studies, American Studies in Social Science, Anthropology, Communication, Economics, Education and Psychological Studies, Geography, Judaic Studies, Political Science, Psychology and Sociology.
C. Arts and Humanities  
21 credits  
Credits must be earned in each of the following disciplines: Art History, Literature, Philosophy, and Religious Studies.

In addition, BGS degree candidates must earn 9 credits in any of the following disciplines: American Studies in Humanities, Art, Art History, Communications (Motion Pictures), Dance, Theatre Arts, Musicology, English, Italian, German, Portuguese, Spanish or French Literature, Philosophy, Religion or Women’s Studies in Humanities.

D. Mathematics/Computer Information Systems  
9 credits  
Math 101 or an acceptable score on the math placement test is required. In addition, students must take either Math 103 (finite mathematics) or a math course approved by the advisor. Finally, a 3-credit course in computer information systems is also mandatory.

E. Natural World (Natural Sciences)  
6 credits  
BGS degree candidates may fulfill the Natural Sciences requirement by taking 6 credits in one or more of the following disciplines: Biology, Chemistry, Geological Sciences, Environmental Science, Marine Sciences, Physics and Physical Sciences.

V. Area of Concentration  
30 Credits  
Every candidate for a degree must select an area of concentration. The candidate designs an area of concentration that meets his/her professional and personal goals. The course of study is reviewed and approved by the Dean and/or Director of the program.

VI. COLLOQUIA  
BGS Colloquia are seminar courses, of particular interest to adult students, especially designed to foster critical thinking and taught by faculty from all departments. Candidates for the BGS degree select 5 colloquia to meet requirements for graduation.

VII. Electives  
15 credits  
Students choose elective courses in consultation with their advisor to meet the 120-credit graduation requirement.

CREDIT CERTIFICATE PROGRAMS

Not everyone needs or wants a complete degree program. Recognizing this, the DCIE - in cooperation with several other colleges and schools of the University - offers special Credit Certificate Programs.

Focusing on a single subject, these certificate programs allow students to concentrate on courses that offer the specific knowledge and skills needed for career advancement. All courses are taught by University of Miami faculty at the undergraduate level and are taken for academic credit.

Each certificate program varies in the number of required credits. While required courses are noted, students may work with an advisor in developing an individually-designed program.
Credit certificate programs are currently available in the following subject areas:

**Certificate in Accounting**
The Certificate in Accounting is awarded by the DCIE and the Department of Accounting. It is designed for those who hold at least an undergraduate degree from an accredited college or university, and whose present interest or occupation is accounting. To sit for the C.P.A. examination in Florida, you must have earned a bachelor’s degree plus 30 hours. The total program of study must include the 36 semester hours of accounting beyond the principles level with certain specifics (which the Certificate Program in Accounting will fulfill). Non-business undergraduate majors must complete 39 semester hours of business or accounting courses, including a minimum of six hours of business law.

**Certificate in Art History**
Awarded by the DCIE and the Department of Art and Art History, this certificate program is designed to offer an appreciation of the visual arts for those who may not have the time or the desire to pursue a full degree, and to provide special knowledge in the field of Art History for persons in complementary professions such as journalists, decorators, business managers, or studio art teachers who may occasionally teach humanities courses. The program also serves to enhance the cultural background of those who have already acquired a degree in another subject and to introduce Art History to those who may be considering a career in this field. A Certificate will be granted upon completion of 18 credit hours in Art History, beyond the survey level.

**Certificate in Computer Information Systems**
The Certificate in Computer Information Systems program is designed to provide a broad background in business computer information systems and to develop the technical skills one needs to stay competitive in this challenging field. The program will be of particular benefit to programmers and to management information systems analysts. The certificate is awarded by the DCIE and the Department of Computer Information Systems upon the successful completion of 18 credits.

**Certificate in General Business**
Awarded by the DCIE and the Department of Management, this certificate provides a broad understanding of the business world. A total of 21 credit hours is required to earn the certificate, including Principles of Accounting (ACC 211) and courses from at least three of the following general business areas: accounting, business management, finance, marketing, business law, economics, or management science. The admission process requires students to submit a copy of college transcript showing 60 credits completed and/or required prerequisites.

**Certificate in Graphic Design**
The Certificate in Graphic Design/Multimedia is awarded by the DCIE and the Department of Art and Art History to persons completing eight sequential courses (24 credits) in Graphic Design/Multimedia. Those who have already acquired an art degree in another field, and those who may be choosing a career in graphic design/multimedia will benefit from this program. Eligibility for the Certificate Program in Graphic Design/Multimedia requires that the candidate already has earned a B.A. in any art studio discipline or a B.F.A. degree.

**Certificate in Human Resources**
Created for professionals currently in personnel or human resources management or those who wish to move into such positions in the future, the Certificate in Human Resources is awarded by the DCIE and the Department of Management after the successful completion of
21 academic credits. The admission process requires students to submit a copy of college transcript showing 60 credits completed and/or required prerequisites.

**Certificate in International Business**
The Certificate Program in International Business is designed to educate the student in the major components (law, accounting, tax, and marketing) of international business transactions. The program encompasses the legal and tax framework upon which international business is conducted, explores the uniqueness of international marketing, and investigates the international dimensions of business. The certificate program is designed for people in both small and large businesses, with interests ranging from export/import management to executive decision-making in multinational companies. This certificate requires a minimum of 18 academic credits. The admission process requires students to submit a copy of college transcript showing 60 credits completed and/or required prerequisites.

**Certificate in Sports Management**
The Certificate in Sports Management, awarded by the DCIE and the Department of Exercise and Sport Sciences features curriculum in sports law, sports information, ethics and integrity, leadership and sports marketing. The Certificate in Sports Management provides insight into the conduct and administration of sports programs at all levels, both amateur and professional. The program is directed toward those who have an interest in pursuing careers in the management of sport activities in professional programs, college and university programs, corporate recreation programs, private recreation enterprises, fitness centers, and other leisure service activities. The certificate is awarded upon completion of 21 credits.

For more information, contact: Collegiate Studies, DCIE, University of Miami, P. O. Box 248005, Coral Gables, FL 33124-1610, (305) 284-2727.

**OFFICE OF PROFESSIONAL ADVANCEMENT**

*Dedicated to providing the highest quality, competency-based, continuing professional education, the Office of Professional Advancement offers seminars, courses and certificate programs to meet the training and professional development needs of both corporations and individuals.*

For more information, specific curriculum descriptions and a listing of current seminars, courses and workshops, contact the Office of Professional Advancement, DCIE, University of Miami, 111 Allen Hall, Coral Gables, Florida 33124-1610, (305) 284-5800 or email pd.cstudies@miami.edu. Additional information on the web at: [http://www.miami.edu/educationmiami.com/opa](http://www.miami.edu/educationmiami.com/opa).

**Personal Financial Planning Certificate Program**
Designed for students preparing for professional examinations and professional practice in personal financial planning. Topics addressed are Investment Planning, Retirement Planning, Income and Estate Tax Planning, Insurance Planning, as well as how to develop a comprehensive financial plan. Endorsed by the Certified Financial Planner Board.

**Human Resources Management Certificate Program**
This certificate provides the latest in proven techniques and strategies to effectively manage organizational challenges. Recognized by the Greater Miami Society for Human Resource
Management, this program delivers a comprehensive curriculum ideally suited for all human resource professionals, especially small business owners.

**Paralegal Studies Certificate program**

The UM Paralegal Studies program is an intense four-month course of study which certifies the successful student as a qualified professional ready to start an exciting new career as a paralegal. Classes are taught by prominent local attorneys and meet either at weekends or three evenings each week.

**Computer Training Programs**

Computer skills are essential to get a job or even to lead a productive life in the twenty-first century. The ability to use a computer is the new literacy. We offer a wide selection of classes that cater to different skill-levels and interests including our own UM certifications. Whether you are a beginner with no previous knowledge of computers, someone who wants to enhance their efficiency in the workplace, or an IT professional seeking a specific industry certification, we can offer the computer training that you need. Courses are offered on evenings and at weekends.

**Courses and Programs**

For more detailed course descriptions, current schedule, and prices please visit our website at [www.miami.edu/ct](http://www.miami.edu/ct).

**Office Productivity**

**Classes for Beginners**

A great place to start! Our UM Computer Foundation course will help you develop a solid understanding of how computers work and teach you essential Internet skills. After you have mastered the fundamentals, you will be ready to explore Microsoft Windows and Word and develop the habits and learn the computer conventions which are used in all applications. This 6 hour course is designed for students with little or no computer experience. **6 hours**

**University of Miami Office Professional**

The UM Office Professional is a certification course created by the University of Miami to establish a nationally recognized standard of business computer skills. The UM Office Professional is an intensive, hands-on computer training course which teaches, tests and certifies all the core skills for Microsoft Windows, Word, Excel, Access, PowerPoint and Outlook.

This 40-hour course is designed for people who have some basic computer experience and want to become proficient in all the popular Microsoft office applications. The UM Office Professional certificate will demonstrate to potential employers that you are proficient in all the core computer skills required in the modern work-place. This is an invaluable tool for the job seeker to establish their computer credentials. It is also invaluable for the employer seeking qualified and productive staff. A more detailed description can be found at [www.miami.edu/umos](http://www.miami.edu/umos). **40 hours (5 weeks)**

**IT Professional Certifications**
We offer training towards certification by IT industry leaders such as Microsoft and CompTIA:

*CompTIA (Computer Technology Industry Association) provides testing that is vendor-neutral and sets the technology standards and guidelines for testing the competency of IT professionals.*

**Microsoft Certified Systems Administrator (MCSA):**
After gaining this credential, an individual will be able to implement, manage, and troubleshoot existing network systems. Appropriate for aspiring Systems Administrators, Network Administrators, and Network Support Specialists. **136 hours (4 months)**

**Microsoft Certified Systems Engineer (MCSE):**

**Microsoft Certified Solutions Developer (MCSD) for Microsoft .NET:**
This certification is aimed at professionals who design and develop business solutions with Microsoft .NET development tools, technologies, and platforms. MCSDs can develop desktop applications as well as multi-user, web-based, XML, n-tier, and transaction-based applications. **272 hours (9 months)**

**Microsoft Certified Database Administrator (MCDBA):**
The MCDBA certification is intended for individuals who implement and administer Microsoft SQL Server 2000 databases. This certification enables you to design, develop logical data models, create physical databases, create data services by using Transact SQL, manage and maintain databases, configure and manage security, monitor and optimize databases, and install and configure SQL Server 2000. **240 hours (8 months)**

**A+ (CompTIA):**
The certification test for A+ covers vendor-neutral hardware and software technologies. A+ serves as the foundation for most CompTIA certifications and teaches skills that are important to all aspects of computer administration. **64 hours (8 weeks)**

**Security+ (CompTIA):**
This course will help build your knowledge and experience with computer hardware, operating systems and networks and also teach you the skills needed to implement basic security services on any type of computer network. This certification is appropriate for those seeking expertise in Communication Security, Infrastructure Security, Basics of Cryptography, and Operational/Organizational Security. **32 hours (4 weeks)**

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**UM Office Computer Certifications**
The UM Office Computer Certificates were created to help business owners take better advantage of their investment in computer systems. Many managers do not have staff trained to use their expensive systems to their full advantage. Instead of hiring a full-time
professional web-master to create your website – send one of your staff members to earn the UM WebMaster certificate. With someone on staff certified as a UM Desktop Publisher, you can produce professional flyers, newsletters, price-lists, memos, posters and ads – instead of paying (and waiting for) some outside agency to do perform the work for you.

The UM Office Professional
Gain proficiency in the core skills of Microsoft Windows, Word, Excel, Access, PowerPoint, and Outlook and learn to integrate all these applications in the workplace. The UM Office Professional trains staff and gives individuals the fundamental skills needed in the modern office. 40 hours (5 weeks)

UMWM (UM Web Master):
Master the fundamental skills of planning, designing, building, launching, and maintaining a website. This course is great for small businesses interested in creating a professional website. 48 hours (6 weeks)

For more information about computer training:
Contact Us:
111 Allen Hall, 5050 Brunson Drive, Coral Gables, FL 33124-1610
Phone: (305) 284-5800 Fax: (305) 284-6279
www.educationmiami.com/opa

ADULT STUDENT ACCESS PROGRAM (A.S.A.P.)

Students may take up to 30 credits in an undergraduate, non-degree seeking category, which may be applied to a degree program, after all application and degree-seeking requirements are met. In order to be enrolled in this category, students submit a one-page application and no other documents or transcripts; academic achievement is evaluated after 12 credits are earned. A 2.5 G.P.A. is required to continue in the program beyond 12 credits. The application for enrollment may be found on the Web at www.miami.edu/asap.

Students may take up to 6 credits maximum in a graduate, non-degree seeking category which may be applied to certain degree programs, after all application and degree seeking requirements are met. However, not all graduate departments participate in this program. In order to enroll in this category, students submit a one-page application and no other documents or transcripts, after securing the written permission of the participating graduate department and the Dean of the Graduate School. The application for enrollment may be found on the Web at www.miami.edu/asap.

For more information, contact: The Adult Student Access Program, DCIE, University of Miami, P.O. Box 248005, Coral Gables, FL 33124-1610, (305) 284-2727.

Certificate Programs Taught in Spanish

Enrichment such as, Interior Decorations, Graphic Design, Theater Production, Acting and Humanistic Cybernetics.

For more information, contact the Koubek Center, DCIE at (305)-284-6001 or visit our web page, www.miami.edu/koubek.
SCHOOL OF EDUCATION - UNDERGRADUATE

www.education.miami.edu

The School of Education offers majors in Elementary Education with ESOL endorsement (grades K-6), Exceptional Student Education with ESOL endorsement (grades K-12), Secondary English with ESOL endorsement, Secondary Chemistry, Biology, Mathematics and Social Science (grades 6-12), Athletic Training, Sport Administration and Exercise Physiology. The School of Education offers 15 credit minors in Education (non-certification), Exercise Science, Leadership, Family and Human Services, Sport Administration and Sports Medicine. Students declaring a major in Elementary Education/ESOL or Exceptional Student Education/ESOL must also choose a major field in the College of Arts and Sciences. Students declaring a major in Secondary Education must also choose a teaching field in the College of Arts and Sciences. Students completing the professional education sequence for Music Education teachers must choose Music Education as a major in the School of Music.

The degrees of Master of Science in Education, Specialist in Education, and Doctor of Philosophy are available in some departments in the School of Education. These programs are under the supervision of the Dean of the Graduate School and the School of Education Academic and Student Services Committee. All teacher education programs leading to certification are approved by the State of Florida and accredited by the National Council for Accreditation of Teacher Education.

The 2002 Title II State Report Summary reported an overall pass rate of 100% on the Florida Teacher Certification Examination for graduates of the School of Education undergraduate and graduate State of Florida teacher education approved programs.

ACADEMIC PROGRAMS

DEPT. of EDUCATIONAL AND PSYCHOLOGICAL STUDIES - Dept. Code: EPS

MINOR IN FAMILY AND HUMAN SERVICES – Code for Minor: EPS

- The requirements of the minor are 12 core credits and 3 elective credits with a grade of C- or better and a GPA of 2.0 or better for these 15 credits.
- Nine of these 15 credits must have been completed at UM; with prior approval, 3 of these 9 may be taken through the UM Study Abroad Program.
- The core courses are EPS 270, EPS 280, EPS 428, and EPS 330.

See the Department of Educational and Psychological Studies for list of courses:
Stephanie Schmitz, Ph.D
Coordinator, Minor in Family and Human Services
Department of Educational and Psychological Studies
319-C Merrick Building
305-284-4829
sschmitz@miami.edu
www.education.miami.edu

Educational and Psychological Studies Course Listing
DEPT. of EXERCISE AND SPORT SCIENCES - Dept. Code: ESS

MAJORS

Bachelor of Science in Education, Exercise Physiology

- The Undergraduate program at the University of Miami is designed for students to acquire a sound knowledge base in the sciences followed by the application of that knowledge base to human movement, exercise and sports performance. Clinical laboratory experiences supplement applied scientific theory in a rigorous academic setting.
- Students may pursue a pre-med track concurrent with the Exercise Physiology major and should inform their advisor in so doing.

Courses for Exercise Physiology major:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS155</td>
<td>Biological and Health Related Bases of Exercise</td>
</tr>
<tr>
<td>ESS184</td>
<td>Athletic and Sports Injuries</td>
</tr>
<tr>
<td>ESS221</td>
<td>Introduction to Exercise: Bioenergetics and Skeletal Muscle Physiology</td>
</tr>
<tr>
<td>ESS222</td>
<td>Exercise Physiology Laboratory: Neuromuscular</td>
</tr>
<tr>
<td>ESS232</td>
<td>Basic Human Physiology</td>
</tr>
<tr>
<td>ESS245</td>
<td>Kinesiology</td>
</tr>
<tr>
<td>ESS246</td>
<td>Gross Anatomy</td>
</tr>
<tr>
<td>ESS310</td>
<td>Elements of Sports Psychology</td>
</tr>
<tr>
<td>ESS321</td>
<td>Introduction to Systemic Exercise Physiology</td>
</tr>
<tr>
<td>ESS322</td>
<td>Exercise Physiology Laboratory: Cardiorespiratory</td>
</tr>
<tr>
<td>ESS363</td>
<td>Principles of Exercise Prescription: Cardiovascular</td>
</tr>
<tr>
<td>ESS365</td>
<td>Principles of Exercise Prescription and Program Management</td>
</tr>
<tr>
<td>ESS366</td>
<td>Exercise Prescription Lab</td>
</tr>
<tr>
<td>ESS232</td>
<td>Basic Human Physiology</td>
</tr>
<tr>
<td>ESS421</td>
<td>Systemic Exercise Physiology</td>
</tr>
<tr>
<td>ESS457</td>
<td>Clinical Internship in ESS</td>
</tr>
<tr>
<td>ESS477</td>
<td>Advanced Nutrition for Sports and Fitness</td>
</tr>
</tbody>
</table>

The University of Miami currently has a 5-year program for undergraduate exercise physiology majors who want to obtain a Master’s Degree in Exercise Physiology. This can be done by taking one additional year of graduate courses. These students must take two graduate courses in Exercise Physiology in their senior undergraduate year in order to get a MS degree in Exercise Physiology in one extra year. Please check our website www.education.miami.edu for additional information on the “5-year program”. To be eligible you must apply for entrance into the 5-year program no later than the Fall of your junior year.
**Bachelor of Science in Education, Athletic Training**

The Athletic Training program at the University of Miami is an undergraduate education program that has been accredited by CAAHEP. The program is designed to provide a structured classroom and clinical experience to prepare students to become eligible to sit for the National Athletic Trainers Association Board of Certification; Didactic courses are sequenced to maximize student learning.

**Athletic Training major:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS140</td>
<td>Introduction to Athletic Training</td>
</tr>
<tr>
<td>ESS141</td>
<td>Introduction to Athletic Training Lab</td>
</tr>
<tr>
<td>ESS145</td>
<td>Responding to Emergencies</td>
</tr>
<tr>
<td>ESS150</td>
<td>Nutrition for Sports and Fitness</td>
</tr>
<tr>
<td>ESS210</td>
<td>Foundations to Athletic Training</td>
</tr>
<tr>
<td>ESS230</td>
<td>Medical Terminology and Documentation</td>
</tr>
<tr>
<td>ESS232</td>
<td>Basic Human Physiology</td>
</tr>
<tr>
<td>ESS235</td>
<td>Personal and Community Health</td>
</tr>
<tr>
<td>ESS245</td>
<td>Anatomy and Kinesiology</td>
</tr>
<tr>
<td>ESS246</td>
<td>Gross Anatomy</td>
</tr>
<tr>
<td>ESS250</td>
<td>Orthopedic Assessment: Lower Extremity</td>
</tr>
<tr>
<td>ESS251</td>
<td>Orthopedic Assessment: Lower Extremity Lab</td>
</tr>
<tr>
<td>ESS260</td>
<td>Orthopedic Assessment: Upper Extremity</td>
</tr>
<tr>
<td>ESS261</td>
<td>Orthopedic Assessment: Upper Extremity Lab</td>
</tr>
<tr>
<td>ESS264</td>
<td>General Medical Conditions Evaluation</td>
</tr>
<tr>
<td>ESS321</td>
<td>Introduction to Systemic Exercise Physiology</td>
</tr>
<tr>
<td>ESS365</td>
<td>Principles of Exercise Prescription and Program Management</td>
</tr>
<tr>
<td>ESS443</td>
<td>Athletic Training Lab I</td>
</tr>
<tr>
<td>ESS444</td>
<td>Athletic Training Lab II</td>
</tr>
<tr>
<td>ESS455</td>
<td>Athletic Training Lab III</td>
</tr>
<tr>
<td>ESS456</td>
<td>Athletic Training Lab IV</td>
</tr>
<tr>
<td>ESS461</td>
<td>Therapeutic Modalities</td>
</tr>
<tr>
<td>ESS462</td>
<td>Therapeutic Modalities Laboratory</td>
</tr>
<tr>
<td>ESS463</td>
<td>Therapeutic Rehabilitation</td>
</tr>
<tr>
<td>ESS464</td>
<td>Therapeutic Rehabilitation Laboratory</td>
</tr>
<tr>
<td>ESS465</td>
<td>Pharmacology</td>
</tr>
<tr>
<td>ESS475</td>
<td>Organization and Administration of Athletic Training</td>
</tr>
<tr>
<td>ESS476</td>
<td>Seminar in Athletic Training</td>
</tr>
</tbody>
</table>
Bachelor of Science in Education, Sport Administration

• The Sport Administration major at the University of Miami is an undergraduate education program designed to prepare students for careers in the sport industry. The program is committed to the professional development of students so that competencies and skills relevant to the Sport Industry can be acquired over time. Specific competencies in organization, ethics, marketing, leadership and legal issues are emphasized.

• Field experience and internships are an essential component of the major. The ESS department is actively engaged in placing students in visible sports settings and appropriate sport environments so that students acquire relevant competencies and gain pragmatic hands-on experiences that are necessary for success in today’s sport industry.

• The Sport Administration major is a 39-credit major leading to a Bachelor of Science in Education.

• A Business Administration minor is mandatory to complement the Sport Administration major and provide a well-rounded comprehensive background to the Sport Administration field.

Sport Administration major:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS201</td>
<td>Introduction to Sport Administration</td>
</tr>
<tr>
<td>ESS204</td>
<td>Sport Personnel/Career Management</td>
</tr>
<tr>
<td>ESS206</td>
<td>Sport Facilities and Event Management</td>
</tr>
<tr>
<td>ESS302</td>
<td>Sport Marketing</td>
</tr>
<tr>
<td>ESS306</td>
<td>Essential Leadership in Sports and the Professions</td>
</tr>
<tr>
<td>ESS308</td>
<td>Ethical Decision Making in Sport and the Professions</td>
</tr>
<tr>
<td>ESS310</td>
<td>Elements of Sports Psychology</td>
</tr>
<tr>
<td>ESS401</td>
<td>Legal Aspects of Sport</td>
</tr>
<tr>
<td>ESS405</td>
<td>Finance and Budget in Sport Administration</td>
</tr>
<tr>
<td>ESS410</td>
<td>Problems and Issues in Sport Administration</td>
</tr>
<tr>
<td>ESS497</td>
<td>Internship in Sport Administration</td>
</tr>
<tr>
<td>ESS498</td>
<td>Seminar in Sport Administration</td>
</tr>
</tbody>
</table>

Business Administration Minor

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC211</td>
<td>Principles of Financial Accounting</td>
</tr>
<tr>
<td>FIN300</td>
<td>Finance for Non-Business Majors</td>
</tr>
<tr>
<td>MGT304</td>
<td>Organizational Behavior</td>
</tr>
<tr>
<td>MKT301</td>
<td>Marketing Foundations</td>
</tr>
</tbody>
</table>

MINORS

A minor in **Exercise Physiology** consists of ESS 150, ESS 155, ESS 221, ESS 363 and ESS 365.

A minor in **Sports Medicine** consists of ESS 150, ESS 184, ESS 221, ESS 245, and ESS 246.
A minor in **Sports Administration** consists of ESS 201, ESS 302, ESS 308 ESS 401 plus three (3) restricted credits taken from the following: ESS 204, ESS 206, ESS 306, ESS 405 or ESS 406.

A minor in **Leadership** consists of ESS 306, ESS 308, plus six (9) restricted credits taken from the following: MGT 304, MGT 307, MGT 360, MGT 422, PHI 330, and PSY 215.

- A grade of C- or better is required for each course applied toward the minor; the overall quality point average for the minor must be 2.0 or above.
- The undergraduate coursework in Exercise Science, Sports Medicine, Sport Administration, Sport Sciences, and Leadership are open to all qualified University of Miami students.
- Determination for using these courses as a minor, as a specialization, and/or as electives in any program, is made by the individual student’s degree granting college or school.

A minor in any of the five areas above consists of 15 credits.

The University of Miami currently has a 5-year program for undergraduate wishing to complete their Masters of Science Degree in one year post Bachelor of Science Degree in Exercise Physiology. This program is for ESS majors in Exercise Physiology only (see below charts).

<table>
<thead>
<tr>
<th>Exercise Physiology Course Rotations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5 – Year Program</strong></td>
</tr>
</tbody>
</table>

### Fall 1
- **ESS 155**: Biological and Health Related Bases of Exercise, 3 credits
- **BIL 109**: Human Biology, 3 credits

### Fall 2
- **ESS 232**: Human Physiology, 3 credits
- **ESS 221**: Introduction to Exercise: Bioenergetics and Skeletal Muscle Physiology, 3 credits
- **ESS 222**: Exercise Physiology Laboratory: Neuromuscular Kinesiology, 2 credits
- **ESS 245**: Kinesiology, 3 credits
- **CHM 103**: Chemistry for Life Sciences I, 4 credits
- **CHM 105**: Chemistry for Life Sciences Lab I, 1 credit

### Spring 1
- **ESS 246**: Gross Anatomy, 3 credits

### Spring 2
- **ESS 321**: Introduction to Systemic Exercise Physiology, 3 credits
- **ESS 322**: Exercise Physiology Laboratory: Cardiorespiratory Athletic and Sport Injuries, 2 credits
- **ESS 384**: Exercise Physiology Laboratory: Cardiorespiratory Athletic and Sport Injuries, 3 credits
- **CHM 104**: Chemistry for Life Sciences II, 4 credits
- **CHM 106**: Chemistry for Life Sciences Lab II, 1 credit
Fall 3
ESS 310 Elements of Sport Psychology 3
ESS 365 Principles of Exercise Prescription 3
ESS 366 Exercise Physiology Laboratory: Assessment 1

Spring 3
ESS 363 Principles of Exercise Prescription: Neuromuscular 3
ESS 477 Advanced Nutrition for Sport and Fitness 3

Fall 4 *
ESS 421 Systemic Exercise Physiology 3
ESS 579 Prescription/Assessment Cardiovascular 3

Spring 4
ESS 458 Project in Exercise and Sport Sciences 3
ESS 586 Exercise Prescription Assessment Lab 3

*take GRE and submit graduate application

GRADUATE SCHOOL – ESS
Summer 1
ESS 520 Cellular Exercise Physiology 3
ESS 646 Research Methods in Exercise Physiology 3

Fall 5
ESS 555 Exercise Biochemistry 3
ESS 699 Special Project in ESS 3
ESS 671 Research Design ANOVA Method 3

Spring 5
ESS 541 Neurophysiology 3
ESS 577 Advanced Nutrition for Sport and Fitness 3
ESS 530 Laboratory: Techniques in Functional Evaluation of Skeletal Muscle 3

ESS XXX Elective 3

Exercise Physiology Course Rotations
(Pre-Med Track)
5 – Year Program

Fall 1
ESS 155 Biological and Health Related Bases of Exercise 3
BIL 150 General Biology 4
BIL 151 General Biology Laboratory 1
CHM 111 Principles of Chemistry I 3
CHM 113 Chemistry Lab I 1

Spring 1
ESS 246 Gross Anatomy 3
BIL 160 Evolution and Biodiversity 4
BIL 161 Evolution and Biodiversity Laboratory 1
CHM 112 Principles of Chemistry II 3
CHM 114 Chemistry Lab II 1

Fall 2
ESS 232 Human Physiology 3

Spring 2
ESS 321 Introduction to Systemic Exercise Physiology 3
## ESS 221 Introduction to Exercise: Bioenergetics and Skeletal Muscle Physiology 3
## ESS 222 Exercise Physiology Laboratory: Neuromuscular 2
## ESS 245 Kinesiology 3
## CHM 201 Organic Chemistry I 3
## CHM 205 Organic Chemistry I Lab 1

### Fall 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS 310</td>
<td>Elements of Sport Psychology</td>
<td>3</td>
</tr>
<tr>
<td>ESS 365</td>
<td>Principles of Exercise Prescription</td>
<td>3</td>
</tr>
<tr>
<td>ESS 366</td>
<td>Exercise Physiology Laboratory: Assessment</td>
<td>1</td>
</tr>
<tr>
<td>PHY 101</td>
<td>College Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHY 106</td>
<td>College Physics Lab I</td>
<td>1</td>
</tr>
<tr>
<td>BIL 250</td>
<td>Genetics</td>
<td>3</td>
</tr>
</tbody>
</table>

### Spring 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS 363</td>
<td>Principles of Exercise Prescription: Neuromuscular</td>
<td>3</td>
</tr>
<tr>
<td>ESS 477</td>
<td>Advanced Nutrition for Sport and Fitness</td>
<td>3</td>
</tr>
<tr>
<td>BIL 255</td>
<td>Cellular and Molecular Biology</td>
<td>3</td>
</tr>
</tbody>
</table>

### Fall 4*

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMB 401</td>
<td>Biochemistry for Medical Sciences (or BMB 258)</td>
<td>3</td>
</tr>
<tr>
<td>ESS 421</td>
<td>Systemic Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>ESS 579</td>
<td>Prescription/Assessment Cardiovascular</td>
<td>3</td>
</tr>
</tbody>
</table>

### Spring 4

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS 458</td>
<td>Project in Exercise and Sport Sciences</td>
<td>3</td>
</tr>
<tr>
<td>ESS 586</td>
<td>Exercise Prescription Assessment Lab</td>
<td>3</td>
</tr>
</tbody>
</table>

*take GRE and submit graduate application

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### GRADUATE SCHOOL – ESS

#### Summer 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS 520</td>
<td>Cellular Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>ESS 646</td>
<td>Research Methods in Exercise Physiology</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Fall 5

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS 555</td>
<td>Exercise Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>ESS 699</td>
<td>Special Project in ESS</td>
<td>3</td>
</tr>
<tr>
<td>ESS 671</td>
<td>Research Design ANOVA Method</td>
<td>3</td>
</tr>
<tr>
<td>ESS XXX</td>
<td>ESS elective</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Spring 5

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS 541</td>
<td>Neurophysiology</td>
<td>3</td>
</tr>
<tr>
<td>ESS 577</td>
<td>Advanced Nutrition for Sport and Fitness</td>
<td>3</td>
</tr>
<tr>
<td>ESS 530</td>
<td>Laboratory: Techniques in Functional Evaluation of Skeletal Muscle</td>
<td>3</td>
</tr>
<tr>
<td>ESS XXX</td>
<td>ESS Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

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Exercise & Sport Sciences Course Listing
DEPT. of TEACHING AND LEARNING - Dept. Code: TAL

- The Department of Teaching and Learning offers a Bachelor of Science in Education Degree in Elementary Education (grades K-6) with ESOL (English to Speakers of Other Languages) endorsement, and Exceptional Student Education (grades K-12) with ESOL endorsement.
- In conjunction with the College of Arts and Sciences, the Department also offers a major in Secondary Education in English with ESOL endorsement, Chemistry, Biology, Mathematics, and Social Science (grades 6-12).
- Also, in conjunction with the School of Music, the Department offers courses and certification in the area of music education.
- A grade of C- or better is required for each course applied toward the major; the overall GPA must be 2.5 within the teaching major and overall GPA.

MAajors

Elementary Education with ESOL Endorsement

The Department of Teaching and Learning offers a major in Elementary Education that leads to certification in Elementary Education (grades K-6) with ESOL endorsement. The requirements for Elementary Education are a major in Elementary Education, and a second major in the College of Arts and Sciences. The following Education courses are required for the Elementary Education major:

*Please note: Students may not register for any classes above TAL 421 without either Teacher Candidacy.

Exceptional Student Education with ESOL Endorsement

The Department of Teaching and Learning offers a major in Special Education (Exceptional Student Education) (grades K-12). The requirements for Special Education are a major in Special Education and a second major in the College of Arts and Sciences. The following Education courses are required for the Special Education major:

*Please note: Students may not register for any classes above TAL 421 without either Teacher Candidacy.

Secondary Education

The Department of Teaching and Learning offers a major in secondary education (grades 6-12). Certification is offered in the general areas of: English; Mathematics; Sciences (Biology, Chemistry); Social Science. Each student should complete a major from the appropriate department in the College of Arts and Sciences and a second major in the Department of Teaching and Learning.

The requirements for a secondary leading to certification include
(a) a major in the appropriate field of Arts and Sciences (Biology, Chemistry, Economics, English, Geography, History, Math or Political Science only) and
(b) the following education courses:
• TAL 101, 103, 204, 304, 440, 472, 480, 506, and
• one course selected from the following list as appropriate for the subject area major: TAL 441, 443, 444, or 445
• English majors take TAL 427 and 428 instead of 506
• Please note: Students may not register for classes above TAL 304 without obtaining Teacher Candidacy.

PROFESSIONAL DEVELOPMENT SCHOOLS

Bel-Aire, Flamingo, Kensington Park, F.S. Tucker, Henry S. West Laboratory Elementary, Ponce de Leon Middle and Coral Gables Senior High School are operated by Miami-Dade County Public Schools. These schools provide the most up-to-date teaching environments, both in terms of design and curriculum, work in partnership with the University of Miami. Students are welcomed at these facilities for field experiences, and both students and faculty have the opportunity to contribute to the high quality functioning of these professional development schools.

ACADEMIC POLICIES

ADMISSION

SELECTION FOR THE TEACHING PROFESSION

The faculty of the School of Education conceives its ultimate obligation to be to the children, adolescents, and adults who will be taught by teachers who have completed teacher preparation programs at the University. The quality of students admitted into the teacher education curriculum is as important as the skills, content, and concepts to be learned. Further, selection of those students who express a desire to become teachers does not begin or end with a student’s initial enrollment in a particular course or sequence of courses leading to teacher certification.

Most courses in the teacher education program require school site-based field experiences, culminating in a full time 12-week internship. School districts require a criminal background check for field placement students and interns. Fingerprinting and FBI background check procedures are at the applicant’s expense. Students with felony arrests may wish to consider these requirements carefully and, if necessary, seek advice from an advisor in the School of Education before applying to programs in the School of Education. Students without a valid social security number will not be eligible for placement in the school district. The Director of Clinical Supervision and Internship Placement will assist students through these requirements.

All students who wish to be considered for admission and/or retention in curricula leading to Florida Teacher Certification will be formally screened at certain points in their program of study with respect to the following criteria:

1. Admission to Teacher Candidacy (see requirements below).
2. Acceptable grade point averages. (C- or better for all education classes)
3. University of Miami faculty evaluations.
Students who receive a grade below C in their Associate Teaching field experience will not be recommended for teacher certification.
4. Evaluations of cooperating faculty at various field experience sites.
Note: The Associate Dean of the School of Education must approve Appeals to the above policies.

**REQUIREMENTS FOR ADMISSION TO TEACHER CANDIDACY**


2. Completion of 40 semester hours. In addition, transfer students must have a minimum of 9 semester hours of acceptable credit earned at the University of Miami.

3. A 2.5 GPA in education core courses. No education classes lower than C-.

4. A 2.5 GPA in the content area teaching major (for secondary education majors).

5. Completion of the Course Advisement Plan (CAP).

6. Above average ratings on field experience evaluations.


8. Completion of Oral Communication Proficiency Requirement (TAL 202/COS 211)

9. Satisfactory completion of Teacher Dispositions Index

10. Further enrollment in teacher education course work offered by the School of Education is contingent upon the student meeting the requirements of 1-6 above with the only exception of students pursuing a 15 credit-hour minor in Education that has been approved by the Dean of their School or College and the Associate Dean of the School of Education.

11. All students must successfully complete MDCPS fingerprinting process. Forms are available in the Office of Student Services.

NOTE: Appeals to the policies stated 1-6 above must be directed to the Associate Dean of the School of Education.

**REQUIREMENTS FOR ADMISSION TO ASSOCIATE TEACHING**

Students make formal application to the Student Services Committee for admission to associate teaching. Application materials are available in the Office of Student Services and are to be completed by students no later than the week of October 20 for Spring Semester Associate Teaching and by the week of March 20 for Fall Semester Associate Teaching.

The following requirements must be met:
1. Admission to a Teaching Certification Program (Teacher Candidacy).

2. Completion of application for admission to associate teaching, which includes the submission of designated folders to the Office of Student Services and teacher disposition forms.

3. Approval of the Associate Dean for Undergraduate Studies and the TAL Department Chair.
4. Recommendations from two members of the faculty familiar with the student’s academic proficiency. One of these must be from a faculty member in the School of Education.

5. Earned a minimum of 90 credit hours.

6. All secondary majors must have completed approximately two-thirds of the courses in the teaching major and received departmental approval. Elementary majors must have completed TAL 420, 421, 422, 423, 424, 425, 426, 427, 428, and received departmental approval. Exceptional Student Education majors must have completed TAL 304, 330, 332, 420, 421, 422, 426, 427, 428, 432, 434 and received departmental approval.

7. Earned a minimum of 2.5 grade point average in the education core courses.

8. A grade of C- or better is required of each course applied to the major.

9. Earned a minimum of 2.5 grade point average overall.

10. Successfully completed pre-internship field experiences.

11. Passed the Florida General Knowledge Test.

12. Taken the Professional Education Test and the Subject Area Exam.

NOTE: A MAXIMUM OF 12 CREDITS MAY BE TAKEN DURING THE STUDENT TEACHING SEMESTER. No outside job may be held or additional classes taken during the Associate Teaching semester.

NOTE: the Associate Dean of the School of Education must approve Appeals to the above policies.

TEACHER EDUCATION PROGRAM ENDORSEMENT

Approved teacher education program endorsement on students’ transcripts will be given when the student meets all requirements of the School of Education and the College of Arts and Sciences or the School of Music. Further, endorsement is contingent upon the student taking at least half of the coursework in teacher education at the University of Miami, including the associate teaching. At least half of the coursework in the students teaching content area(s) must be taken at the University of Miami in the College of Arts and Sciences, School of Music or the School of Education, as determined by the program in which the student is enrolled.

For Graduate Degree Programs offered by the School of Education, see the Bulletin of the Graduate School.

For further information, address all inquiries to: Dean; School of Education; P.O. Box 248065; University of Miami; Coral Gables, Florida 33124; Telephone: (305) 284-3711

REQUIREMENTS FOR GRADUATION

BACHELOR OF SCIENCE IN EDUCATION
I. Candidates for B.S.Ed in the School of Education must complete the credit hours of work and achieve the quality point average specified for students in the University at large as stated in the section ACADEMIC REGULATIONS AND PROCEDURES, subject to regulations concerning the major specified in departmental and program sections of this Bulletin. Exempted is interpreted to refer exclusively to those exemptions provided under the following headings:
   A. Advanced Standing and Placement (Credit Granted);
   B. Credit by Examination;
   C. Advanced Placement (by proficiency examination);
   D. Statement of Foreign Language Requirements;

II. Students must pass both the Professional Education, General Knowledge and Subject Area tests of the Florida Teacher Certification Examination (FTCE). Not applicable to ESS majors.

III. Except where a required course is one designated to correct a deficiency in his/her college preparation, the student may apply the credit hours of any required course from which he is exempted toward the hours specified for that subject as a general requirement for graduation and, upon payment of a recording fee, toward the 120 credits required for graduation. (See Departmental Proficiency Examinations.) An exemption may be granted for English 105, but these credits may not be applied toward the 120 credits required for graduation.

IV. Credit Only
Not applicable to ESS majors

Only free electives may be taken under this option. Courses which satisfy the major, minor, the distributions of the School, the General Education Requirements of the University or any course for which a C or better is required may not be taken for credit only.

V. Transferred credit may not count toward the completion of a major without the written approval of the Associate Dean of the School of Education.

VI. Required Areas of Study.
   A. English Composition.
      Except as indicated below, students must take English 105 and 106 (or their equivalent) during the first year of enrollment in the School. Admission to English 105 requires a placement score acceptable to the Department of English. Students whose placement scores are deemed unacceptably low will be required to take the non-credit course, ENG 103, before taking ENG 105 and 106. Students whose placement scores are high may be exempt from ENG 105 but not from ENG 106 or its equivalent.

   B. Mathematics
      B.S.Ed degree candidates who do not place out of MTH 101 must take MTH 101 or MTH 107 during their first year of study. In addition, all degree candidates must take one of the following math courses: MTH 103, MTH 108, MTH 109, MTH 110, MTH 111, MTH 131.

   C. Foreign Languages (applicable to Sport Administration majors only)
      Students must earn at least 3 credits of a foreign language at the 200 course level or higher. Special 200-level courses are required of native speakers who choose to fulfill the language requirement by taking language.

Areas of Knowledge
D. People and Society
B.S.Ed. Degree candidates must earn 6 credits (credits required depends on the program in which the student is enrolled) in the History/Social Sciences.

E. Arts and Humanities
B.S.Ed degree candidates must earn 12 credits must be earned in the areas of 1) Fine Arts; 2) Literature; and 3) Philosophy/Religion. At least 3 credits must be earned in the Arts and 3 credits in the Humanities. The literature requirement may not be fulfilled by a course that has been used to fulfill the foreign language requirement. All Humanities/Literature credits must be earned in courses from among the following:
1. Fine Arts: *Note: COS 211 Public Speaking is required of all Teaching and Learning and Sport Administration majors.
2. Literature
3. Philosophy/Religion

F. Natural World
B.S.Ed degree candidates may fulfill the Natural Sciences requirement by taking 6 credits (credits required depends on the program the student is enrolled) in two or more of the following disciplines: Biology, Chemistry, Geological Sciences, Marine Sciences, Physics, and Physical Sciences.

Note: No more than six credit hours may be taken in any one department to satisfy the areas of knowledge requirement.

VII. Writing
Every student must complete five writing-oriented (W) courses beyond ENG 105 and 106. Students must take one approved writing course section per academic year for a minimum of five writing intensive course sections, or their equivalents. A student is required to write at least 4000 words in each W course. Writing assignments will be assessed for both content and style. A W course listed in section V (Required Areas of Study) may be used to satisfy both the writing and Required Areas of Study criteria. Foreign language courses that meet the criteria above may be used to satisfy the writing requirement. Transfer students must satisfy at least 2 courses of the writing requirement at the University of Miami.

VIII. Majors
Every candidate for the B.S.Ed degree must choose a major in Elementary Education/ESOL endorsement, Exceptional Student Education/ESOL endorsement, Secondary Education (English with ESOL endorsement, Chemistry, Biology, Mathematics, Geography, History, Political Science or Economics) Athletic Training, Sport Administration or Exercise Physiology. To find the requirements for the major, consult this Bulletin under the discipline concerned, and confer with the designated departmental representative. Candidates with a major in the Department of Teaching and Learning are required to select an approved second major in the College of Arts and Sciences. The choice of majors should be made no later than the beginning of the junior year and must be approved by the major department. Any student making unsatisfactory progress in a major may be required to change his/her major or to relinquish candidacy for the degree.

IX. Electives
Electives may be chosen from any courses offered by the University. The student should consult an advisor before selecting elective courses. At least six credits must be at the 300 level or above.
Note: Common prerequisites and total length for state-approved teacher education programs are subject to revision based on legislative and State of Florida Department of Education rule changes.

For Graduate Coursework, Graduate Degree Programs Offered By The School of Education, see the Bulletin of the Graduate School.

For further information, address all inquiries to: Dean; School of Education; P. O. Box 248065; University of Miami; Coral Gables, Florida 33124; Telephone: (305) 284-3711

MINOR

The Department also offers a minor in Education consisting of 15 credits passed with a grade of C- or higher with an overall GPA of 2.0. Courses must be selected from the list of acceptable departmental courses. A minimum of six credits must be numbered 400 or higher. This minor is a non-certification minor.

Teaching and Learning Course Listing
COLLEGE OF ENGINEERING - UNDERGRADUATE
www.miami.edu/engineering

MISSION STATEMENT

The College of Engineering is committed to the constant pursuit of excellence in Engineering Education, Research, and Service to meet society’s changing needs and aspirations.

The objective of the College of Engineering is to serve society by offering high quality educational programs in the professional areas that it covers, and by performing research and community service, with high professional standards. The College is dedicated to educating engineers to deal with the major issues of society over the next generation - enhancing competitiveness, advancing health care, coming into harmony with the environment, utilizing technology for humankind’s benefit, and supporting a sophisticated infrastructure. The goal of the faculty is to prepare students to be employed effectively in manufacturing, consulting, construction, information technology, service industries, and those related to medical care, in roles involving planning, design and implementation at all levels of decision making. Students are broadly prepared in technical, leadership, and management skills. Student development accrues both inside and outside the classroom, with input from faculty, employers, alumni, and other students. They are made acutely aware of environmental and international perspectives. Professional competence in the traditional sense is complemented by a broad capability to function in society. The College places great emphasis on providing students with a learning experience which will enable them to develop productive careers while creating engineering solutions to problems of our society. Learning is centered around real life experiences, which involve an understanding of science, mathematics, social values, and aesthetics, to produce economical solutions to physical problems which society encounters. Protection and enhancement of the environment is stressed at all levels, and emphasis is placed on the creative application of knowledge which will improve the quality of life.

DEPARTMENT AND PROGRAMS

The College of Engineering has five departments - Biomedical Engineering, Civil, Architectural, and Environmental Engineering, Electrical and Computer Engineering, Industrial Engineering, and Mechanical and Aerospace Engineering - offering curricula leading to Bachelor of Science degrees in the following fields: Aerospace Engineering, Architectural Engineering; Biomedical Engineering; Civil Engineering; Computer Engineering; Electrical Engineering; Engineering Science; Environmental Engineering; Industrial Engineering; Information Technology; and Mechanical Engineering.

Interdisciplinary areas of study, areas of specialization within departments, and study in two entirely different areas are available through options, concentrations and dual degree programs.

The programs in Architectural Engineering, Biomedical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Environmental Engineering, Industrial Engineering, Manufacturing Engineering, and Mechanical Engineering are accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).
The College offers graduate programs leading to degrees both in the traditional and interdisciplinary areas of study. Programs leading to the M.S. degree may include specialization in the following areas of study: Architectural Engineering, Biomedical Engineering, Civil Engineering, Electrical and Computer Engineering, Engineering Management, Environmental Engineering, Industrial Engineering, Mechanical Engineering, Medical Informatics, Structural Engineering, Transportation Engineering, and Thermal and Fluid Sciences. A joint M.S.I.E./M.B.A. program and a M.S. program in Management of Technology are offered in conjunction with the School of Business Administration and a M.S. in Environmental Health and Safety in conjunction with the School of Medicine. The Master of Science in Computer Integrated Manufacturing (CIM) is an interdisciplinary program offered jointly with the Departments of Electrical and Computer Engineering, Industrial Engineering, and Mechanical Engineering. Graduates of the CIM Program will receive a Master of Science Degree in their chosen field and a certificate from the College of Engineering, which documents a concentration in the CIM area.

Combined BS/MS Program

The College offers a five-year Bachelor of Science and Master of Science BS/MS degree program in Architectural Engineering, Biomedical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Environmental Engineering, Industrial Engineering, Information Technology and Mechanical Engineering. This program is specifically designed for those students who want to pursue their graduate study as they are completing their undergraduate study. The special conditions and processes for the five-year BS/MS Program are as follows:

Requirements:

You must be an undergraduate student in the College of Engineering (CoE). You must have a cumulative GPA of at least 3.0 at the time of application. Students should discuss the program and possibility of entering with an academic advisor. Completed applications are due prior to the beginning of the final exams in your junior year.

Application Process:

Get the application form (It is different for US students and International students) from the CoE Office of Research and Graduate Studies, fill it out and then return it to the same office. The application fee is waived for currently enrolled students in the CoE.

Take the GRE Examination before the end of your senior year and attain a combined score of more than 1000 on the Verbal and Quantitative portions.

Financial Implications:

Many financial aid programs, including those offered by the University and the federal and state governments are restricted to coursework required to complete an undergraduate degree. For further information contact the CoE office of Research and Graduate Studies.

Once admitted into BS-MS program:

In your senior year when you have a fulltime undergraduate status, you may take a maximum of twelve (12) graduate credits (a maximum of six (6) credits per semester). In order to register for these classes, you must complete and submit the special “SENIOR GRADUATE STATUS REQUEST FORM” for students in this program.
During your last one or two semesters, when you are taking graduate course work only, register as a graduate student.

Application for candidacy can be submitted after you have earned a minimum of twelve (12) graduate credits and have also completed the GRE requirement stated above. This must be submitted at least one semester prior to anticipated graduation from the program.

A student wishing to withdraw from the BS/MS Program without the MS degree must complete all the requirements for the BS degree.

To qualify for the MS degree, the student must meet all the pertinent Graduate School requirements, including an acceptable score on the GRE (Graduate Record Examination) and a minimum of 3.0 GPA in the credits applied toward the MS degree.

The student is awarded both the BS and MS degrees at the end of the fifth year when all degree requirements are satisfied.

The Doctor of Philosophy Degree is currently offered in the area of Biomedical Engineering, Civil Engineering, Electrical and Computer Engineering, Ergonomics, Industrial Engineering, and Mechanical Engineering. The Ph.D. programs in Interdepartmental Graduate Studies permit, with approval of the Graduate Council, highly qualified students to pursue a privileged individualized program which cuts across disciplinary lines.

The Bulletin of the Graduate School presents more detailed information on these graduate programs.

The College is primarily housed in the J. Neville McArthur Building. Completed in 1959 and renovated in 1984, this attractive building is the gift of the late J. Neville McArthur, who was a member of the Board of Trustees and a prominent citizen and dairyman. The Engineering Annex is also a gift of the McArthur family. Students in the College of Engineering come from all parts of the United States and from many nations throughout the world, comprising one of the most diverse and cosmopolitan engineering student bodies in the country.

**ENGINEERING LABORATORIES**
The College of Engineering maintains a variety of well-equipped laboratories adequate for undergraduate instruction and providing for graduate and sponsored research.

**COMPUTER LABORATORIES**
Clarke Computational Laboratory
Computer Graphics Laboratory
Computer-Aided Design Laboratories

**BIOMEDICAL ENGINEERING LABORATORIES**
Biomaterials/Circulatory Assist Device Laboratory
Biomechanics Laboratory
Biomedical Instrumentation Laboratory
Dauer Hemodynamics Laboratory
Rehabilitative Engineering Laboratory
Neurosensory Laboratory
Biomedical Optics Laboratory
Tissue Biomechanics Laboratory
Tissue Engineering Laboratory
CIVIL, ARCHITECTURAL AND ENVIRONMENTAL ENGINEERING LABORATORIES
Geotechnical Engineering Laboratory
Structural Laboratories
Environmental Engineering Laboratory
Architectural Engineering Laboratory
Computer-Aided Engineering Applications Laboratory

ELECTRICAL AND COMPUTER ENGINEERING LABORATORIES
Electronics Laboratory
Wireless Communications Laboratory
Digital Signal Processing Laboratory
Electrical Machinery Laboratory
Digital Design Laboratory
Microprocessor Laboratory
Electro-Optics and Micro-Devices Laboratory
Distributed Decision Environments Laboratory
Underwater Imaging Laboratory
Networks Laboratory
Embedded Systems Laboratory
Computer Vision and Image Processing Laboratory
Information Technology Laboratory
Multimedia Laboratory
Digital Audio and Speech Processing Laboratory
Optics and Fiber Communications Laboratory
ECE Computer Laboratory

INDUSTRIAL ENGINEERING LABORATORIES
Computer Integrated Manufacturing Laboratory
Industrial Hygiene Laboratory
Biomechanics and Gait Laboratory
Human Factors and Aging Research Laboratory
Productivity Research Laboratory
Work Design Laboratory
Work Physiology Laboratory
Systems and Operations Research Laboratory
Industrial Ventilation Laboratory

MECHANICAL AND AEROSPACE ENGINEERING LABORATORIES
Controls Laboratory
Design and Manufacturing Laboratory
Fluid Mechanics Laboratory
Heat Transfer Laboratory
Internal Combustion Laboratory
Materials Laboratory
Measurements Laboratory
Stress Analysis Laboratory
ACADEMIC POLICIES

ADMISSION

Admission to the College of Engineering is covered under the section on Admission to the University in the General Information section of this Bulletin. Algebra, trigonometry, analytic geometry, chemistry, computer literacy, and physics are high school subjects that are appropriate for students planning on entering the College.

The academic work of each transfer student will be evaluated on an individual basis, and the student will be enrolled in the College at an appropriate level.

REQUIREMENTS FOR GRADUATION

The College believes that emphasis should be placed on the student’s ultimate level of attainment in selected subject areas. For those students whose preparation is advanced beyond that of the average secondary school graduate, the University provides proficiency examinations and schedules the students for more advanced work. Graduation for these students may be accelerated. For those students whose secondary school preparation has not provided an adequate background, the University offers preparatory courses. Graduation for these students may be delayed accordingly.

The student’s program of study is selected jointly with an advisor, with special attention to the individual students needs. Flexibility is ordinarily possible within the framework of sound education in the essential fundamentals and within the development of depth in selected fields of design and analysis. An examination of a typical curriculum given under the various department sections of this Bulletin shows that there is a strong common core of studies. Therefore, students uncertain of their ultimate field of specialization retain a high degree of mobility to enable them to transfer from one curriculum to another.

Each student must demonstrate upon admission an adequate preparation in the necessary skills of reading, writing, and mathematics. Placement test scores will indicate which, if any, supplementary courses must be taken the first semester. Although these courses are recorded for University credit, the student must take the full curriculum, as listed, in addition to these courses. Students not prepared in these areas are advised to make every effort to correct deficiencies before the first semester.

Completion of any of the prescribed curricula, except Engineering Science, with an overall grade point average of at least 2.0 (C) in all course work, to include all accepted work from other institution(s), is the basic requirement for graduation in the College. An average of C also must be attained in all work attempted at the University of Miami and the professional studies. The Engineering Science curriculum, because of its special purpose, has a higher requirement, i.e., a grade point average of 3.0 (B).

The requirements for graduation as specified by each Department and Program reflect the general education requirements of the University of Miami and the requirements of the appropriate accrediting agencies. The curricula contain required courses and elective courses. No course required for graduation may be taken under the credit-no credit (Credit-Only) option.

Students are expected to make satisfactory progress toward graduation by meeting the criteria established above. Whenever a student fails to demonstrate positive academic
progress, he/she may be placed on academic probation or dismissed by the College of Engineering Scholastic Standards and Advising (SSA) Committee.

**General Educational Requirements**

People and Society and Humanities and Arts electives may be taken from a wide variety of courses. A minimum of 18 credits of people and society/humanities and arts electives is required for graduation, with a distribution of a minimum of 6 credits each in the areas of Humanities and Arts and People and Society; the other 6 credits may be taken in either Humanities and Arts or People and Society.

The College of Engineering faculty requires that the courses selected must provide both breadth and depth and not be limited to a selection of unrelated introductory courses. Courses that instill cultural values are acceptable, while written exercises and personal craft are not. Foreign language courses in a student’s native language(s) or that spoken at home are not acceptable. To provide depth, the College of Engineering Faculty requires at least two courses be at the advanced level. An advanced level course is defined as a course with at least one prerequisite or a course at the 300 or 400 levels.

To satisfy the University of Miami general education requirements on writing intensive courses, at least six credits of the People and Society/Humanities and Arts electives must be in writing sections (W) (note: all English and literature courses are considered writing courses). The remainder of the required writing is satisfied by writing within the engineering design and laboratory courses.

**COLLEGE OF ENGINEERING – HUMANITIES AND ARTS - PEOPLE AND SOCIETY ELECTIVES**

Select six courses with at least two courses in HUMANITIES AND ARTS and two in PEOPLE AND SOCIETY.

Two of these six courses should be taken in sections designated as Writing sections (W).

Also at least two of these six courses must be at the advanced level. An advanced level course is defined as a course with at least one prerequisite or a course at the 300 or 400 levels.

**People and Society**

Courses in the following areas may be used to fulfill this requirement: Africana Studies; American Studies (AMS); Anthropology (except APY 203); Economics; Educational Psychology; Geography and Regional Studies (except GEG 120); International Studies; Judaic Studies; History; Political Sciences; Psychology (except PSY 204); Sociology; Teaching and Learning; Women’s and Gender Studies (WES), and the following courses: BME 320; CBR 102; COM 101; COM 110; COS 112; COS 118; COS 336; COS 472; FSS 190-199.

**Humanities and Arts excluding Talent and Performance Courses**

Courses in the following areas may be used to fulfill this requirement: Architecture (Note: A special form must be completed prior to registration in the course ARC 323); Musicology; Art History; English (200-level or above): Modern Languages and Literature (300-level or
above): Philosophy (except PHI 210 and PHI 510); Religious Studies; and the following courses: CMP 103, CMP 204, CMP 205, COS 211; DAN 250; FFA 190-199.

The following are examples of excluded Talent and Performance Courses:
1. All studio courses: ARTXXX
2. All theater courses: THAXXX
3. All Dance courses other than DAN250: DANXXX
4. All Performance courses: MIPXXX
5. All Keyboard and Vocal courses: MKPXXX and MVPXXX
6. All Music Education courses: MEDXXX
7. All Music Business and Entertainment courses: MMIXXX
8. All Music Theory & Composition courses: MTCXXX
9. All Music and Jazz Instrumental courses: MSJXXX

The student’s official records are maintained by the Office of Enrollment Services. It is the student’s obligation to take the initiative to assure that all requirements are being met in conformity with his/her own graduation plans.

DUAL MAJORS
Dual majors are offered for engineering students with strong interest in related fields of study such as Physics or Mathematics. In order to obtain a dual major in one of these areas, the student will have to obtain, in parallel, a degree in one of the engineering programs, plus additional course work approved by the dual majors department. Further information on this dual major program may be obtained from the Deans Office of the College.

MINORS
Minors are offered by the College of Engineering. The departments of Civil, Architectural, and Environmental Engineering, Electrical and Computer Engineering, Industrial Engineering, and Mechanical Engineering offer minors with various areas of specialization. Details of each area of concentration and its requirements may be found under each departmental listing.

Engineering students can earn a minor offered by any other College/School within the University of Miami, including the College of Engineering. In cases where the major degree requirements satisfy some of the requirements for the minor, at least six credits beyond the major degree requirements must be taken in the minor subject area to earn a minor. Minors in Engineering require a minimum GPA of 2.0 in the courses required for the minor.

HONORS PROGRAM

Students who show both promise and superior performance may receive academic advantages, certain privileges, and recognition through admission to the Honors Program of the University. Please refer to the HONORS PROGRAMS section, which appears elsewhere in this Bulletin, for information on these programs.

DEPARTMENTAL HONORS PROGRAM
A student in the College of Engineering may graduate with Departmental Honors noted upon his/her diploma and transcript upon fulfillment of the following requirements:

A. Completion of at least 18 credits of course work in honors courses and/or in courses at the 500 level, including 6 credits in independent study, senior thesis, or designated
advanced or special honors courses specified by the department, with grades of at least B in these 6 credits.

B. Attainment of at least a 3.4 overall grade point average. Transfer students must also attain at least a 3.4 grade point average in all work taken at the University of Miami.

C. Attainment of at least a 3.5 average in the departmental major courses.

D. A written request from the student to the departmental faculty during his/her semester of expected graduation stating the desire to graduate with Departmental Honors, and specifying those courses taken in compliance with section (A) above.

CERTIFICATE PROGRAMS IN ENGINEERING
In cooperation with the University’s School of Continuing Studies, the College of Engineering offers practicing engineers advanced or specialized training without having to meet the stringent entrance requirements of the Graduate School. Persons holding Bachelors degrees, registered as Professional Engineers, or possessing equivalent qualifications can be granted Certificates of Proficiency by the University after completing fifteen semester-hours of course work in a specified field of engineering. Study programs are arranged on an individual basis by each student and his/her advisor. Detailed information on Certificate Programs can be requested from the Office of the Dean of Engineering.

THE INTERNSHIP COOPERATIVE PROGRAM
The Cooperative Program takes its name from the close cooperation that exists between the College and participating employers. This arrangement attempts to insure that each student’s academic and work experience will integrate and contribute significantly to his/her overall growth and professional development. Interviews and screening by both the employer and Cooperative Program personnel attempt to match the needs of the employer carefully with the interests and capability of the student.

ADVANTAGES TO THE STUDENT:
1. Offers on-the-job experience to supplement the academic degree program.

2. Offers potential long term career employment with the Cooperative Program employer.

3. The experience obtained makes the student, upon graduation, potentially much more valuable to any future employer. Upon completion of an appropriate amount and level of experience, graduation in the Cooperative Program may be recognized by a special seal on the student’s diploma.

4. Helps the student to verify whether or not his/her career or specialty choice is correct.

5. Tends to increase motivation and to make academic studies more meaningful.

6. Earnings from Cooperative Program employment can cover a significant portion of the student’s college expenses.

7. Certain work experience may shorten the experience requirements, after graduation, for eligibility for professional registration.

8. Helps to develop the students understanding of human relations and the lifelong need of learning to balance appropriately the demands on ones time of multiple duties such as studying, employment, daily necessities, family obligations, etc.
ADVANTAGES TO THE EMPLOYER:
1. Offers an opportunity to recruit and screen potential employees in the fields of engineering.

2. The Cooperative Program maintains an up-to-date roster of available undergraduate and graduate students, many with previous experience. This roster offers employers means of obtaining employees to meet fluctuating work loads, on relatively short notice.

3. Students in the Cooperative Program can provide good company public relations with their classmates.

4. Participation in a Cooperative Program serves the profession by providing opportunities for many capable and well deserving young persons to attend a university, who otherwise might lack the financial ability or motivation to attend.

TYPES OF COOPERATIVE PROGRAM ARRANGEMENTS

CONTINUOUS WORK-STUDY
An arrangement involving a combination of part-time employment (15 or more hours per week) and a credit hour academic load which is appropriately reduced from the normal full-time load to balance the employment duties. Full-time employment may be undertaken during the summer period. Two students may be used during the year to share the hours of a full-time position (20 hours each student). In some instances, an individual student will hold a full-time position and carry a light academic load in evening and/or early morning classes.

ALTERNATING WORK-STUDY
An arrangement involving two students alternating full-time employment and full-time study. Students alternate positions of work and study at the end of each semester (including the summer), and thereby provide the equivalent employee time of a full-time position year-round.

STUDENT ELIGIBILITY FOR THE PROGRAM
University of Miami students enrolled in the College of Engineering are eligible to enter the Cooperative Program. Initial entry into the Program is limited to superior students. Normally, work assignments are not given until the equivalent of one or two semesters of full-time academic work is completed. Currently, most students in the Program are under continuous work-study arrangements.

STUDY ABROAD PROGRAMS
The College of Engineering encourages its students to take advantage of one of the University of Miami’s numerous study abroad options in Latin America, Europe, Asia, Australia and the Middle East. Of particular interest to Engineering students are the following: internships (unpaid and paid) in Spain, England, France, Argentina, Colombia, Chile, and Australia in which professional work experience is carried out abroad; course work at Engineering schools abroad for a semester or an academic year; summer programs in intensive Language instruction, Humanities and Social Sciences abroad. The cost of attending these programs is equivalent to University of Miami tuition and fees. Almost all University of Miami financial aid is granted. With prior approval and detailed curriculum advice, courses taken abroad will apply towards graduation.
THE MANAGEMENT OF TECHNOLOGY SUPPLEMENTAL PROGRAM

The objective of this program is to educate engineers in how to exploit their technological knowledge. This is a vital, but often neglected, link in achieving competitiveness in the global marketplace. The basic premise motivating this approach is the recognition that in today’s world, technology is the backbone of the business enterprise system and that wealth can only be created through production of goods and services. This program will educate engineers in a multitude of subjects bridging the gap between product technology, production technology and the marketplace, which is the ultimate customer of engineering contributions.

The program consists of four courses:

1. Quality in Design of Products and Production Systems
2. Entrepreneurship for Engineers
3. Production Systems Design

A project is required at the end of the program, but is threaded throughout the program starting with the first course. Upon completion of the program, the student will receive a special certificate of completion. This program is available to all qualified students in all departments of the College of Engineering.

Admission to the Program
Admission to this supplemental program will be by application submitted by the candidate or by nomination by an advisor or department chair. All applications will be reviewed by a standing committee. Students must meet the prerequisite of each course before enrolling in it.

Requirements for the Certificate
The program is an add-on to existing curriculum. Students must complete all courses designated in order to qualify for the certificate. A notation will be made on the student’s transcript recognizing their completion of the special program. No designation will be made on the diploma.

Course Sequence
Courses are recommended to be taken in the sequence indicated above.

Team Work
Students will be encouraged to work on projects in teams. Multidisciplinary teams will also be encouraged.
ACADEMIC PROGRAMS

BIOMEDICAL ENGINEERING - Dept. Code: BME

Mission Statement
The mission of the biomedical engineering program is to educate students to become knowledgeable and skilled engineers with an understanding of the ethical and other professional aspects of biomedical engineering. Design skills and an ability to work both independently and as part of a team are emphasized.

Educational Objectives
The objective of the biomedical engineering program is to graduate engineers who have skills and knowledge in the physical and biological sciences, mathematics, information technology and fundamentals of engineering.

The program offers three concentrations: the Premed graduates are prepared for studies in medicine or related fields. The Electrical and Mechanical Concentrations graduates must be prepared to carry out engineering tasks in industry or in graduate work in their specific area of concentration.

Program Description
Biomedical engineering is a field where engineering principles and techniques are applied to the life sciences and medicine. It covers a wide spectrum of activities from the development of artificial organs and limbs, tissue engineering, implantable medical devices, biomedical instrumentation, computing in medical research and diagnosis, signal and image processing, clinical engineering, rehabilitation engineering, to cardiovascular, neurological, respiratory and flow studies.

Although Biomedical Engineering has been a graduate program at the University of Miami for more than thirty years, the Bachelor of Science in Biomedical Engineering has been awarded since 1993. This program was designed to offer the interested student an opportunity to integrate knowledge in engineering and in the life sciences over a four year period while also developing a set of practical skills.

The Biomedical Engineering program at the University of Miami has three major goals to achieve via the implementation of three parallel concentrations. Each one provides a broad foundation in the basic sciences and in engineering while offering special courses to allow the students to focus on specific career related subjects. The three concentrations are Electrical (E), Mechanical (M), and Premedical (P). The goals are: 1. Prepare the students in all three concentrations for graduate or professional studies in relation to engineering. 2. Enable the students in the Premed concentration to satisfy the requirements for medical schools while thoroughly exposing them to the major areas in BME. 3. Prepare the students for immediate employment as engineers in the biomedical devices and diagnostics industry as contributors to the economy. In striving to achieve these goals, the objective of the faculty is to provide all graduates with the mathematical, investigational, and design tools required to formulate problems accurately, generate alternative solutions, evaluate those alternatives, and present the best solutions to research, development and economic problems. Superior students are prepared for graduate studies or medical school. The teaching laboratories meet current program needs and are constantly being improved. Equipment and experiments are geared to provide instruction in the areas of biomechanics, tissue mechanics, instrumentation, biomedical optics and other areas. The curriculum
includes required courses in mathematics and in the physical and life sciences that ensure a firm scientific background, while advanced departmental courses provide for specialization. Required courses in the humanities and social sciences give students the social, ethical and ecological awareness needed in their profession. The courses are designed with the prerequisite structure in mind so that students have to draw from previously acquired knowledge to complete the upper level course requirements successfully.

The engineering design experience is interwoven in the curriculum throughout the students four years of study. The students then enroll in 23 mandatory BME credits (Biomaterials, Biomechanics and Biomedical Measurements, Mathematical Analysis in BME, Biomedical Transport Phenomena, Biomedical Signal Processing and Biomedical Instrumentation) as juniors and seniors. During the senior year each student is involved in a major design experience through a year-long Senior Design Project. It is a capstone project where the students pool all their knowledge and previous design experience into one major project integrating the various components of the curriculum. Students prepare written and oral presentations. They also select two or three technical electives to pursue their individual professional interests.

Technical Entrepreneurship is an alternative to the Senior Design Project. In this two-semester sequence the students form entrepreneurial teams of 4 to 6 members to design and develop new products. They also work on the business aspects of the project. This program was established with a grant from the National Collegiate Innovators and Inventors Alliance (NCIIA) in 1999 and it is currently supported by additional grants from NCIIA.

Voluntary participation in ongoing research and development projects within the department’s laboratories, or on technical problems within the medical research laboratories, or at industrial firms are strongly encouraged. Communication is emphasized through requirements for oral presentation and written technical reports in many of the BME courses, in the Senior Design Project, in the Technical Entrepreneurship sequence and in the special laboratory experience. These activities provide the graduates with valuable practical experience and communications skills while studying Biomedical Engineering at the University of Miami.

Biomedical Engineering is a field in which engineering principles and techniques are applied to the life sciences and medicine. It covers a wide spectrum of activities from the development of artificial organs and limbs, implantable medical devices, biomedical instrumentation, computing in medical research and diagnosis, signal and image processing, clinical engineering, rehabilitation engineering, and cardiovascular, neurological, respiratory, tissue mechanics and flow studies. The diagnostic and therapeutic tools available to the physician entering the twenty-first century represent complex and intricate applications of engineering.

Opportunities for quality education extend beyond the classroom. The small-class environment and the open-door policy of the faculty foster information exchange. The Biomedical Engineering Society sponsors speakers presenting aspects of the biomedical industry and entrepreneurialships-an excellent opportunity to learn about employment.

Graduates of the biomedical engineering undergraduate program may seek employment in industry or continue their studies either in graduate school or in a professional school in medicine, law or business. The biomedical engineering undergraduate program is accredited by the Accreditation Board of Engineering and Technology.
The Department of Biomedical Engineering also offers graduate courses leading to the Master of Science and Doctor of Philosophy degrees.

Qualified students may apply for the combined BS/MS program. Details are provided following the curricula for the BS degrees.

The College offers a dual major in Biomedical Engineering. In order to obtain the dual major in Biomedical Engineering, the student will have to obtain, in parallel, a major in one of the fundamental engineering programs, plus 24 credit-hours of course work, including 18 credits of required course work and 6 credits of elective course work from the lists given below. Of this total of 24 credits, at least 12 have to be at the level of 400 and above.

The Biomedical Engineering courses are open to students with background in mathematics, physics and chemistry upon approval of their respective department.

The required courses for the dual major are:

- BME 335. Biomaterials I 3 credits
- BME 375. Biomechanics I 3 credits
- BME 440. Biomedical Measurements 4 credits
- BME 480. Biomedical Instrumentation 3 credits
- BME 501. Unified Medical Sciences 3 credits
- BME 502. Unified Medical Sciences II 3 credits

The electives are to be chosen from the BME course list.

The Honors Program in Biomedical Engineering (HPBE) accepts outstanding students. This program allows simultaneous undergraduate and graduate admission to the College of Engineering and leads to the B.S. and M.S. degrees in five years. Completion of this program is possible within four years. The students typically enter with at least 15 credits which are applicable toward the requirements for the B.S. Biomedical Engineering degree. For details regarding admission requirements, please refer to the HONORS PROGRAMS section in this Bulletin.

A tabular listing of the course requirements for the degree Bachelor of Science in Biomedical Engineering is shown below for each of three concentrations:
# BACHELOR OF SCIENCE IN BIOMEDICAL ENGINEERING
## Electrical Concentration (135 credits)

<table>
<thead>
<tr>
<th>FRESHMAN YEAR</th>
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<tbody>
<tr>
<td><strong>Fall Semester</strong></td>
<td><strong>Spring Semester</strong></td>
</tr>
<tr>
<td>ENG 105 English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>MTH 110 Analytic Geometry and Calculus I</td>
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</tr>
<tr>
<td>BME 111 Introduction to Engineering I</td>
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<tr>
<td>PHY 205 University Physics I</td>
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<tr>
<td>People and Society Elective*</td>
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<tbody>
<tr>
<td><strong>Fall Semester</strong></td>
<td><strong>Spring Semester</strong></td>
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<tr>
<td>MTH 311 Ordinary Differential Equations</td>
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<td>CHM 112 Principles of Chemistry II</td>
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<td>CHM 114 Chemistry Laboratory II</td>
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<tr>
<td>BIL 150 General Biology</td>
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<td>BIL 151 General Biology Laboratory</td>
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<tr>
<td>PHY 207 University Physics III</td>
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<tr>
<td>EEN 201 Electrical Circuit Theory</td>
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<tr>
<th>JUNIOR YEAR</th>
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<tbody>
<tr>
<td><strong>Fall Semester</strong></td>
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<tr>
<td>BME 330 Foundations of Medical Imaging</td>
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<tr>
<td>BME 375 Biomechanics I</td>
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<tr>
<td>EEN 307 Linear Circuits and Signals</td>
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<tr>
<td>BME 310 Mathematical Analysis in Biomedical Engineering</td>
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<tr>
<td>EEN 305 Electronics I</td>
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<td>People and Society Elective*</td>
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<tr>
<td><strong>Fall Semester</strong></td>
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<tr>
<td>BME 480 Biomedical Instrumentation</td>
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<tr>
<td>BME 570 Introduction to Biosignal Processing</td>
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<tr>
<td>BME 571 Introduction to Biosignal Processing Lab</td>
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<tr>
<td>BME 401 Senior Project I</td>
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<tr>
<td>BME 507 LabView Applications for Biomedical Engineering</td>
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<td>Technical Elective**</td>
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<tr>
<td>PS/HA Elective*</td>
<td>3</td>
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# BACHELOR OF SCIENCE IN BIOMEDICAL ENGINEERING

## Mechanical Concentration (135 credits)

### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>ENG 105 English Composition I</td>
<td>ENG 107 Writing about Science</td>
</tr>
<tr>
<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>MTH 112 Calculus II</td>
</tr>
<tr>
<td>BME 111 Introduction to Engineering I</td>
<td>BME 112 Introduction to Engineering II</td>
</tr>
<tr>
<td>PHY 205 University Physics I</td>
<td>PHY 206 University Physics II</td>
</tr>
<tr>
<td>People and Society Elective*</td>
<td>PHY 208 University Physics II Lab</td>
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<tr>
<td></td>
<td>CHM 111 Principles of Chemistry I</td>
</tr>
<tr>
<td></td>
<td>CHM 113 Chemistry Laboratory I</td>
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### SOPHOMORE YEAR

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<tr>
<th>Fall Semester</th>
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<tbody>
<tr>
<td>MTH 311 Ordinary Differential Equations</td>
<td>PHY 209 University Physics III Lab</td>
</tr>
<tr>
<td>CHM 112 Principles of Chemistry II</td>
<td>CAE 210 Mechanics of Solids I</td>
</tr>
<tr>
<td>CHM 114 Chemistry Laboratory II</td>
<td>EEN 118 Introduction to Programming</td>
</tr>
<tr>
<td>BIL 150 General Biology</td>
<td>BME 265 Medical Systems Physiology</td>
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<td>BIL 151 General Biology Laboratory</td>
<td>EEN 204 Electrical Circuits Laboratory</td>
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<tr>
<td>PHYS 207 University Physics III</td>
<td>Humanities and Arts Elective*</td>
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<tr>
<td>EEN 201 Electrical Circuit Theory</td>
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### JUNIOR YEAR

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<thead>
<tr>
<th>Fall Semester</th>
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<tbody>
<tr>
<td>BME 330 Foundations of Medical Imaging</td>
<td>BME 440 Biomedical Measurements</td>
</tr>
<tr>
<td>BME 375 Biomechanics I</td>
<td>BME 460 Physiologic fluid mechanics</td>
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<tr>
<td>MEN 202 Dynamics</td>
<td>IEN 311 Applied Probability and Statistics</td>
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<tr>
<td>EEN 307 Linear Circuits and Signals</td>
<td>BME 335 Biomaterials I</td>
</tr>
<tr>
<td>BME 310 Mathematical Analysis in Biomedical Engineering</td>
<td>BME 506 ProEngineer Applications for Biomedical Engineering</td>
</tr>
<tr>
<td>MEN 301 Engineering Materials Science</td>
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### SENIOR YEAR

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<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>BME 480 Biomedical Instrumentation</td>
<td>BME 560 Biomedical Transport Phenomena</td>
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<tr>
<td>BME 565 Principles of Cell Tissue Engineering</td>
<td>BME 402 Senior Project II</td>
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<tr>
<td>BME 570 Introduction to Biosignal Processing</td>
<td>BME 575 Biomechanics II</td>
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<td>BME 571 Introduction to Biosignal Processing Lab</td>
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<tr>
<td>BME 401 Senior Project I</td>
<td>PS/HA Elective*</td>
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<td>PS/HA Elective*</td>
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BACHELOR OF SCIENCE IN BIOMEDICAL ENGINEERING
Premed Concentration (135 credits)

<table>
<thead>
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<th>FRESHMAN YEAR</th>
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<th><strong>Spring Semester</strong></th>
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<tbody>
<tr>
<td></td>
<td>ENG 105 English Composition I</td>
<td>ENG 107 Writing about Science</td>
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<td></td>
<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>MTH 112 Calculus II</td>
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<td>BME 111 Introduction to Engineering I</td>
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<td>PHY 205 University Physics I</td>
<td>PHY 206 University Physics II</td>
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<td>CHM 111 Principles of Chemistry I</td>
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<td>CHM 113 Chemistry Laboratory I</td>
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<th><strong>Fall Semester</strong></th>
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<tbody>
<tr>
<td></td>
<td>MTH 311 Ordinary Differential Equations</td>
<td>CHM 201 Organic Chemistry I (Lecture)</td>
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<td>CHM 112 Principles of Chemistry II</td>
<td>CHM 205 Organic Chemistry Lab I</td>
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<td>CHM 114 Chemistry Laboratory II</td>
<td>EEN 118 Introduction to Programming</td>
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<td>BIL 150 General Biology</td>
<td>BIL 160 Evolution and Biodiversity</td>
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<td>BIL 151 General Biology Laboratory</td>
<td>EEN 201 Electrical Circuit Theory</td>
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<td>PHY 207 University Physics III</td>
<td>CAF 210 Mechanics of Solids I</td>
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<tbody>
<tr>
<td></td>
<td>BME 330 Foundations of Medical Imaging</td>
<td>CHM 202 Organic Chemistry II (Lecture)</td>
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<tr>
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<td>MEN 301 Engineering Materials Science</td>
<td>EEN 307 Linear Circuits and Signals</td>
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<td>BIL 161 Biology laboratory II</td>
<td>BME 440 Biomedical Measurements</td>
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<td>BME 335 Biomaterials</td>
<td>BME 375 Biomechanics I</td>
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<td>BME 310 Mathematical Analysis in Biomedical Engineering</td>
<td>CHM 206 Organic Chemistry Laboratory II</td>
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<td>EEN 204 Electrical Circuits Laboratory</td>
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<tr>
<td></td>
<td>BME 570 Introduction to Biosignal Processing</td>
<td>BME 480 Biomedical Instrumentation</td>
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<td></td>
<td>BME 571 Introduction to Biosignal Processing Lab</td>
<td>BME 560 Biomedical Transport Phenomena</td>
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<td>BME 401 Senior Project I</td>
<td>BME 402 Senior Project II</td>
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<td>BMB 258 Introduction to Biochemistry and Molecular Biology</td>
<td>Technical Elective**</td>
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<td></td>
<td>IEN 311 Applied Probability and Statistics</td>
<td>PS/HA Elective*</td>
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<td>Tech. Elective**</td>
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<td>PS/HA Elective*</td>
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BACHELOR OF SCIENCE IN BIOMEDICAL ENGINEERING
(Any of the three Concentrations) AND
MASTER OF SCIENCE IN BIOMEDICAL ENGINEERING

- Juniors from any of the three BME Concentrations are invited to apply for admission to the combined BS-MS in Biomedical Engineering program, who have maintained at least a 3.0 CGPA.
- Those, who are accepted into this accelerated program, must maintain at least a 3.0 CGPA and a minimum of a 3.0 GPA for the final 30 credits to meet the requirements of the Graduate School.
- The participants are excused from BME 401/402 Senior Design I and II, but are required to complete BME 605/606 Master Design Project I and II.
- If a student needs to withdraw from the BS/MS BME program then all the requirements for the specific BS BME Concentration must be completed for graduation with the BS BME degree.
- The curriculum is altered only for the fourth year by the elimination of 1 credit for BME 401 during the first semester and 2 credits for BME 402 during the second semester.
- A 3 credit Technical Elective is added for the second semester.
- The 6 credits of Technical electives earned during the second term of the fourth year are counted toward the required 30 credits for the MS degree.
- The curriculum for the fifth year is shown below.

<table>
<thead>
<tr>
<th>FIFTH YEAR</th>
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<tbody>
<tr>
<td><strong>Fall Semester</strong></td>
<td><strong>Spring Semester</strong></td>
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</table>
| BME 605 M.S. Design Project I | 3  BME 606 M.S. Design Project II | 3
| Technical Elective          | 3  Technical Elective    | 3
| Technical Elective          | 3  Technical Elective    | 3
| Technical Elective          | 3  Technical Elective    | 3
|                              | 12                       | 12

HPBE HONORS PROGRAM IN BIOMEDICAL ENGINEERING
LEADING TO BS AND MS IN BIOMEDICAL ENGINEERING

Admission requirements for students completing their studies in high schools, and procedures for applying to the HPBE program are stated in this Bulletin under HONORS PROGRAMS, with the subheading HONORS PROGRAM BIOMEDICAL ENGINEERING.

Students usually begin the program with at least 15 credits of university credits, which are applicable to the program. Whether the student selects the Premed, Mechanical or Electrical Concentration, 30 additional credits must be completed to earn the MSBE degree at the same time as the BSBE degree. Participants in this program follow the curriculum for the corresponding BS-MS program with the exception that these honors degrees require a 6 credit thesis to be completed. The thesis must have a strong engineering design component that is approximately half of the effort. This is the way that the design requirement for the BS BE program is met. The participants are not required to complete the 3 cr. Senior Design Project requirement.

Biomedical Engineering Course Listing
CIVIL, ARCHITECTURAL, AND ENVIRONMENTAL ENGINEERING  
Dept. Code: CAE

MISSION STATEMENT  
The mission of the Department of Civil, Architectural, and Environmental Engineering is to:

- Provide high-quality undergraduate and graduate education in civil, architectural, and environmental engineering that will prepare graduates for professional careers and a lifetime of learning
- Conduct high-quality research that will advance the body of knowledge and improve the quality of human life
- Serve the engineering profession and society through active involvement in professional organizations and contribution of professional expertise

CIVIL ENGINEERING PROGRAM  
Civil engineers are leaders in the planning, design, construction, and operation of systems that are essential to modern life. These systems include: buildings, highways, airports, pipelines, bridges, dams, irrigation systems, drainage systems, water-supply and distribution systems, and wastewater collection and treatment works. Civil engineers are employed by government agencies, public utility companies, private consulting firms, construction companies, architectural firms, and universities.

Educational Objectives  
Within the first several years following graduation from the civil engineering program, graduates are expected to be:

1. Working as a professional in an area closely related to civil engineering, pursuing licensure, and moving towards specialization in one of the following areas: structures, environmental, transportation, geotechnical engineering, or general civil engineering; or
2. Pursuing a graduate or professional degree.

Curriculum  
The Civil Engineering curriculum provides an integrated educational experience in mathematics, basic sciences, humanities, social sciences, engineering sciences, and civil engineering design. The first two years of the Civil Engineering curriculum provide a strong foundation in mathematics, basic sciences, and engineering sciences. During the next two years of the four-year program, the Civil Engineering curriculum integrates engineering sciences with design applications in the areas of structural, environmental, geotechnical, and transportation engineering. The curriculum culminates with a major senior-level design project that includes design applications from the major specialty areas of civil engineering.

Graduate study is offered leading to the degrees Master of Science and Doctor of Philosophy in Civil Engineering. For detailed information on graduate studies, see the Graduate Studies Bulletin.

A tabular listing of the course requirements for the degree of Bachelor of Science in Civil Engineering is shown below:
CIVIL ENGINEERING

<table>
<thead>
<tr>
<th>FRESHMAN YEAR</th>
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<tbody>
<tr>
<td><strong>Fall Semester</strong></td>
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<tr>
<td>CAE 111 Introduction to Engineering I</td>
<td>CAE 112 Introduction to Engineering II</td>
</tr>
<tr>
<td>PHY 205 University Physics I</td>
<td>PHY 206 University Physics II</td>
</tr>
<tr>
<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>PHY 208 University Physics II Lab</td>
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<tr>
<td>ENG 105 English Composition I</td>
<td>MTH 112 Calculus II</td>
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<td>ENG 107 Writing About Science</td>
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<tbody>
<tr>
<td><strong>Fall Semester</strong></td>
<td><strong>Spring Semester</strong></td>
</tr>
<tr>
<td>CAE 201 Computer-Aided Drafting and Design</td>
<td>CAE 211 Mechanics of Solids II</td>
</tr>
<tr>
<td>CAE 210 Mechanics of Solids I</td>
<td>CAE 212 Structural Laboratory</td>
</tr>
<tr>
<td>PHY 207 University Physics III</td>
<td>IEN 311 Applied Probability and Statistics</td>
</tr>
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<td>PHY 209 University Physics III Lab</td>
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*To be selected from lists of approved People and Society (PS)/Humanities and Arts (HA), Technical, Design, and Basic Science electives.
BACHELOR OF SCIENCE IN CIVIL ENGINEERING AND MASTER OF SCIENCE IN CIVIL ENGINEERING

The five-year BS/MS program leads to both the B.S. and M.S. degrees in Civil Engineering in five years. This program is open to exceptional students who are admitted to the graduate program at the end of their junior year. Students applying for this program must have a minimum grade point average of 3.0, and score more than 1000 on the Graduate Record Examination. The course requirements for the five-year BS/MS program are as follows:

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ARCHITECTURAL ENGINEERING PROGRAM

Architectural engineers are leaders in the planning, design, construction, and operation of engineered systems for commercial, industrial, and institutional buildings and other facilities. These engineered systems include electrical, communications and control, lighting, heating, ventilating, air conditioning, fire protection, plumbing, acoustic, and structural components. Architectural engineers are employed by consulting firms, construction companies, architectural firms, government agencies, and universities.

Educational Objectives
Within the first several years following graduation from the architectural engineering program, graduates are expected to be:

1. Working as a professional in an area closely related to architectural engineering, pursuing licensure, and moving towards specialization in one or more of the following areas: structures, building environmental systems, or construction management; or

2. Pursuing a graduate or professional degree.

Curriculum
The Architectural Engineering curriculum provides an integrated educational experience in mathematics, basic sciences, humanities, social sciences, engineering sciences, and architectural engineering design. The Architectural Engineering program integrates design applications across the curriculum, beginning with building construction and architectural design in the sophomore year, and continuing with structural, building mechanical and electrical systems design, and construction management in the junior and senior years. The curriculum culminates with a major comprehensive design experience that includes applications from the major specialty areas of architectural engineering.

Graduate study is offered leading to the degree of Master of Science in Architectural Engineering. For detailed information on graduate studies, see the Graduate Studies Bulletin.

A tabular listing of the course requirements for the degree of Bachelor of Science in Architectural Engineering is shown below:
## ARCHITECTURAL ENGINEERING

### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<td>CAE 111 Introduction to Engineering I</td>
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<td>MTH 110 Analytic Geometry and Calculus I</td>
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<td>ENG 107 Writing about Science</td>
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### SOPHOMORE YEAR

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<tr>
<td>CAE 201 Computer-Aided Drafting and Design</td>
<td>CAE 211 Mechanics of Solids II</td>
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<td>CAE 212 Structural Laboratory</td>
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<td>EEN 205 Principles of Electrical Engineering I</td>
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<td>ARC 294 Introduction to the Development of Architecture</td>
<td>ARC 292 Introduction to Architecture Design I</td>
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<tr>
<td>PHY 207 University Physics III</td>
<td>CHM 151 Chemistry for Engineers I</td>
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<td>PHY 209 University Physics III Lab</td>
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### JUNIOR YEAR

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<tr>
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<td>MAE 303 Thermodynamics I</td>
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<td>IEN 311 Applied Probability and Statistics</td>
<td>CAE 380 Architectural Acoustics and Lighting</td>
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<td>ARC 293 Introduction to Architecture Design II</td>
<td>MAE 408 Heating, Ventilating, and Air Conditioning</td>
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<td>MTH 311 Ordinary Differential Equations</td>
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### SENIOR YEAR

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<td>CAE 320 Design of Concrete Structures</td>
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<td>CAE 480 Building Environmental Systems</td>
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<td>ARC 476 19th and 20th Century Architecture</td>
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BACHELOR OF SCIENCE IN ARCHITECTURAL ENGINEERING AND
MASTER OF SCIENCE IN ARCHITECTURAL ENGINEERING

The five-year BS/MS program leads to both the B.S. and M.S. degrees in Architectural Engineering in five years. This program is open to exceptional students who are admitted to the graduate program at the end of their junior year. Students applying for this program must have a minimum grade point average of 3.0, and score more than 1000 on the Graduate Record Examination. The course requirements for the five-year BS/MS program are as follows:

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BACHELOR OF SCIENCE IN ARCHITECTURAL ENGINEERING AND MASTER OF SCIENCE IN ARCHITECTURE

The six-year BSAE/MArch program leads to both the B.S. degree in Architectural Engineering and the professional MArch degree in Architecture in six years. The program is open to exceptional students who are admitted to the graduate program at the end of their junior year. Upon completion of this program, graduates are eligible for professional registration as both an engineer and an architect. The course requirements for the BSAE/MArch program are as follows:

B.S.A.E/M.Arch. Dual Degree Program

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ENVIRONMENTAL ENGINEERING PROGRAM

Environmental engineers are leaders in the application of engineering principles to improve and maintain the environment for the protection of human health, for the protection of nature’s beneficial ecosystems, and for environment-related enhancement of the quality of human life. Environmental engineers are employed by government agencies, consulting firms, and universities.

Educational Objectives

Within the first several years following graduation from the environmental engineering program, graduates are expected to be:

1. Working as a professional in an area closely related to environmental engineering, pursuing licensure, and moving towards specialization in one of the following areas: water supply and wastewater engineering, solid and hazardous wastes management, air pollution control, or occupational health and safety; or

2. Pursuing a graduate or professional degree.

Curriculum

The Environmental Engineering curriculum provides an integrated educational experience in mathematics, basic sciences, humanities, social sciences, engineering sciences, and environmental engineering design. The first two years of the Environmental Engineering curriculum provide a strong foundation in mathematics, basic sciences, and engineering sciences. The next two years of the four-year program, integrate engineering sciences with design applications in the areas of:

- Air pollution control engineering
- Water and wastewater engineering
- Solid and hazardous wastes engineering
- Occupational health and safety

Basic principles of environmental engineering are first presented in an introductory course (Introduction to Environmental Engineering), followed by more specialized courses that integrate basic principles with design applications in:

- Air pollution control engineering (Air Pollution)
- Water and wastewater engineering (Design of Water Quality Control Systems, Water-Resources Engineering)
- Solid and hazardous wastes engineering (Solid and Hazardous Waste Engineering)
- Occupational health and safety (Industrial Safety Engineering)

Design courses emphasize an integrated approach that considers all environmental media in the prevention and control of environmental problems. The curriculum culminates with a major senior-level design project that includes design applications from the major specialty areas of environmental engineering.

A tabular listing of the course requirements for the degree of Bachelor of Science in Environmental Engineering is shown below:
## ENVIRONMENTAL ENGINEERING

### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAE 111 Introduction Engineering I</td>
<td>CAE 112 Introduction to Engineering II</td>
</tr>
<tr>
<td>PHY 205 University Physics I</td>
<td>PHY 206 University Physics II</td>
</tr>
<tr>
<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>MTH 112 Calculus II</td>
</tr>
<tr>
<td>ENG 105 English Composition I</td>
<td>ENG 107 Writing About Science</td>
</tr>
<tr>
<td></td>
<td>People and Society Elective*</td>
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### SOPHOMORE YEAR

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<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAE 201 Computer-Aided Drafting and Design</td>
<td>CAE 211 Mechanics of Solids II and</td>
</tr>
<tr>
<td>CAE 210 Mechanics of Solids I</td>
<td>CAE 212 Structural Laboratory or</td>
</tr>
<tr>
<td>PHY 207 University Physics III</td>
<td>MAE 202 Dynamics</td>
</tr>
<tr>
<td>MTH 211 Calculus III</td>
<td>CAE 340 Introduction to Environmental Engineering</td>
</tr>
<tr>
<td>CHM 111 Principles of Chemistry I</td>
<td>EEN 205 Principles of Electrical Engineering</td>
</tr>
<tr>
<td>CHM 113 Chemistry Laboratory I</td>
<td>PHY 209 University Physics III Lab</td>
</tr>
<tr>
<td>Humanities and Arts Elective*</td>
<td>MTH 311 Ordinary Differential Equations</td>
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<tr>
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<td></td>
<td>CHM 114 Chemistry Laboratory II</td>
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### JUNIOR YEAR

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<tr>
<td>CAE 330 Fluid Mechanics</td>
<td>CAE 440 Design and Analysis of Water Quality</td>
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<tr>
<td>CAE 345 Water and Wastewater Analysis</td>
<td>Control Systems</td>
</tr>
<tr>
<td>MAE 303 Thermodynamics I</td>
<td>CAE 541 Environmental Microbiology</td>
</tr>
<tr>
<td>IEN 311 Applied Probability and Statistics</td>
<td>Earth Science Elective*</td>
</tr>
<tr>
<td>ENV Basic Science Elective*</td>
<td>Humanities and Arts Elective*</td>
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<td>Advanced PS/HA Elective*</td>
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### SENIOR YEAR

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<th>Fall Semester</th>
<th>Spring Semester</th>
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<tr>
<td>CAE 403 Senior Design Project</td>
<td>CAE 402 Professional Practice</td>
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<td>CAE 430 Water-Resources Engineering</td>
<td>CAE 542 Solid and Hazardous Waste Engineering</td>
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<tr>
<td>CAE 540 Environmental Chemistry</td>
<td>CAE 543 Air Pollution</td>
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<tr>
<td>IEN 351 Industrial Safety Engineering</td>
<td>ENV Design Elective*</td>
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* To be selected from lists of approved People and Society (PS)/Humanities and Arts (HA), Technical, Design, Earth Science, and Basic Science electives.
BACHELOR OF SCIENCE IN ENVIRONMENTAL ENGINEERING AND
MASTER OF SCIENCE IN CIVIL ENGINEERING

The five-year BS/MS program leads to both the B.S. degree in Environmental Engineering and the M.S. degree in Civil Engineering in five years. This program is open to exceptional students who are admitted to the graduate program at the end of their junior year. Students applying for this program must have a minimum grade point average of 3.0, and score more than 1000 on the Graduate Record Examination. The course requirements for the five-year BS/MS program are as follows:

<table>
<thead>
<tr>
<th>FRESHMAN YEAR</th>
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</thead>
<tbody>
<tr>
<td><strong>Fall Semester</strong></td>
<td><strong>Spring Semester</strong></td>
</tr>
<tr>
<td>CAE 111 Introduction Engineering I</td>
<td>CAE 112 Introduction to Engineering II</td>
</tr>
<tr>
<td>PHY 205 University Physics I</td>
<td>PHY 206 University Physics II</td>
</tr>
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<td>MTH 110 Analytic Geometry and Calculus I</td>
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<td>ENG 105 English Composition I</td>
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<tr>
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<td>ENG 107 Writing About Science</td>
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<td>CHM 114 Chemistry Laboratory II</td>
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<th>JUNIOR YEAR</th>
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<tr>
<td><strong>Fall Semester</strong></td>
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<td>CAE 330 Fluid Mechanics</td>
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<td><strong>Fall Semester</strong></td>
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<td>CAE 601 Engineering Scholarship</td>
<td>CAE 604 Masters Design Project II</td>
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DUAL-DEGREE PROGRAMS

There are two dual-degree programs. The first dual-degree program leads to Bachelor of Science degrees in both Civil Engineering and Architectural Engineering, and the second dual-degree program leads to Bachelor of Science degrees in both Civil Engineering and Environmental Engineering. The dual-degree programs are very popular, highly recommended and, if planned in advance, take only one more semester than degree programs in either Civil Engineering, Architectural Engineering, or Environmental Engineering. Curricula for the dual degree programs are available in the Department office.

MINOR IN CIVIL, ARCHITECTURAL, OR ENVIRONMENTAL ENGINEERING
(for students in the College of Arts and Sciences and the School of Architecture)

A Minor in Civil, Architectural, or Environmental Engineering requires 15 credits passed with a grade of C or higher. Students are required to satisfy the prerequisites for all courses, and are required to complete the core course, CAE 210, plus an additional 12 or 13 credits within an area of specialization. The additional credits required for minors in civil, architectural, and environmental engineering are as follows:

Minor in Civil Engineering

**GEOTECHNICAL TRACK**
CAE 211 (CAE 212 optional), CAE 330, CAE 370/371, CAE 470.

**STRUCTURAL TRACK**
CAE 211 (CAE 212 optional), CAE 310, and any two of: CAE 320, CAE 321, and CAE 421

**TRANSPORTATION TRACK**
CAE 211 (CAE 212 optional), CAE 350, CAE 450, CAE 550.

Minor in Architectural Engineering

**STRUCTURAL TRACK**
CAE 211 (CAE 212 optional), CAE 310, CAE 320, and CAE 321

**MECHANICAL/ELECTRICAL TRACK**
CAE 330, CAE 380, CAE 480, and CAE 581

Minor in Environmental Engineering

CAE 330, CAE 340, CAE 430, and CAE 440

Civil, Architectural & Environmental Engineering Course Listing
ELECTRICAL AND COMPUTER ENGINEERING - Dept. Code: EEN

MISSION STATEMENT
The mission of the Department of Electrical and Computer Engineering is to achieve and maintain, through a continuous improvement process, excellence in undergraduate and graduate education, research, and service to the community and the nation. We endeavor to accomplish this by providing high-quality education and research programs which will impart the requisite knowledge and skills to our students enabling them to assume leadership roles in contributing to the advancement of the underlying electrical and computer engineering technologies which sustain the current world economy, to promote a strong commitment to life-long learning, to prepare them for a variety of alternative career paths and to participate as responsible citizens in a rapidly changing and shrinking global community.

INTRODUCTION
Electrical and Computer Engineering are complementary disciplines that are at the forefront of the continuing development and evolution of our modern technological society. Electrical and computer engineers have initiated and contributed to the development of such important and diverse areas as integrated electronics and photonics, telecommunication systems and computer networks, computer hardware and software, image processing and computer vision, automation and robotics, electrical power generating and transmission systems, as well as participated in the development of significant applications to biotechnology. These technologies have significantly transformed how our evolving society will live, learn, work, communicate and do business in the 21st century and are critical to the development of a sustainable world economy. It is an exciting and challenging discipline offering a variety of rewarding career paths. The Department of Electrical and Computer Engineering offers a number of innovative academic and research programs to help prepare students to achieve a variety of career goals.

The Department currently offers three undergraduate degree programs:
1. The Bachelor of Science in Electrical Engineering degree program (B.S.E.E.)
2. Bachelor of Science in Computer Engineering degree program (B.S.Cp.E.)
3. Bachelor of Science in Information Technology degree program (B.S.I.T.)

The Electrical Engineering and the Computer Engineering degree programs are accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).

The Electrical Engineering degree program has three options:
1- Electrical Engineering Option;
2- Audio Engineering Option;
3- Wireless Communication Option.

All of these three options require specialized courses as well as the 49 Engineering Credit Hours required in the accredited Electrical Engineering degree program.

In addition, the Department offers graduate courses leading to the Degree of Master of Science in Electrical and Computer Engineering (M.S.E.C.E.), and the Doctor of Philosophy degree (Ph.D.). For further information see the Bulletin of the Graduate School.
DEPARTMENTAL LABORATORIES
The Department maintains a variety of well-equipped laboratories and computers adequate for undergraduate instruction and graduate research. The laboratories and computer facilities include:

Electronics Laboratory
Wireless Communications Laboratory
Digital Signal Processing Laboratory
Electrical Machinery Laboratory
Digital Design Laboratory
Information Technology Laboratory
Microprocessor Laboratory
Electro-Optics and Micro-Devices Laboratory
Distributed Decision Environments Laboratory
Computer Vision and Image Processing Laboratory
Embedded Systems Laboratory
Underwater Imaging Laboratory
Networks Laboratory
Multimedia Laboratory (Arnold Center for Confluent Media Studies)
Digital Audio and Speech Processing Laboratory
ECE Computing Laboratory
Optics and Fiber Communications Laboratory

DEPARTMENTAL ELECTIVES
In describing the above curricula, different electives are mentioned. The definitions of these electives are listed below:

1. Humanities and Arts/People and Society Electives: selected from the appropriate table found in this Bulletin under the Engineering section

2. Technical electives: Appropriate EEN, Math, Physics, Chemistry, Biology, Computer Science, or other Engineering Courses selected in consultation with, and with the approval of, the academic advisor.

3. Analysis Elective: selected from EEN 500 or 533 or any Elective Math course approved by the academic advisor.


5. Information Technology Technical Elective: selected in consultation with, and with the approval of the academic advisor.

6. Software Engineering Technical Electives are selected from EEN 519, 537, 571, 572, 574, 577, 578, 579, CSC 329, 529, and 540.

INTERNSHIP PROGRAM
The Department of Electrical and Computer Engineering encourages its students to take advantage of the College of Engineering Internship Cooperative Program with Industry. Students could do that either on a part-time or a full-time arrangement. Students who wish to intern full-time for one semester may apply to earn as much as three credit hours that could be applied to their degree requirement as a Technical Elective. Students interested in
such a possibility need to submit a proposal to the ECE Department describing the type of work they expect to accomplish approved by the industrial supervisor. If the proposal is approved the student will be assigned a Faculty Supervisor and will be able to register under EEN499. At the end of the Internship Program, the Student is expected to submit to the ECE Department a technical report with comments from the student industrial supervisor. The Faculty advisor will review the report and submit the appropriate grade for EEN499.

Note: An EEN course for which another EEN course is a prerequisite may not be taken unless the student has completed the EEN prerequisite course with a grade of C- or better.

**BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.)**

The Degree of Bachelor of Science in Electrical Engineering is attained upon completion of the course requirements described under the Electrical Engineering Degree Program with any one of its three options. These are the Electrical Engineering option, the Audio Engineering option, and the Wireless Communication option.

**Electrical Engineering** is concerned with the design, analysis and implementation of a variety of systems, components and devices, primarily of an electrical or electronic nature, which form the cornerstone of our complex and technologically oriented society. This ranges from small-scale integrated electronics and photonics systems and devices, the technological drivers of the information technology revolution, to large-scale electrical power systems and power generators, which supply the nation’s energy needs and form the basis for sustained economic growth. Electrical engineering is a rapidly changing discipline. To adequately train students to meet the challenges of the future and to assume leadership roles in the practice of electrical engineering, the department has in place a modern curriculum that reflects best practices in the industries we serve and is constantly updated to incorporate new technological, scientific and economic developments. The curriculum in the first two years provides a thorough background and in-depth preparation in the physical and mathematical sciences as well as fundamental knowledge and exposure to basic engineering principles and computer programming techniques. Students then concentrate on electrical engineering courses in their junior and senior years. Because of the overwhelming computer-oriented nature of modern electrical and electronic systems, students in electrical engineering are also expected to take courses in computer hardware and software and to incorporate this knowledge into a variety of design experiences offered.

**Audio Engineering** was developed with support from the School of Music in response to the need for industry professionals with the theoretical knowledge and the analytical, technical and design skills, which can only be acquired in a formal engineering degree. The Audio Engineering option combines traditional electrical engineering studies with audio studies in areas such as acoustics, digital audio, transducers, signal processing, post production, and recording. Our Audio Engineering graduates are highly sought by industry and have been pursuing successful careers in music/entertainment and the telecommunications industries, in the analog and digital electronics industry, and in the hearing aid/medical instrumentation industry, or have chosen to pursue graduate degrees. Students enrolled in Audio Engineering have access to a variety of well-equipped laboratories, At the College of Engineering the students are expected to be involved in laboratories of electronics, computing, digital design, signal processing, and audio and speech processing. At the School of Music students have access to the Gusman Concert Hall, which houses a professional recording studio with automated console and multi-track recording. There, students can record live concerts ranging from small jazz groups to a symphony orchestra. In addition, Audio Engineering students use the Weeks Center for
Recording and Performance, which also features a fully professional recording studio, analog and digital signal processing equipment and audio test equipment.

**Wireless Communication** was recently added to meet the growing need in wireless communications and networking. The option provides a solid background in the areas of conventional communications, modern computer networks and protocols, wireless network design and management, wireless networks, wireless web protocols, internet programming, databases, distributed transaction processing, and security. The Wireless Communication option is concerned with the design and implementation of projects related to wireless systems. The graduates of this option will not only have theoretical and practical foundations, but will also be aware of the recent developments in all emerging fields and standardization efforts in wireless systems. Considering that there currently is and expected to remain an acute shortage of manpower in the high tech areas, we expect our graduates to have no problem in positioning themselves favorably in the job market.

**EDUCATIONAL OBJECTIVES**
The educational objectives of the Electrical Engineering Program are to produce graduates who have the:

1. knowledge of mathematics, physics and the engineering sciences as well as the skill needed to plan, design, and develop successful solutions to electrical engineering problems.
2. broad educational background, professional and ethical context, and communication and team skills expected from a successful and responsible practicing electrical engineer.
3. background, preparation and experience necessary to be successful in graduate and professional degree programs, and a variety of alternative career paths.
4. foundations for independent learning and commitment to life-long education to continually improve, refine, and broaden their skills and competencies in the face of evolving technological developments and global needs.

This degree program endeavors to achieve its objectives by imparting to its students the fundamental principles underlying modern electrical engineering, along with the necessary skills and experiences to apply standard practices, methodologies and available tools for solving electrical engineering problems. The major areas of Electrical Engineering include electronics, analog and digital circuits, microprocessors, communications and control systems.

The design sequence is spread throughout the educational experience curricula, culminating in the two-semester senior design project.

Graduates are expected to keep pace with this rapidly evolving discipline. To this end, the faculty stresses the importance of continued education and life-long professional development by trying to instill in their students a sense of excitement for the prospects of this evolving technology, tempered by a strong sense of responsibility and concern for its potential impacts on society.
### Requirements of the Electrical Engineering Degree Program (B.S.E.E)

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<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Electrical Option</th>
<th>Audio Option</th>
<th>Wireless Option</th>
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<tr>
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<td>EEN 112 Intro. To Engineering II</td>
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<td>EEN 415 Senior Design I</td>
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<td>EEN 435 Communication Electronics</td>
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<td>✓</td>
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**Total Common Engineering Credits**: 49

**Additional Engineering and Technical Elective (Courses/# of Credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Electrical Option</th>
<th>Audio Option</th>
<th>Wireless Option</th>
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<td>✓</td>
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<td>EEN 402</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
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<td>Tech Elect</td>
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<td>EEN 437</td>
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<td>EEN 502</td>
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<td>EEN 540</td>
<td>3</td>
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<td>✓</td>
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<tr>
<td>EEN 301-3</td>
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<td>EEN 368-3</td>
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<td>EEN 437-1</td>
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<td>EEN 539-3</td>
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<tr>
<td>EEN 562-3</td>
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<tr>
<td>EEN 563-1</td>
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<td>EEN 564-3</td>
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<td>Tech Elec-3</td>
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**Total Additional Engineering and Technical Elective Credits**: 21

**Total Engineering and Tech. Elec. Credits**: 70

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<tr>
<th>Course</th>
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<th>Electrical Option</th>
<th>Audio Option</th>
<th>Wireless Option</th>
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<tr>
<td>MMI (Music Media)+ MTC (Music Theory)</td>
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<td>Total Math &amp; Basic Sciences Credits</td>
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<td>Total General Education Credits</td>
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**Total Credits**: 127

257
ELECTRICAL ENGINEERING OPTION- 127 credits

FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEN 111 Introduction to Engineering I</td>
<td>EEN 112 Introduction to Engineering II</td>
</tr>
<tr>
<td>ENG 105 English Composition I</td>
<td>EEN 118 Introduction to Programming</td>
</tr>
<tr>
<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>ENG 107 Writing about Science</td>
</tr>
<tr>
<td>PHY 205 University Physics I</td>
<td>MTH 112 Calculus II</td>
</tr>
<tr>
<td></td>
<td>PHY 206 University Physics II</td>
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<td>PHY 208 University Physics II Lab</td>
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SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>EEN 201 Electrical Circuit Theory</td>
<td>EEN 204 Electrical Circuits Laboratory</td>
</tr>
<tr>
<td>EEN 304 Logic Design</td>
<td>EEN 218 Intermediate Computer Programming</td>
</tr>
<tr>
<td>MTH 210 Vectors and Matrices</td>
<td>EEN 305 Electronics I</td>
</tr>
<tr>
<td>PHY 207 University Physics III</td>
<td>EEN 307 Linear Circuits and Signals</td>
</tr>
<tr>
<td>PHY 209 University Physics III Lab</td>
<td>EEN 315 Digital Design Laboratory</td>
</tr>
<tr>
<td>Humanities and Arts Elective*</td>
<td>MTH 311 Ordinary Differential Equations</td>
</tr>
<tr>
<td></td>
<td>People and Society Elective*</td>
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JUNIOR YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
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<tbody>
<tr>
<td>EEN 301 Electromagnetic Field Theory</td>
<td>EEN 312 Microprocessor</td>
</tr>
<tr>
<td>EEN 306 Electronics II</td>
<td>EEN 404 Communication Systems</td>
</tr>
<tr>
<td>EEN 311 Electronics Laboratory</td>
<td>EEN 405 Solid-State Electronics</td>
</tr>
<tr>
<td>EEN 316 Structured Digital Design</td>
<td>CHM 151 Chemistry for Engineers I</td>
</tr>
<tr>
<td>EEN 336 Signals and Systems</td>
<td>CHM 153 Chemistry Laboratory for Engineers</td>
</tr>
<tr>
<td>IEN/EEN 310 Engineering Probability</td>
<td></td>
</tr>
<tr>
<td>Humanities and Arts Elective*</td>
<td>People and Society Elective*</td>
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SENIOR YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEN 402 Electrical Machine Theory</td>
<td>EEN 416 Senior Project II</td>
</tr>
<tr>
<td>EEN 415 Senior Project I</td>
<td>Technical Elective</td>
</tr>
<tr>
<td>EEN 436 Intro. Digital Signal Processing</td>
<td>EEN Elective*</td>
</tr>
<tr>
<td>EEN Elective</td>
<td>EEN 308 Linear Control Systems</td>
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<tr>
<td>EEN 435 Communication Electronics</td>
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<tr>
<td>Adv. HA/PS Elective</td>
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</table>

*See description of electives under the Electrical and Computer Engineering Section.

MINOR IN ELECTRICAL ENGINEERING

Non-ECE Students wishing to minor in Electrical Engineering should satisfy a 15 credit requirement specified as follows:

1. A core of seven credits consisting of EEN 201, EEN 204, and EEN 305.

2. Eight or more credits of Electrical Engineering Electives. It is recommended that these elective credits be taken from one of the following two sets of EEN courses:
   - Communication (EEN 306, 307, 311, 336, 404, 436, 534)

3. A 2.0 grade point average in all EEN courses taken.
DOUBLE DEGREE PROGRAM - B.S.E.E. & B.S.B.E.
A BME student who satisfies the requirement of the B.S.B.E. degree with electrical orientation as described in this Bulletin may also qualify for the B.S.E.E. degree by taking the following additional courses: EEN 218, 301, 306, 308, 316, 336, 404, 405, 435, 436 and one of each from (EEN 503, 516, 542, 555) and (EEN 536, 537, 538, 553) as well as having an ECE Faculty as co-sponsor of the Senior Project.

THE FIVE-YEAR B.S.E.E.-M.S.E.C.E. DUAL DEGREE PROGRAM
This is a structured and integrated program with a minimum of 157 approved credits including two required courses EEN 615 & 616 and 12 Technical Elective courses as follows:

- At least one Analysis elective course.
- At least two Computer Engineering elective courses.
- At least six EEN Elective Courses.
- An additional three EEN or other Technical Elective courses.

The above Elective courses are to be selected in consultation with the advisor such that: At least thirty credits must be at the graduate (500 or 600 level). Of these at least 12 credits must be at the 600 level.

Note that:
- Interested EEN Juniors with cumulative GPA above 3.0 may declare their intent to participate by submitting an official application to the Departmental Graduate Committee for admission into the MSECE portion of the program.
- A student wishing to drop out of the five-year program without the MSECE degree could receive the BSEE degree after completing all its requirements, including the senior design project.
- All students must take the Graduate Record Examination before beginning their fifth-year courses.
- To qualify for the MSECE degree, students must meet all the pertinent Graduate School requirements, including an acceptable GRE score and a minimum of 3.0 GPA in the 30 credits applied towards the MSECE degree.
- The student is awarded both the BSEE and the MSECE degrees after the requirements for both degrees are satisfied.

COURSE REQUIREMENT FOR THE BSEE-MSECE FIVE YEAR DUAL DEGREE PROGRAM (156 credits)

The first three years are the same as in the undergraduate B.S.E.E. program with 97 credits. The remaining 60 credits shown below should include at least ten graduate courses of which, at least four are at the 600 level. Also see description of electives under the Electrical and Computer Engineering Section.
### FOURTH YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEN 402 Electrical Machine Theory</td>
<td>EEN Elective*</td>
</tr>
<tr>
<td>EEN 436 Intro. Digital Signal Processing</td>
<td>Analysis Elective*</td>
</tr>
<tr>
<td>EEN Electives*</td>
<td>EEN or Tech. Elective*</td>
</tr>
<tr>
<td>EEN 435 Communication Electronics</td>
<td>EEN308 Linear Control Systems</td>
</tr>
<tr>
<td>Adv. HA/PS Elective*</td>
<td>Adv. HA/PS Elective*</td>
</tr>
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<td></td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>EEN Electives*</td>
<td>EEN Elective*</td>
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<tr>
<td>EEN or Tech. Elective*</td>
<td>Computer Engineering Elective*</td>
</tr>
<tr>
<td>Computer Engineering Elective*</td>
<td>EEN or Tech. Elective*</td>
</tr>
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<td><strong>Total</strong></td>
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<tr>
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*See description of electives under the Electrical and Computer Engineering Section.*

### FIFTH YEAR (GRADUATE CREDITS ONLY)

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<td>Computer Engineering Elective*</td>
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### AUDIO ENGINEERING OPTION – 134/135 Credits

#### FRESHMAN YEAR

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<tbody>
<tr>
<td>EEN 111 Introduction to Engineering I</td>
<td>EEN 112 Introduction to Engineering II</td>
</tr>
<tr>
<td>ENG 105 English Composition I</td>
<td>EEN 118 Introduction to Programming</td>
</tr>
<tr>
<td>MTH 110 Analytical Geometry and Calculus I</td>
<td>ENG 107 Writing about Science</td>
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<tr>
<td>PHY 205 University Physics I</td>
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<tr>
<td>MTC 110 Fundamentals of Music</td>
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#### SOPHOMORE YEAR

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<th>Spring Semester</th>
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<tbody>
<tr>
<td>EEN 218 Intermediate Computer Programming</td>
<td>EEN 204 Electrical Circuits Laboratory</td>
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<tr>
<td>EEN 201 Electrical Circuit Theory</td>
<td>EEN 304 Logic Design</td>
</tr>
<tr>
<td>MTH 210 Vectors and Matrices</td>
<td>EEN 305 Electronics I</td>
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<td>PHY 207 University Physics III</td>
<td>EEN 307 Linear Circuits and Signals</td>
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<td>PHY 209 University Physics III Lab</td>
<td>CHM 151 Chemistry for Engineers</td>
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<tr>
<td>MCY 132 The Understanding and Enjoyment of Music II</td>
<td>CHM 153 Chemistry Laboratory for Engineers</td>
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<td>MMI 140 Audio Workshop I</td>
<td>MTH 311 Ordinary Differential Equations</td>
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<td>MMI 141 Audio Workshop II</td>
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#### JUNIOR YEAR

<table>
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<th>Fall Semester</th>
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<tbody>
<tr>
<td>EEN 306 Electronics II</td>
<td>EEN 312 Microprocessor</td>
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<td>EEN 311 Electronics Laboratory</td>
<td>EEN 316 Structured Digital Design</td>
</tr>
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<td>EEN 315 Digital Design Laboratory</td>
<td>EEN 404 Communication Systems</td>
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<td>EEN 336 Signals and Systems</td>
<td>MMI 172 Audio Design Workshop III</td>
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<td>IEN/EEN 310 Engineering Probability</td>
<td>MMI 501 Transducer Theory</td>
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<td>MMI 171 Audio Design Workshop II</td>
<td>EEN 435 Communication Electronics</td>
</tr>
<tr>
<td>MMI 436 Audio Postproduction**</td>
<td>People and Society Elective*</td>
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<td>Humanities and Arts Elective*</td>
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#### SENIOR YEAR

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<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>EEN 415 Senior Project I</td>
<td>EEN 416 Senior Project II</td>
</tr>
<tr>
<td>EEN 502 Engineering Acoustics</td>
<td>EEN 540 Digital Speech and Audio Processing</td>
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<tr>
<td>MMI 502 Digital Audio I</td>
<td>Audio Engineering or Tech. Elective</td>
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<tr>
<td>Social Sciences Elective*</td>
<td>MMI 503 Digital Audio II</td>
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<td>Adv. HA/PS Elective*</td>
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<td><strong>16</strong></td>
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</table>

* See description of electives under the Electrical and Computer Engineering Section.

** Note that MMI504 could be substituted for MMI 436
## WIRELESS COMMUNICATION OPTION – 129 credits

### FRESHMAN YEAR

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<thead>
<tr>
<th>Fall Semester</th>
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</thead>
<tbody>
<tr>
<td>EEN 111 Introduction to Engineering I</td>
<td>EEN 112 Introduction to Engineering II</td>
</tr>
<tr>
<td>ENG 105 English Composition I</td>
<td>EEN 118 Introduction to Programming</td>
</tr>
<tr>
<td>MTH 110 Analytical Geometry and Calculus I</td>
<td>ENG 107 Writing about Science</td>
</tr>
<tr>
<td>PHY 205 University Physics I</td>
<td>MTH 112 Calculus II</td>
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<tr>
<td>People and Society Elective*</td>
<td>PHY 206 University Physics II</td>
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<td>PHY 208 University Physics II Lab</td>
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<table>
<thead>
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<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEN 112 Introduction to Engineering II</td>
<td>EEN 118 Introduction to Programming</td>
</tr>
<tr>
<td>EEN 118 Introduction to Programming</td>
<td>ENG 107 Writing about Science</td>
</tr>
<tr>
<td>MTH 112 Calculus II</td>
<td>PHY 206 University Physics II</td>
</tr>
<tr>
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### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEN 201 Electrical Circuit Theory</td>
<td>EEN 204 Electrical Circuits Laboratory</td>
</tr>
<tr>
<td>EEN 218 Intermediate Computer Programming</td>
<td>EEN 305 Electronics I</td>
</tr>
<tr>
<td>EEN 304 Logic Design</td>
<td>EEN 307 Linear Circuits and Signals</td>
</tr>
<tr>
<td>MTH 210 Vectors and Matrices</td>
<td>MTH 311 Ordinary Differential Equations</td>
</tr>
<tr>
<td>PHY 207 University Physics III</td>
<td>CHM 153 Chemistry Laboratory for Engineers</td>
</tr>
<tr>
<td>PHY 209 University Physics III Lab</td>
<td>Humanities and Arts Elective*</td>
</tr>
<tr>
<td>16</td>
<td>17</td>
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</tbody>
</table>

### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEN 301 Electromagnetic Field Theory</td>
<td>EEN 312 Microprocessor</td>
</tr>
<tr>
<td>EEN 306 Electronics II</td>
<td>EEN 316 Structured Digital Design</td>
</tr>
<tr>
<td>EEN 311 Electronics Laboratory</td>
<td>EEN 368 Internet Computing I</td>
</tr>
<tr>
<td>EEN 315 Digital Design Laboratory</td>
<td>EEN 404 Communication Systems</td>
</tr>
<tr>
<td>EEN 336 Signals and Systems</td>
<td>EEN 436 Intro. Digital Signal Processing</td>
</tr>
<tr>
<td>IEN/EEN 310 Engineering Probability</td>
<td>Humanities and Arts Elective*</td>
</tr>
<tr>
<td>People and Society Elective*</td>
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</tbody>
</table>

### SENIOR YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEN 415 Senior Project I</td>
<td>EEN 416 Senior Project II</td>
</tr>
<tr>
<td>EEN 435 Communication Electronics</td>
<td>EEN 563 Wireless Communication Lab</td>
</tr>
<tr>
<td>EEN 534 Communication Networks</td>
<td>EEN 564 Wireless Networks</td>
</tr>
<tr>
<td>EEN 539 Digital Communications</td>
<td>EEN 437 Real-Time DSP Lab.</td>
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<tr>
<td>EEN 562 Wireless and Cellular Communication</td>
<td>Wireless Communication or Tech. Elective</td>
</tr>
<tr>
<td>Adv. HA/PS Elective*</td>
<td>Adv. HA/PS Elective*</td>
</tr>
<tr>
<td>16</td>
<td>13</td>
</tr>
</tbody>
</table>

* See description of other electives under the Electrical and Computer Engineering section

### BACHELOR OF SCIENCE IN COMPUTER ENGINEERING (B.S.Cp.E.)

The Degree of Bachelor Science in Computer Engineering is attained upon completion of the course requirements described under the Computer Engineering Curriculum.

### COMPUTER ENGINEERING PROGRAM

Computer engineering is concerned with the characterization, design, analysis and implementation of hardware, software and overall architecture of computers and computer systems and the development of applications enabled by such configurations. This ranges from embedded microprocessors and associated software supporting a variety of familiar devices, to large-scale distributed computer systems interconnected by high-speed telecommunication networks controlled by sophisticated communication protocols. Since modern electronic computing systems are digital in nature, the program provides in-depth coverage of a range of topics dealing with digital information processing systems. Among the topics covered are digital system design, computer organization and architecture, operating systems, software engineering, database systems, image processing and computer vision, programming languages, microprocessor-based systems, digital communications, computer communication networks, wireless and mobile networks, design
and implementation of very large scale integrated (VLSI) circuits and systems, artificial intelligence, data mining, computer graphics, and multimedia systems and networks.

Computer engineering is a rapidly changing and evolving discipline driven by new technology developments and marketplace conditions. To adequately train students to meet the challenges of the future and to assume leadership roles in the practice of computer engineering, the department offers an up-to-date curriculum that reflects new technology developments that have the potential for significantly impacting professional practice in the industry. The curriculum is constantly updated to incorporate new technological, scientific and economical developments.

**EDUCATIONAL OBJECTIVES**

The educational objectives of the Computer Engineering Program are to produce graduates who have:

1. the knowledge of mathematics, physics and the engineering sciences as well as the skill needed to plan, design, and develop successful solutions to computer engineering problems.

2. the broad educational background, professional and ethical context, and communication and team skills expected from a successful and responsible practicing computer engineer.

3. the background, preparation and experience necessary to be successful in graduate and professional degree programs, and a variety of alternative career paths.

4. the foundations for independent learning and commitment to life-long education to continually improve, refine, and broaden their skills and competencies in the face of evolving technological developments and global needs.

This degree Program endeavors to achieve its objectives by imparting to its students the fundamental principles underlying modern computer engineering, along with the necessary skills and experiences to apply standard practices, methodologies and modern tools for solving computer engineering problems. The major areas of Computer Engineering include digital systems, algorithms and data structures, programming languages, computer architecture, microprocessors, operating systems, software engineering, database and artificial intelligence.

The computer engineering design sequence is spread throughout the computer engineering curriculum. System design is emphasized during the last three semesters, culminating in the senior design project.

Graduates are expected to keep pace with this rapidly-evolving discipline. To this end, the faculty stresses the importance of continued education and life-long professional development, by trying to instill in their students a sense of excitement for the prospects of this evolving technology, tempered by a strong sense of responsibility and concern for its potential impacts on society.
## COMPUTER ENGINEERING CURRICULUM - 129 Credits

### FRESHMAN YEAR

<table>
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<tr>
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<th>Course</th>
<th>Credits</th>
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<tr>
<td><strong>Fall Semester</strong></td>
<td>EEN 111 Introduction to Engineering I</td>
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<tr>
<td></td>
<td>EEN 118 Introduction to Programming</td>
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<tr>
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<td>ENG 105 English Composition I</td>
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<td>PHY 205 University Physics I</td>
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<td><strong>Spring Semester</strong></td>
<td>EEN 112 Introduction to Engineering II</td>
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<td>EEN 218 Intermediate Computer Programming</td>
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<td>ENG 107 Writing about Science</td>
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<td>MTH 112 Calculus II</td>
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<td>PHY 206 University Physics II</td>
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### SOPHOMORE YEAR

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<tr>
<td><strong>Fall Semester</strong></td>
<td>EEN 201 Electric Circuits I</td>
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<td>EEN 304 Logic Design</td>
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<td>MTH 210 Vectors and Matrices</td>
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<td>PHY 207 University Physics III</td>
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<td><strong>Spring Semester</strong></td>
<td>EEN 305 Electronics I</td>
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<td>EEN 315 Digital Design Laboratory</td>
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<td>EEN 318 Advanced Computer Programming</td>
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<td>IEN/EEN 310 Engineering Probability</td>
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<td>CHM 151 Chemistry for Engineers</td>
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<td>CHM 153 Chemistry Laboratory for Engineers</td>
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### JUNIOR YEAR

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<td>EEN 306 Electronics II</td>
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<td>EEN 312 Microprocessor</td>
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<td>EEN 316 Structured Digital Design</td>
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<td>MTH 309 Discrete Mathematics I</td>
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<td>EEN 455 Design-for-Testability Laboratory</td>
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<td>CHM 567 Database Design and Management</td>
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<td>MTH 311 Ordinary Differential Equations</td>
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### SENIOR YEAR

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<tr>
<td><strong>Fall Semester</strong></td>
<td>EEN 417 Embedded Microprocessor System Design</td>
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<td>EEN 418 Senior Project Planning</td>
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<td>EEN 424 UNIX Systems and Servers</td>
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<td>EEN 521 Computer Operating Systems</td>
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* See description under the Electrical and Computer Engineering Section.

** The three computer engineering elective courses are usually selected in consultation with the Academic Advisor from the following list of courses: EEN 368, 470, 511, 512, 519, 523, 532, 534, 537, 538, 542, 548, 553, 568, 570, 571, 572, 573, 574, 575, 576, 577, and 578. However, one computer engineering elective course may be selected from the following computer science courses: CSC 517, 518, 527, 529, 540, and 555.

### THE FIVE-YEAR B.S.Cp.E.-M.S.E.C.E. DUAL DEGREE PROGRAM

This is a structured and integrated program with a minimum of 159 approved credits that includes ten additional elective courses and replaces three technical elective courses as well as one senior design course currently required under the B.S.Cp.E. Degree as follows:

- Three required courses: EEN 368, 615, 616.
- Two hardware elective courses from: EEN 532, 542, 614.
- Two software elective courses from: EEN 511, 512, 513, 537, 572.
• Four elective courses from one of the following two concentration areas:
  (A) EEN 336, 436, 536, 538, 540, 571, 638, 671, CSC 544, 529.
  (B) EEN 519, 534, 548, 568, 570, 573-578, 634, 653.

• Three additional technical electives.

Elective courses for each of these areas are to be selected in consultation with the advisor from the appropriate courses listed above for each area.

• At least thirty credits must be at the graduate (500 or 600) level. Of these, at least twelve credits must be in courses open to graduate students only (600 level).

• Interested ECN juniors with cumulative GPA above 3.0 may declare their intent to participate by submitting an official application to the Departmental Graduate Committee for admission into the M.S.E.C.E. portion of the program.

• A student wishing to drop out of the five-year program without the M.S.E.C.E. degree could receive the B.S.Cp.E. degree after completing all its requirements, including the senior design project.

• All students must take the Graduate Record Examination before beginning their fifth-year courses.

• To qualify for the M.S.E.C.E. degree, students must meet all the pertinent Graduate School requirements, including an acceptable GRE score and a minimum of 3.0 GPA in the 36 credits applied towards the M.S.E.C.E. degree.

• The student is awarded both the B.S.Cp.E. and the M.S.E.C.E. degrees after the requirements for both degrees are satisfied.

**COURSE REQUIREMENT FOR THE B.S.Cp.E. – M.S.E.C.E. FIVE YEAR DUAL DEGREE PROGRAM (159 credits)**

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<tr>
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<td>EEN 424 UNIX Systems and Servers</td>
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<td>EEN 521 Computer Operating Systems</td>
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<td>Computer Eng. Software Elective</td>
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<td><strong>FIFTH YEAR (GRADUATE CREDITS ONLY)</strong></td>
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<tr>
<td>Fall Semester</td>
<td>EEN 615 M.S. Design Project I</td>
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<tr>
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<td>Computer Eng. Software Elective</td>
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* See description of electives under the Electrical and Computer Engineering Section.
MINOR IN COMPUTER ENGINEERING
Students wishing to minor in Computer Engineering must satisfy the following requirements:

1. A core of thirteen credits consisting of EEN 118, 218, 304, and 312.
2. At least five credits of computer engineering electives selected from the following courses: EEN 315, 316, 414, 424, 454/455, 512, 519, 521, 537, 547, 567.
3. A minimum grade point average of 2.0 in all EEN courses taken.

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (B.S.I.T.)
The Degree of Bachelor of Science in Information Technology is attained upon completion of the course requirements described under the Information Technology Program in any one of its two options: the Information Technology option and the Software Engineering option.

INFORMATION TECHNOLOGY PROGRAM
Information technology has had a profound impact on business and commerce, education and knowledge dissemination, entertainment and the arts, biomedical research and practice, scholarly research, and society in general. The Internet now interconnects millions of computers around the world allowing individuals, organizations and businesses to communicate freely and almost instantaneously and to share information on a worldwide basis. Modern information technology, based on a combination of highly dynamic and complex electronic computing environments together with networking infrastructure and software systems, requires practitioners who are well versed in a variety of these key areas of information technology. Individuals are needed with experience and hands-on training in the design, deployment, operational use, and management of these complex systems.

The Information Technology (IT) Program at the University of Miami’s College of Engineering is designed to prepare students for a successful career as information technology professionals. The extensive practical nature of this curriculum is supported by the new Information Technology Laboratory, which serves as a microcosm of a real-world environment that encompasses enterprise issues such as network connectivity, systems interoperability, portable software development, redundant system architecture, web development, system integration, and multimedia delivery. The hardware and software systems that constitute the laboratory are those used in enterprises to provide their information technology solutions. Departmental laboratories utilized by this program include:

1. Multimedia Laboratory (Arnold Center for Confluent Media Studies)
2. Software Engineering Laboratory
3. Networks Laboratory
4. Microprocessor Laboratory
5. Embedded Systems Laboratory
6. Digital Signal Processing Laboratory
7. Digital Audio and Speech Processing Laboratory
8. Information Technology Laboratory
Information Technology option provides in-depth training in the areas of computer organization and architectures, operating systems, software development and documentation, information retrieval and database systems, computer communication networks, the Internet and intranets, wireless and mobile networks, multimedia systems and networks, systems and network management, information modeling and characterization, and modern information processing concepts to prepare the information technology professional of the 21st century. The curriculum is constantly updated to incorporate new technological developments and reflect best practices in the information technology industry.

Software Engineering option is concerned with the sound application of engineering and mathematical techniques in designing, building, operating and maintaining reliable and economical software systems. As computer use has increased and the need for reliable, efficient, economical and ‘correct’ software systems has grown. It is one of the fastest growing segments of the computing industry and plays an important role in almost every field. This option provides a solid background in the areas of general engineering, mathematics, science and a strong emphasis in software design and development. The rate of growth of software systems has far outpaced the growth of hardware systems in recent years. With this growing market, there is a need to produce engineers who have the formal training in sound engineering practices, while at the same time are able to work in team environments on large scale, complex software systems. This option prepares the student for the demands of this exciting field with a strong emphasis on hands-on training.

EDUCATIONAL OBJECTIVES:
The educational objectives of the Information Technology Program are to produce graduates who have the:

1. the knowledge of mathematics, science, and engineering, and the skills needed to analyze computer and information technology applications and requirements, and to plan, design, and develop successful solutions.

2. the broad educational background, professional and ethical context, and communication and team skills expected from a successful and responsible practicing information technology professional.

3. the background, preparation and experience necessary to be successful in graduate and professional degree programs, and a variety of alternative career paths.

4. the foundations for independent learning and commitment to life-long education to continually improve, refine, and broaden their skills and competencies in the face of evolving technological developments and global needs.

This degree Program endeavors to achieve its objectives by imparting to its students the fundamental principles underlying the field of information technology, along with the necessary skills and experiences to apply standard practices, methodologies and modern tools for developing information technology solutions. The major areas of Information Technology include algorithms and data structures, computer programming, web technologies, computer networks, network programming/computing, software development and testing, database management systems, and multimedia systems and networks.
The design experience involving a wide spectrum of information technologies is spread throughout the information technology curriculum. System design is emphasized during the last three semesters, culminating in the senior design project.

Graduates are expected to keep pace with this rapidly-evolving discipline. To this end, the faculty stresses the importance of continued education and life-long professional development, by trying to instill in their students a sense of excitement for the prospects of this evolving technology, tempered by a strong sense of responsibility and concern for its potential impacts on society.

**INFORMATION TECHNOLOGY OPTION - 128 credits**

| FRESHMAN YEAR |  |
|---------------|  |
| **Fall Semester** | **Spring Semester** |
| EEN 111 Introduction to Engineering I | 3 | EEN 112 Introduction to Engineering II | 2 |
| EEN 118 Introduction to Programming | 3 | EEN 218 Intermediate Computer Programming | 3 |
| MTH 110 Analytic Geometry and Calculus I | 5 | Basic Science Lab Elective | 1 |
| PHY 205 University Physics I | 3 | ENG 107 Writing About Science | 3 |
|  | 17 | MTH 112 Calculus II | 4 |

| SOPHOMORE YEAR |  |
|----------------|  |
| **Fall Semester** | **Spring Semester** |
| EEN 201 Electric Circuits I | 3 | EEN 312 Microprocessor | 4 |
| EEN 304 Logic Design | 3 | EEN 318 Advanced Computer Programming | 3 |
| PHY 207 University Physics III | 3 | EEN 368 Internet Computing I | 3 |
| PHY 209 University Physics III Laboratory | 1 | Basic Science Elective | 3 |
| MTH 210 Vectors and Matrices | 3 | People and Society Elective* | 3 |
| Humanities and Arts Elective* | 3 | 16 |
|  | 16 |

| JUNIOR YEAR |  |
|--------------|  |
| **Fall Semester** | **Spring Semester** |
| EEN 424 UNIX Systems and Servers | 3 | EEN 414 Computer Organization and Design | 3 |
| IEN/EEN 310 Engineering Probability | 3 | EEN 567 Database Design and Management | 3 |
| IEN 572 Management of Technology /or | | EEN 570 Network Client-Server Programming | 3 |
| CIS 360 Analysis of Information Systems | 3 | EEN 575 Data Network Design and Management | 3 |
| MTH 309 Discrete Mathematics I | 3 | I.T. Technical Elective* | 3 |
| Humanities and Arts Elective* | 3 | People and Society Elective* | 3 |
|  | 15 | 18 |

| SENIOR YEAR |  |
|--------------|  |
| **Fall Semester** | **Spring Semester** |
| EEN 418 Senior Project Planning | 1 | EEN 419 Senior Project | 2 |
| EEN 534 Communication Networks | 3 | EEN 571 Interactive Multimedia Computing | 3 |
| EEN 576 Internet and Intranet Security | 3 | I.T. Technical Elective* | 3 |
| I.T. Technical Elective* | 3 | I.T. Technical Elective* | 3 |
| I.T. Technical Elective* | 3 | Adv. HA/PS Elective* | 3 |
| Adv. HA/PS Elective* | 3 | 14 |
|  | 16 |

* See description of electives under the Electrical and Computer Engineering Section.
AREAS OF CONCENTRATION WITHIN THE BSIT PROGRAM (INFORMATION TECHNOLOGY OPTION):

GENERAL IT CONCENTRATION
Fifteen credits to satisfy the I.T. Elective courses are selected in consultation with and approval of the academic advisor.

COMPUTER ENGINEERING IT CONCENTRATION
- EEN 204  Electronic Circuits Laboratory (1 cr.)
- EEN 315  Digital Design Laboratory (1 cr.)
- EEN 316  Structured Digital Design (1 cr.)
- EEN 454  Digital System Design and Testing (2 cr.)
- EEN 455  Design-for-Testability Laboratory (1 cr.)
Three courses selected from EEN 514, 521, 532, 542 and CSC 529 (3 cr. each)
(EEN 305 is a prerequisite for EEN 532, 542)

COMPUTER SCIENCE IT CONCENTRATION
Select fifteen credits from:
- CSC 517  Data Structures and Algorithm Theory (3 cr.)
- CSC 518  Interpreters and Compiler Theory (3 cr.)
- CSC/EEN 519  Programming Languages (3 cr.)
- CSC 527  Theory of Computing (3 cr.)
- CSC 529  Introduction to Computer Graphics (3 cr.)
- CSC 540  Algorithm Design and Analysis (3 cr.)

MULTIMEDIA IT CONCENTRATION
- EEN 586  Multimedia Networking (3 cr.)
- EEN 589  Multimedia Databases (3 cr.)
- CSC 529  Computer Graphics (3 cr.)
- EEN 421  Intro. To 3D Computer Modeling and Animation (2cr)
Two courses from:
- EEN 422  Character Design and Motion Capture for Computer Games (2cr.)
- CSC 329  Game Programming (3cr.)
- CSC 547  Computational Geometry (3cr.)

BUSINESS IT CONCENTRATION:
Select fifteen credits in junior- and/or senior-level courses in the Business IT concentration to satisfy the I.T. Elective courses. Also, select at least nine credits to satisfy the University of Miami General education requirements, and possibly satisfy the prerequisite courses of the selected I.T. Elective courses. Both selections must be done with the approval of both the department chair and IT program coordinator.

COMMUNICATION IT CONCENTRATION:
Select fifteen credits in junior- and/or senior-level courses in the Communication IT concentration to satisfy the I.T. Elective courses. Also, select at least nine credits to satisfy the University of Miami General education requirements, and possibly satisfy the prerequisite courses of the selected I.T. Elective courses. Both selections must be done with the approval of both the department chair and IT program coordinator.
SOFTWARE ENGINEERING OPTION - 131 credits

**FRESHMAN YEAR**

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<tbody>
<tr>
<td>EEN 111 Introduction to Engineering I</td>
<td>EEN 112 Introduction to Engineering II</td>
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<tr>
<td>EEN 118 Introduction to Programming</td>
<td>EEN 218 Intermediate Computer Programming</td>
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<td>ENG 105 English Composition I</td>
<td>Basic Science Elective</td>
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<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>Basic Science Lab Elective</td>
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<td>PHY 205 University Physics I</td>
<td>ENG 107 Writing About Science</td>
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<td>MTH 112 Calculus II</td>
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**SOPHOMORE YEAR**

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<th>Spring Semester</th>
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<tbody>
<tr>
<td>EEN 304 Logic Design</td>
<td>EEN 312 Microprocessor</td>
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<tr>
<td>EEN 318 Advanced Computer Programming</td>
<td>EEN 201 Electric Circuits I</td>
</tr>
<tr>
<td>PHY 207 University Physics III</td>
<td>EEN 368 Internet Computing I</td>
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<tr>
<td>PHY 209 University Physics III Laboratory</td>
<td>Basic Science Elective</td>
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<tr>
<td>MTH 210 Vectors and Matrices</td>
<td>People and Society Elective*</td>
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<tr>
<td>Humanities and Arts Elective*</td>
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**JUNIOR YEAR**

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<thead>
<tr>
<th>Fall Semester</th>
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<tbody>
<tr>
<td>EEN 414 Computer Organization and Design</td>
<td>EEN 511 Software Engineering</td>
</tr>
<tr>
<td>EEN 424 UNIX Systems and Servers</td>
<td>EEN 512 Software Architecture</td>
</tr>
<tr>
<td>IEN/EEN 310 Engineering Probability</td>
<td>EEN 567 Database Design and Management</td>
</tr>
<tr>
<td>IEN 572 Management of Technology /or</td>
<td>EEN 570 Network Client-Server Programming</td>
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<tr>
<td>CIS 360 Analysis of Information Systems</td>
<td>People and Society Elective*</td>
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<tr>
<td>MTH 309 Discrete Mathematics I</td>
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**SENIOR YEAR**

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<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>EEN 418 Senior Project Planning (Software Engineering Project)</td>
<td>EEN 419 Senior Project</td>
</tr>
<tr>
<td>EEN 513 Software Design and Testing</td>
<td>EEN 575 Data Network Design and Management</td>
</tr>
<tr>
<td>EEN 521 Computer Operating Systems</td>
<td>SE Technical Elective*</td>
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<tr>
<td>EEN 576 Internet and Intranet Security</td>
<td>SE Technical Elective*</td>
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<td>SE Technical Elective*</td>
<td>SE Technical Elective. *</td>
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<td>Adv. HA/PS Elective*</td>
<td>Adv. HA/PS Elective*</td>
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* See description of electives under the Electrical and Computer Engineering Section.

**THE FIVE YEAR B.S.I.T.-M.S.E.C.E. DUAL DEGREE PROGRAM**

This is a structured and integrated program with a minimum of 158 approved credits including six elective courses as follows:

- Six credits of EEN elective courses selected from the following list: EEN 512, 514, 532, 536, 538, 540, 542, 553, 562, 563, 564, 565, 614, 638, and 671.

- Nine credits of technical elective courses selected in consultation with the Academic Advisor

- At least thirty credits must be at the graduate (500 or 600) level including twelve credits in courses open to graduate students only (600 level).

- Interested ITN juniors with cumulative GPA above 3.0 may declare their intent to participate by submitting an official application to the Departmental Graduate Committee for admission into the M.S.E.C.E. portion of the program.
A student wishing to drop out of the five-year program without the M.S.E.C.E. degree could receive the B.S.I.T. degree after completing all its requirements, including the senior design project.

All students must take the Graduate Record Examination before beginning their fifth-year courses.

To qualify for the M.S.E.C.E. degree, students must meet all the pertinent Graduate School requirements, including an acceptable GRE score and a minimum of 3.0 GPA in the thirty credits applied towards the M.S.E.C.E. degree.

The student is awarded both the B.S.I.T. and the M.S.E.C.E. degrees after the requirements for both degrees are satisfied.

**COURSE REQUIREMENT FOR THE B.S.I.T. - M.S.E.C.E. FIVE YEAR DUAL DEGREE PROGRAM (158 CREDITS)**

The first two years are the same as in the B.S.I.T. Degree Program with 65 credits. The remaining 93 credits are specified below:

| JUNIOR YEAR |  |  
|-------------|  |  
| **Fall Semester** | **Spring Semester** |  |
| EEN 307 Linear Circuits and Signals | 3 | EEN 315 Digital Design Laboratory | 1 |
| EEN 424 UNIX Systems and Servers | 3 | EEN 336 Signals and Systems | 3 |
| IEN/EEN 310 Engineering Probability | 3 | EEN 414 Computer Organization and Design | 3 |
| MTH 309 Discrete Mathematics I | 3 | EEN 567 Database Design and Management | 3 |
| Humanities and Arts Elective* | 3 | EEN 568 Internet Computing II | 3 |
|  | 15 | People and Society Elective* | 3 |
|  |  |  | 16 |

| SENIOR YEAR |  |  
|-------------|  |  
| **Fall Semester** | **Spring Semester** |  |
| EEN 316 Structured Digital Design | 1 | EEN 454 Digital System Design and Testing | 2 |
| EEN 404 Communication Systems | 3 | EEN 455 Design-for-Testability Laboratory | 1 |
| IEN 572 Management of Technology /or CIS 360 Analysis of Information Systems | 3 | EEN 562 Wireless and Cellular Communication | 3 |
| EEN 576 Internet and Intranet Security | 3 | EEN 563 Wireless Communication Lab | 1 |
| Technical Elective** | 3 | EEN 570 Network Client-Server Programming | 3 |
| Adv. HA/PS Elective* | 3 | EEN 575 Data Network Design and Management | 3 |
|  | 16 | Adv. HA/PS Elective* | 3 |
|  |  |  | 16 |

| FIFTH YEAR (GRADUATE CREDITS ONLY) |  |  
|-----------------------------------|  |  
| **Fall Semester** | **Spring Semester** |  |
| EEN 521 Computer Operating Systems | 3 | EEN 571 Interactive Multimedia Computing | 3 |
| EEN 534 Communication Networks | 3 | EEN 616 M.S. Design Project II | 3 |
| EEN 615 M.S. Design Project I | 3 | EEN Elective** | 3 |
| EEN Elective** | 3 | EEN Elective** | 3 |
| Technical Elective** | 3 | Technical Elective** | 3 |
|  | 15 |  | 15 |

* See description of electives under the Electrical and Computer Engineering Section.

** Two of these six electives must be at the 600 level.

[Electrical and Computer Engineering Course Listing](#)
ENGINEERING SCIENCE

The curricula in the engineering sciences have been designed to prepare a student to fill the gap between the pure and applied sciences. The programs have been planned to enable the graduate to meet, work, and communicate with scientists and engineers at all levels of research and development, design and production, sales and distribution and to participate in the rapid and efficient translation of the latest scientific discoveries into technological achievements.

The general curriculum outlined below has been developed to give the student a firm foundation in the engineering sciences supported by a thorough grounding and facility in mathematics, physics and chemistry. In addition, each student will choose an area of specialization in at least one of the Engineering fields of architectural, civil, biomedical, electrical, industrial, or mechanical, and mathematics, chemistry or physics. By being well grounded in both the basic and applied sciences, the student, upon graduation, will be well prepared to assume responsibilities in his/her field of specialization or continue his/her professional development through graduate studies.

The engineering science program is intended primarily for students who expect to pursue graduate studies, and it will not satisfy the licensure requirements for professional engineering registration.

Premedical Studies: When BIL 150 and 160 are added to the course sequence for engineering science, basic premedical requirements are satisfied. Additional specific courses, such as genetics or biochemistry, may be required for admission to certain medical schools. For optimum timing and course selection students who combine premedical studies and engineering science should consult the faculty advisor for engineering science and the Coordinator, Committee on Premedical Studies.

Because of the nature of the curriculum and its goals, the student must maintain a B average. The degree of Bachelor of Science Engineering Science is awarded upon successful completion of the program.

The required curriculum for the degree of Bachelor of Science in Engineering Science (General Concentration) is shown below as is a typical premed curriculum. A Professional Chemistry Concentration in the Engineering Science Program is available (the Professional Chemistry Program, approved by the American Chemical Society, is also available in the College of Arts and Sciences).

MISSION STATEMENT
The mission of the Engineering Science program is to provide excellent undergraduate and graduate education in engineering that will prepare graduates to meet Societies changing needs and aspirations.

EDUCATIONAL OBJECTIVES:
The objectives of the Engineering Science program are to educate engineers who:

- have a sound background in the fundamentals of engineering science grounded in mathematics, physics and chemistry
- have abilities and knowledge expected by graduate programs
- are prepared to enter graduate programs with a strong background in pure science
ENGINEERING SCIENCE CURRICULUM (General Concentration) 123-124 credits

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<th>FRESHMAN YEAR</th>
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<tr>
<td><strong>Fall Semester</strong></td>
<td><strong>Spring Semester</strong></td>
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<tr>
<td>MAE 111 Introduction to Engineering I</td>
<td>MAE 112 Introduction to Engineering II</td>
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<tr>
<td>ENG 105 English Composition I</td>
<td>CAE 210 Mechanics of Solids I</td>
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<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>ENG 107 Writing about Science</td>
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<tr>
<td>PHY 205 University Physics I</td>
<td>MTH 112 Calculus II</td>
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<td>PHY 206 University Physics II</td>
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<td>PHY 208 University Physics II Lab</td>
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<td><strong>Fall Semester</strong></td>
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<tr>
<td>MAE 207 Mechanics of Solids II</td>
<td>EEN 201 Electrical Circuit Theory</td>
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<tr>
<td>CHM 111 Principles of Chemistry I</td>
<td>MAE 202 Dynamics</td>
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<td>CHM 113 Chemistry Laboratory I</td>
<td>CHM 112 Principles of Chemistry II</td>
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<td>MTH 210 Vectors and Matrices</td>
<td>CHM 114 Chemistry Laboratory II</td>
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<tr>
<td>PHY 207 University Physics III</td>
<td>MTH 310 Multivariable Calculus</td>
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<td>PS/HA Elective*</td>
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<td><strong>Fall Semester</strong></td>
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<tr>
<td>IEN 311 Applied Probability and Statistics</td>
<td>EEN 204 Electrical Circuits Laboratory</td>
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<tr>
<td>MAE 303 Thermodynamics I</td>
<td>MAE 241 Measurements Laboratory</td>
</tr>
<tr>
<td>MTH 311 Ordinary Differential Equations</td>
<td>MAE 309 Fluid Mechanics</td>
</tr>
<tr>
<td>PHY 350 Intermediate Electricity and Magnetism</td>
<td>CHM 201 Organic Chemistry I (Lecture)</td>
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<tr>
<td>PS/HA Elective*</td>
<td>MAE 301 Engineering Materials Science</td>
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<td>PS/HA Elective*</td>
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<td><strong>Fall Semester</strong></td>
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<tr>
<td>MAE 302 Mechanical Behavior of Materials</td>
<td>EEN 305 Electronics I</td>
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<tr>
<td>MAE 412 System Dynamics</td>
<td>PHY 351 Intermediate Electricity and Magnetism OR</td>
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<tr>
<td>CHM 360 Physical Chemistry I (Lecture)</td>
<td>CHM 202 Organic Chemistry II (Lecture)</td>
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<td>PHY 360 Introduction to Modern Physics</td>
<td>CHM 205 Organic Chemistry Laboratory I OR</td>
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<td>PS/HA Elective*</td>
<td>Applied Elective***</td>
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<td>Technical Elective**</td>
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* People and Society (PS)/Humanities and Arts (HA) Electives are selected from the appropriate table found in this Bulletin in the College of Engineering section.

** Technical Electives are advanced courses in mathematics, science or engineering, approved by the Faculty Advisor, as appropriate for individual objectives. The Department recommends that students take Engineering Administration (MAE 410) as a possible technical elective. It is a part of the professional registration examinations, and professional registration, a desirable qualification for all engineers, is essential for those in consulting work and those employed by large utilities.

*** Applied electives are advanced courses selected in coordination with the Faculty Advisor and require his/her approval.
ENGINEERING SCIENCE (Premed Concentration) 124 credits

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<tr>
<td><strong>Fall Semester</strong></td>
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<tr>
<td>MAE 111 Introduction to Engineering I</td>
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<tr>
<td>ENG 105 English Composition I</td>
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<td>MTH 110 Analytic Geometry and Calculus I</td>
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<td>PHY 205 University Physics I</td>
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<td><strong>Spring Semester</strong></td>
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<tr>
<td>BIL 150 General Biology</td>
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<td>BIL 151 General Biology Laboratory</td>
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<tr>
<td>CHM 112 Principles of Chemistry II</td>
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<td>CHM 114 Chemistry Laboratory II</td>
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<td>PHY 207 University Physics III</td>
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<td>PS/HA Elective*</td>
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<td><strong>Fall Semester</strong></td>
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<tr>
<td>MAE 202 Dynamics</td>
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<tr>
<td>MAE 207 Mechanics of Solids II</td>
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<tr>
<td>CHM 201 Organic Chemistry I (Lecture)</td>
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<td>MTH 311 Ordinary Differential Equations</td>
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<td>IEN 311 Applied Probability and Statistics</td>
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* People and Society (PS)/Humanities and Arts (HA) Electives (to be selected from the appropriate table found in this Bulletin in the College of Engineering section).

** Electives are advanced courses selected in coordination with the Faculty Advisor and require his/her approval.
INDUSTRIAL ENGINEERING - Dept. Code: IEN

Mission Statement
The Industrial Engineering Department mission is to provide education; impart knowledge and skills necessary to practice in a variety of manufacturing and service organizations, promote life long learning and contribute to the economy and the welfare of human kind.

Overview
Industrial Engineering combines science and technical knowledge with human sciences to design, plan, and analyze systems that involve people, materials, money, energy, equipment, and other resources. Industrial engineers work with personnel in research and development, accounting, engineers in other disciplines, maintenance, human resources, and production to increase organizational productivity, improve quality, reduce health care costs, conserve energy, develop public transportation systems, and improve industrial safety conditions. Industrial engineering distinguishes itself from other engineering professions because it has applications in manufacturing, service, commercial, and governmental activities. It is the major branch of engineering concerned not only with technology, but with people, making industrial engineers a prime source of management talent. Manufacturing Engineering represents a major thrust in the Department of Industrial Engineering. The principal objective of the Manufacturing Engineering program is to prepare graduates to design solutions for problems that arise in a manufacturing environment.

Through consultation with his/her academic advisor, a student is assisted in choosing electives which will prepare him/her for a degree of specialization compatible with his/her future goals. Specific courses required in the Manufacturing Engineering area of specialization include Robotics, Automated Assembly, Design of Manufacturing Systems, and Product Design for Manufacturing.

The Industrial Engineering Department offers graduate programs leading to the Master of Science in Industrial Engineering, Master of Science in Environmental Health and Safety, and Master of Science in Management of Technology. The Department also offers a Ph.D. program in Ergonomics and a Ph.D. in Industrial Engineering. For further information, see the Bulletin of the Graduate School.

The Industrial Engineering Department in cooperation with the School of Business Administration offers a dual MSIE/MBA weekend executive program. For more details of this program contact the Department of Industrial Engineering.

BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

Industrial Engineering Program Educational Objectives
The major goal of the Industrial Engineering program at the University of Miami is to prepare graduates to contribute to the economy by virtue of employment in a variety of industries: manufacturing (heavy and light, traditional and high technology) and service (health care, retail, transportation, logistics, government, consulting, banking, and insurance). In striving to achieve this goal, the objective of the faculty is to provide all graduates with the mathematical, scientific, and design tools required to formulate problems accurately, generate alternative solutions, evaluate those alternatives, and present the best solutions to clients or decision makers in a fashion that facilitates decision-making processes. In addition, superior students are prepared for graduate studies and research.
Within the first several years following graduation from the Industrial Engineering program, graduates are expected to be:

1. Working as professionals by adding value in any one of the following sectors:
   - Manufacturing
   - Service
   - Government
   - Consulting

2. Pursuing or holding a graduate degree and/or developing professionally through continuing education, licensure, certification and seminars in a new area or their chosen areas of expertise.

The curriculum includes required courses in mathematics and the physical sciences that ensure a firm scientific background while advanced departmental courses provide specialization. Required courses in the humanities and social sciences give students the social, ethical and ecological awareness needed in their profession. The courses are designed with the prerequisite structure in mind so that students have to draw from previously acquired knowledge to successfully complete upper level course requirements.

The engineering design experience is interwoven in the curriculum throughout the students’ four years of study.

- Starting with IEN 111 *Introduction to Engineering I* and IEN 112 *Introduction to Engineering II*, an introduction to Engineering graphics, Auto CAD, MATLAB, and C++ are given.
- The students then move on to take IEN 301-201 *Methods Analysis & Project Management* where they perform work measurement projects in industry, write reports, and make oral presentations to management. In addition, the students are exposed to techniques and tools in project management such as use of network flow and MSProject.
- In IEN 306 *Manufacturing Processes I* the students are introduced to the principles of metal cutting, metal forming, and metrology.
- Students take IEN 361 *Industrial Cost Analysis* and IEN 380 *Engineering Economy* where they become aware of the impact of productivity on the economic and social well-being of industry and countries. The students are also introduced to basic models of decision making such as the formulation and evaluation of an economic strategy.
- IEN 406 *Computer-Aided Manufacturing* introduces the students to product design in manufacturing and modern concepts of CAD/CAM/Automation.
- IEN 441 focuses on the formulation of linear programming problems and solutions by the simplex method. Related topics include sensitivity analysis, duality theory and network programming. Engineering applications are emphasized.
- IEN 442 focuses on basic concepts and techniques of random processes that are used to develop models for a variety of engineering and managerial problems. Topics include the Poisson Process, Markov chains, renewal theory, queuing models, and reliability.
- IEN 465 *Production and Inventory Control* provides a thorough treatment of modern production and inventory management policies, and their ramifications on supply chain management.
• Theory and applications of decision support systems in industrial engineering are covered in IEN 524 Decision Support Systems in IE. The topics include the study of model-based data-based, knowledge-based, and communication-based decision support systems.
• In IEN 557 Ergonomics and Human Factors Engineering both laboratory projects and real-world projects are designed, discussed, and conducted.
• Industry based projects are embedded into several other courses such as IEN 512 Statistical Quality Control and Quality Management, IEN 547 Computer Simulation Systems, and IEN 568 Materials Handling and Facilities Planning.
• IEN 494 Senior Project is a capstone project course where the students pool all of their knowledge and previous design experience into one major project integrating all components of the curriculum together. These projects are usually industry-based. Students prepare written and oral presentations. These presentations are made before top management or engineers of the organization where the projects were conducted in the presence of the faculty representatives from the department.

Real world projects are an integral part of most junior and senior level courses. In these courses, communication is emphasized through requirements for oral presentation and written technical reports. This experience provides the graduates with valuable industrial experience and communications skills while studying at the University of Miami.

The teaching laboratories meet current program needs and are constantly being improved. Equipment and experiments are geared to provide instruction in the areas of production system design, work methods and measurement, human factors engineering, manufacturing processes, computer applications in industrial engineering and operations research.
### BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING (128 Credits)

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
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<tbody>
<tr>
<td>IEN 111 Introduction to Engineering I</td>
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<tr>
<td>ENG 105 English Composition I</td>
<td>ENG 107 Writing about Science</td>
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<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>MTH 112 Calculus II</td>
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<td>PHY 205 University Physics I</td>
<td>ECO 211 Economic Principles and Problems</td>
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<td>PHY 206 University Physics II</td>
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#### SOPHOMORE YEAR

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<tr>
<th>Fall Semester</th>
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<tbody>
<tr>
<td>COS 211 Public Speaking</td>
<td>CAE 210 Mechanics of Solids I</td>
</tr>
<tr>
<td>IEN 201 Methods Analysis &amp; Project Management</td>
<td>ECO 212 Economic Principles and Problems</td>
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<td>MTH 210 Vectors and Matrices</td>
<td>EEN 205 Principles of Electrical Engineering I</td>
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<td>PHY 207 University Physics III</td>
<td>or MEN 303 Thermodynamics I</td>
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<td>PHY 209 University Physics III Laboratory</td>
<td>CHM 151 Chemistry for Engineers I</td>
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<td>Humanities and Arts Elective*</td>
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<td><strong>Advanced PS/HA Elective</strong>*</td>
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<th>Fall Semester</th>
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<tbody>
<tr>
<td>IEN 306 Manufacturing Processes I</td>
<td>IEN 312 Applied Statistical Methods</td>
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<tr>
<td>IEN 310 Introduction to Engineering Probability</td>
<td>IEN 361 Industrial Cost Analysis</td>
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<td>IEN 351 Industrial Safety Engineering</td>
<td>IEN 406 Computer-Aided Manufacturing</td>
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<tr>
<td>IEN 380 Engineering Economy</td>
<td>IEN 442 Stochastic Models in Operations Research</td>
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<tr>
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#### SENIOR YEAR

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<td>IEN 465 Production and Inventory Control</td>
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<td>IEN 547 Computer Simulation Systems</td>
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<td>IEN Elective ***</td>
<td>IEN 568 Materials Handling and Facilities Planning</td>
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### INDUSTRIAL ENGINEERING CONCENTRATIONS
- Engineering Management
- Service Sector
- Operations Research
- Occupational Health and Safety
- Manufacturing
## BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

### ENGINEERING MANAGEMENT CONCENTRATION (128 Credits)

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<td>EEN 205 Principles of Electrical Engineering I</td>
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<td>MGT 338 Labor-Management Relations or BSL 212 Introduction to Business Law</td>
<td>or MEN 303 Thermodynamics I</td>
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<td>IEN 306 Manufacturing Processes</td>
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<td>IEN 310 Introduction to Engineering Probability</td>
<td>IEN 312 Applied Statistical Methods</td>
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<td>IEN 351 Industrial Safety Engineering</td>
<td>IEN 361 Industrial Cost Analysis or ACC 301 Cost Accounting</td>
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<tr>
<td>IEN 380 Engineering Economy</td>
<td>IEN 406 Computer-Aided Manufacturing</td>
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# BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

## SERVICE SECTOR CONCENTRATION (128 Credits)

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** Technical Elective courses are selected from the following list:
- CAE 350 Transportation Engineering I
- CAE 553 Transportation Systems Planning and Demand Modeling
- FIN 422 Speculative Markets and Derivatives
- CIS 360 Analysis of Information Systems

*** IEN Electives are selected from courses at the 300 level or above, offered by the Department of Industrial Engineering.
BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

OPERATIONS RESEARCH CONCENTRATION (128 Credits)

**FRESHMAN YEAR**

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- CAE 553 Transportation Systems Planning and Demand Modeling
- CIS 323 Object-Oriented Programming in C++
- EEN 537 Principles of Artificial Intelligence
- MAS 548 System Dynamic Modeling and Analysis
- MTH 320 Introduction to Numerical Analysis

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**BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING**

**OCCUPATIONAL HEALTH AND SAFETY CONCENTRATION (128 Credits)**

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BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING
MANUFACTURING ENGINEERING PROGRAM

Manufacturing Engineering Program Educational Objectives
The goal of the Manufacturing Engineering program at the University of Miami is to prepare graduates to contribute to the economy by virtue of employment in a variety of manufacturing industries; heavy and light, traditional and high technology. In striving to achieve this goal, the objective of the faculty is to provide all graduates with the mathematical, scientific, and design tools required to formulate problems accurately, generate alternative solutions, evaluate those alternatives, and present the best solutions to clients or decision makers in a fashion that facilitates decision-making processes. In addition, superior students are prepared for graduate studies and research.

Within the first several years following graduation from the Manufacturing Engineering program, graduates are expected to be:

1. Working as professionals by adding value and supporting management in the decision-making process in any one of the following sectors:
   - Heavy, light, traditional, and high tech manufacturing
   - Service
   - Government
   - Consulting

2. Pursuing or holding a graduate degree and/or developing professionally through continuing education, licensure, certification and seminars in a new area or their chosen areas of expertise and application.

The curriculum includes required courses in mathematics and the physical sciences that ensure a firm scientific background while advanced departmental courses provide specialization. Required courses in the humanities and social sciences give students the social, ethical and ecological awareness needed in their profession. The courses are designed with the prerequisite structure in mind so that students have to draw from previously acquired knowledge to successfully complete upper level course requirements.

The engineering design experience is interwoven in the curriculum throughout the students’ four years of study.
- Starting with IEN 111 Introduction to Engineering I, and IEN 112 Introduction to Engineering II, an introduction to engineering graphics, Auto CAD, MATLAB, and C++ are given.
- The students then move on to take IEN 201 Methods Analysis & Project Management where they perform work measurement projects in industry, write reports, and make oral presentations to management. In addition, the students are exposed to techniques and tools in project management such as use of network flow and MSProject.
- In IEN 306 Manufacturing Processes the students are introduced to the principles of metal cutting, metal forming, and metrology.
- Students take IEN 361 Industrial Cost Analysis and IEN 380 Engineering Economy where they become aware of the impact of productivity on economic and social-well being of industry and countries. The students are also introduced to basic models of decision-making such as the formulation and evaluation of an economic strategy.
- IEN 406 Computer-Aided Manufacturing introduces the students to product design in manufacturing and modern concepts of CAD/CAM/Automation.
University of Miami Bulletin, 2006-2007
Undergraduate, College of Engineering

- In IEN 407 **Product Design for Manufacturing**, design techniques and software are covered. Students work on several design projects which are monitored by the instructor.
- IEN 441 focuses on the formulation of linear programming problems and solutions by the simplex method. Related topics include sensitivity analysis, duality theory and network programming. Engineering applications are emphasized.
- IEN 442 focuses on basic concepts and techniques of random processes that are used to develop models for a variety of engineering and managerial problems. Topics include the Poisson Process, Markov chains, renewal theory, queuing models, and reliability.
- IEN 465 **Production and Inventory Control** provides a thorough treatment of modern production and inventory management policies and their ramifications on supply chain management.
- IEN 507 **Design of Manufacturing Systems** introduces current methods and techniques used for scheduling production and process planning. The students work on several assignments in these areas.
- In IEN 505 **Robotics** and IEN 509 **Automated Assembly** students work on several design projects involving end-effector design for robots, design of feeding systems, implementation of sensor technology in process design and write programs for the implementation of various robotics/assembly applications.
- Theory and applications of decision support systems in industrial engineering are covered in IEN 524 **Decision Support Systems in IE**. The topics include the study of model-based data-based, knowledge-based, and communication-based decision support systems.
- In IEN 557 **Ergonomics and Human Factors Engineering** both laboratory projects and real world projects are designed, discussed, and conducted.
- Industry based projects are embedded into several other courses such as IEN 512 **Statistical Quality Control and Quality Management**, IEN 547 **Computer Simulation Systems**, and IEN 568 **Materials Handling and Facilities Planning**.
- IEN 494 **Senior Project** is a capstone project course where the students pool all of their knowledge and previous design experience into one major project integrating all components of the curriculum together. These projects are usually industry-based. Students prepare written and oral presentations. These presentations are made before top management or engineers of the organization where the projects were conducted in the presence of the faculty representative from the department.

Real world projects are an integral part of most junior and senior level courses. In these courses, communication is emphasized through requirements for oral presentation and written technical reports. This experience provides the graduates with valuable industrial experience and communication skills while studying at the University of Miami.

The teaching laboratories meet current program needs and are constantly being improved. Equipment and experiments are geared to provide instruction in the areas of manufacturing systems design, work methods and measurement, human factors engineering, manufacturing processes, computer applications in industrial engineering and operations research.
# Bachelor of Science in Industrial Engineering

## Manufacturing Engineering Program (128 Credits)

### Freshman Year

<table>
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<tr>
<th>Fall Semester</th>
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<tbody>
<tr>
<td>IEN 111 Introduction to Engineering I</td>
<td>IEN 112 Introduction to Engineering II</td>
</tr>
<tr>
<td>ENG 105 English Composition I</td>
<td>ENG 107 Writing About Science</td>
</tr>
<tr>
<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>MTH 112 Calculus II</td>
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<tr>
<td>PHY 205 University Physics I</td>
<td>ECO 211 Economic Principles and Problems</td>
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<tr>
<td>COS 211 Public Speaking</td>
<td>CAE 210 Mechanics of Solids I</td>
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<td>ECO 212 Economic Principles and Problems</td>
<td>ECO 212 Economic Principles and Problems</td>
</tr>
<tr>
<td>IEN 201 Methods Analysis &amp; Project Management</td>
<td>EEN 205 Principles of Electrical Engineering I</td>
</tr>
<tr>
<td>MTH 210 Vectors and Matrices</td>
<td>or MEN 303 Thermodynamics I</td>
</tr>
<tr>
<td>PHY 207 University Physics III</td>
<td>CHM 151 Chemistry for Engineers I</td>
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<tr>
<td>PHY 209 University Physics III Lab</td>
<td>CHM 153 Chemistry Laboratory for Engineers</td>
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<td>Advanced PS/HA Elective*</td>
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<tr>
<td>IEN 306 Manufacturing Processes I</td>
<td>IEN 312 Applied Statistical Methods</td>
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<tr>
<td>IEN 310 Introduction to Engineering Probability</td>
<td>IEN 361 Industrial Cost Analysis</td>
</tr>
<tr>
<td>IEN 351 Industrial Safety Engineering</td>
<td>IEN 406 Computer-Aided Manufacturing</td>
</tr>
<tr>
<td>IEN 380 Engineering Economy</td>
<td>IEN 442 Stochastic Models in Operations Research</td>
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<tr>
<td>IEN 441 Deterministic Models in Operations Research</td>
<td>Advanced PS/HA Elective*</td>
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<tr>
<td>MTH 311 Ordinary Differential Equations</td>
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### Senior Year

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<tr>
<td>IEN 465 Production and Inventory Control</td>
<td>IEN 407 Product Design for Manufacturing</td>
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<tr>
<td>IEN 505 Robotics</td>
<td>IEN 494 Senior Project</td>
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<tr>
<td>IEN 509 Automated Assembly</td>
<td>IEN 524 Decision Support Systems in IE</td>
</tr>
<tr>
<td>IEN 512 Statistical Quality Control and Quality Management</td>
<td>IEN 507 Design of Manufacturing Systems</td>
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<td>IEN 557 Ergonomics and Human Factors Engineering</td>
<td>IEN 547 Computer Simulation Systems</td>
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<td>IEN 568 Materials Handling and Facilities Planning</td>
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<td>15 credits</td>
<td>18 credits</td>
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* People and Society/Humanities and Arts Electives are selected from a list of approved electives maintained in the department at UM.
INDUSTRIAL ENGINEERING MINOR
A student majoring in another discipline who chooses to take a minor in Industrial Engineering must complete 15 credits of coursework consisting of the following:
IEN 201
IEN 351
IEN 380 and
Any two 300, 400 or 500 level IEN courses
Substitutions may be accepted with the permission of the Department Chairman.

FIVE-YEAR BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING AND MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING (FIVE-YEAR BSIE/MSIE PROGRAM)

This program is specifically designed for those students who want to pursue their graduate study as soon as they complete their undergraduate study in Industrial Engineering. The special conditions for this Five-Year BSIE/MSIE Program are as follows:

1. The student must declare his/her intent to participate before the end of the Junior year by submitting an official application to the department graduate committee for admission into the MSIE portion of the program. Exceptions to this rule must be approved by the department faculty.
2. A student wishing to withdraw from the Five-Year Program without the MSIE degree must complete all the requirements for the BSIE program, including the IEN 494 Senior Project in order to get his/her BSIE degree.
3. To qualify for the MSIE degree, the student must meet all the pertinent Graduate School requirements, including an acceptable score on the GRE (Graduate Record Examination) and a minimum of 3.0 GPA in the 30 credits applied toward the MSIE degree.
4. All students must take the GRE and show satisfactory scores before the beginning of the fifth year.
5. The student is awarded both the BSIE and MSIE degrees at the end of the fifth year when all requirements are satisfied.
### FIVE-YEAR BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING AND MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING

#### FRESHMAN YEAR

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#### SOPHOMORE YEAR

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<td>or MEN 303 Thermodynamics I</td>
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#### JUNIOR YEAR

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<td>IEN 310 Introduction to Engineering Probability</td>
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<td>IEN 351 Industrial Safety Engineering</td>
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<td>IEN 380 Engineering Economy</td>
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<tr>
<td>IEN 441 Deterministic Models in Operations Research</td>
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<tr>
<td>MTH 311 Ordinary Differential Equations</td>
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<td>IEN 406 Computer-Aided Manufacturing</td>
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#### SENIOR YEAR

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<td>IEN 512 Statistical Quality Control and Improvement</td>
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#### FIFTH YEAR

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<tr>
<td>IEN 612 Design of Experiments</td>
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<td>IEN 642 Linear Programming and Extensions</td>
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* People and Society/Humanities and Arts Electives are selected from a list of approved electives maintained in the department at UM.

** The Technical Elective is selected from courses at the 300 level or above, offered by one of the following departments: MTH, BME, CAE, EEN, IEN, MEN, ACC, FIN, MGT, MAS, MKT.

*** IEN Electives are selected from courses at the 300 level or above, offered by the Department of Industrial Engineering.

**** IEN Electives are selected from courses at the 500 or 600 level, offered by the Department of Industrial Engineering.
FIVE-YEAR BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING  
(ENGINEERING MANAGEMENT CONCENTRATION) 
AND 
MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING

### FRESHMAN YEAR

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<td>PHY 209 University Physics III Lab</td>
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** IEN Electives are selected from courses at the 500- or 600-level, offered by the Department of Industrial Engineering.

Industrial Engineering Course Listing
MECHANICAL AND AEROSPACE ENGINEERING - Dept. Code: MAE

Engineering is the art of applying the knowledge of science for the benefit of humanity. Mechanical Engineering is the most broadly based area of engineering. It is concerned with the analysis, design, development and application of equipment for such diverse fields as energy conversion, transportation, production machinery, consumer goods, and environmental control. Today’s advanced technology is largely a result of the skill of mechanical engineers who are heavily represented in most fields of modern industry.

Because of the varied careers and opportunities which are available to the Mechanical Engineering graduates, the curriculum emphasizes education in the fundamentals of the physical, mathematical, and engineering sciences, including materials science, solid mechanics, fluid mechanics and thermodynamics. These basic subjects are followed by courses in their application to the design and analysis of engineering devices and systems. The available mini- and micro-computers are utilized for analysis and design throughout the curriculum.

Aerospace Engineering is concerned with the analysis, design and development of a wide variety of aircraft and space vehicles and systems. The undergraduate aerospace engineering program is designed to provide a broad based foundation in aeronautics and astronautics, including topics such as aerodynamics, propulsion, aerospace structures and materials, flight dynamics, control and performance.

In the junior and senior years, the student is assisted in choosing technical electives in preparation for a degree of professional specialization or for further study in engineering, law, business or medicine. With the aid of an advisor and the concurrence of the department chairman, the student may select courses compatible with a variety of career goals.

The department offers two undergraduate degrees: Bachelor of Science in Mechanical Engineering and Bachelor of Science in Aerospace Engineering. Within the Bachelor of Science in Mechanical Engineering program, sequences of courses are available to provide advanced knowledge in such traditional areas as electromechanical design, heat transfer, applied mechanics, fluid mechanics, materials science, and nuclear engineering. There are concentrations in Aerospace Engineering, Environmental Engineering, Energy Engineering, Automobile Engineering, Combustion Engines/Exhaust Emissions, and Heating, Ventilation and Air Conditioning. In addition, a Biomedical Engineering concentration is offered in conjunction with the Department of Biomedical Engineering and the Medical School.

MISSION STATEMENT
The mission of the Department of Mechanical and Aerospace Engineering is to provide excellent undergraduate education in aerospace engineering and undergraduate and graduate education in mechanical engineering that will prepare graduates to meet Society’s changing needs and aspirations.

EDUCATIONAL OBJECTIVES
The objectives of the mechanical engineering program are to educate engineers who:

(1) have a sound background in the fundamentals of engineering

(2) have the abilities and knowledge expected by industry

(3) are prepared for entry-level jobs in mechanical engineering
(4) are prepared for graduate work in mechanical engineering

The objectives of the aerospace engineering program are to educate engineers who:

(1) have a sound background in the fundamentals of engineering
(2) have the abilities and knowledge expected by industry
(3) are prepared for entry-level jobs in aerospace engineering
(4) are prepared for graduate work in aerospace engineering

GRADUATE STUDIES
Graduate programs leading to the degrees of Master of Science, Doctor of Arts and Doctor of Philosophy are offered by the Department with options in various engineering and interdisciplinary fields. Detailed information is available in the Bulletin of the Graduate School.

MECHANICAL ENGINEERING CURRICULUM (126 credits)

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*** Applied Thermodynamics Electives are selected with approval of Faculty Advisor, e.g., MAE 308, MAE 408, MAE 503, MAE 510, MAE 520, MAE 570.

### AEROSPACE ENGINEERING CURRICULUM (126 CREDITS)

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CONCENTRATIONS IN MECHANICAL ENGINEERING

Aerospace Engineering Concentration
The mission of the aerospace engineer is to design and manufacture payload carrying vehicles to travel distances at the lowest cost in the shortest period of time. The training of the aerospace engineer is by demand multidisciplinary and by spirit pioneering. It includes aerodynamics, propulsion, advanced materials, structures, controls, robotics, electronics and computer usage.

An option has been developed to allow students at the University of Miami to have a concentration of courses in Aerospace Engineering. This concentration in aerospace is built on the existing accredited degree program in Mechanical Engineering.

See Aerospace Engineering Concentration Curriculum.

Energy Engineering Concentration
This concentration provides the fundamentals and applications of various aspects of energy such as solar, hydrogen, electric and nuclear energy sources; energy conversion; internal combustion engines; and energy utilization in heating, ventilating, air conditioning and refrigeration systems. The technical electives related to this concentration include MAE 408, MAE 503, MAE 506, MAE 509, MAE 510, MAE 514, MAE 538, MAE 539, and MAE 540. Students can take special project courses in Internal Combustion Engines, Dorgan Solar Energy, Pollution Control, Fluid and Thermal Sciences, and Two-Phase Flow Laboratories.

Biomedical Engineering Concentration
This concentration is built around a 9-credit course sequence which has been developed to familiarize graduate and advanced undergraduate students with the rudiments of anatomy, physiology, biochemistry, and clinical medicine. Completion of the program is intended to aid the student in pursuing a career in medicine or in engineering and design in such areas as extracorporeal life-support systems and prosthetic devices.

The student should take Chemistry 201 as a prerequisite to Biomedical Engineering 501 and 502, Unified Medical Sciences I and II. These Biomedical Engineering courses satisfy the requirements for electives in the Mechanical Engineering Program, but under current regulations, the student will require 131 credits to graduate.

Automotive Engineering Concentration
This program is designed to acquaint the mechanical engineering student with the fundamental science and engineering underlying the design of both conventional and high performance internal combustion engines and the fundamentals of emission formation in combustion systems, automobile mechanisms and structures including vibrations and noise. Included are studies of conventional fuels and synthetic fuels of the future such as hydrogen and methanol.

Technical Electives are MAE 503, 514 and 521.
Environmental Engineering Concentration
In the students junior and senior years he or she should select three People and Society/Humanities and Arts electives from List A below, including one of the 500-level courses, and two Technical Electives from List B.

<table>
<thead>
<tr>
<th>List A</th>
<th>List B</th>
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<tr>
<td><strong>Socio-Humanistic elective sequences recommended:</strong></td>
<td><strong>Technical electives recommended:</strong></td>
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<tr>
<td>ECO 211, 212</td>
<td>MAE 408, 503, 508, 521, 520</td>
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<td>MAS 547</td>
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<td>BIL 150, 160</td>
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HVAC Systems Concentration
This concentration is offered to specialize the mechanical engineering student with the theory and applications of HVAC systems. At least the HVAC Technical Electives MAE 408, MAE 508, and MAE 539 should be selected. The design project for MAE 442-443 will involve air-conditioning component and system design.

Sustainable Engineering Concentration
The Sustainable Engineering concentration focuses on engineering that maximizes the benefits of technology to society while it minimizes the non-renewable resources utilized and the associated impact on the environment of producing and disposing of that technology. Projects in the design courses MAE 342, MAE 441 and MAE 442-443 will focus on Sustainable Engineering, and there will be a Special Project in the laboratory course MAE 404.

Other Concentrations
Concentrations may also be elected in electro-mechanical design, heat transfer, fluid mechanics, solid mechanics, computer aided design, nuclear engineering, materials science and chemical technology by judicious selection of technical electives.
# MECHANICAL ENGINEERING CURRICULUM

## AEROSPACE ENGINEERING CONCENTRATION (126 credits)

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## DUAL-DEGREE PROGRAM

A dual-degree program leading to the two degrees, Bachelor of Science in Aerospace Engineering and Bachelor of Science in Mechanical Engineering, is available as per the following curriculum.
## BACHELOR OF SCIENCE IN AEROSPACE ENGINEERING AND BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING CURRICULUM (147 CREDITS)

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<td>MTH 311 Ordinary Differential Equations</td>
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<td>MAE 470 Introduction to Aerospace Structures</td>
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<td>MAE 371 Aerodynamics</td>
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### SENIOR YEAR

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<td>MAE 471 Flight Dynamics and Orbital Mechanics</td>
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<td>MAE 472 Design of Aerospace Structures</td>
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<td>Spring Semester</td>
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<td>MAE 445 Capstone Design Project - II</td>
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<td>MAE 446 Aircraft Design</td>
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### FIFTH YEAR

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<td>MAE 441 Design of Fluid and Thermal Systems</td>
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<td>MAE 412 System Dynamics</td>
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<td>MAE Technical Elective**</td>
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<td>MAE Technical Elective**</td>
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<td>MAE Applied Thermo Elective</td>
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</table>

* People and Society (PS)/Humanities and Arts (HA) Electives are selected from the appropriate table found in this Bulletin in the College of Engineering section.

** Technical Electives are advanced courses in mathematics, science or engineering, approved by the Faculty Advisor, as appropriate for individual objectives. The Department recommends that students take Engineering Administration (MAE 410) as a possible technical elective. It is a part of the professional registration examinations, and professional registration, a desirable qualification for all engineers, is essential for those in consulting work and those employed by large utilities.
*** Applied Thermodynamics Electives are selected with approval of Faculty Advisor, e.g., MAE 308, MAE 408, MAE 503, MAE 510, MAE 520, MAE 570.

MECHANICAL ENGINEERING MINOR

A student in the College of Arts and Sciences choosing the general field of mechanical engineering as a minor must complete 15 credits consisting of the following:

1. A core of CAE 210 and MAE 111.

2. Nine additional credits of Mechanical Engineering electives. These nine credits must be chosen from one of the following areas of specialization:
   d. Thermal Engineering: MAE 303, MAE 308, MAE 310, MAE 408, MAE 441, MAE 503, MAE 508, MAE 510.

The five-year BS/MS program leads to both the B.S. degree and the M.S. degree in Mechanical Engineering in five years. The program is intended for exceptional students who are admitted to the graduate program in their junior year. Students applying for this program must have a grade point average of at least 3.0 and must attain a score of more than 1000 on the Graduate Record Examination (taken before the fifth year). The curriculum requirements for this program are as follows:

BACHELOR of SCIENCE and MASTER of SCIENCE in MECHANICAL ENGINEERING

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<tr>
<th>FRESHMAN YEAR</th>
<th>SPRING SEMESTER</th>
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<tr>
<td><strong>Fall Semester</strong></td>
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<td>MAE 111 Introduction to Engineering I</td>
<td>MAE 112 Introduction to Engineering II</td>
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<td>ENG 105 English Composition I</td>
<td>MAE 210 Mechanics of Solids I</td>
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<td>MTH 110 Analytic Geometry and Calculus I</td>
<td>ENG 107 Writing about Science</td>
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<td>PHY 205 University Physics I</td>
<td>MTH 112 Calculus II</td>
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<td>PHY 206 University Physics II</td>
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<td>PHY 208 University Physics II Lab</td>
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<td><strong>SOPHOMORE YEAR</strong></td>
<td><strong>JUNIOR YEAR</strong></td>
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<td><strong>Fall Semester</strong></td>
<td><strong>Spring Semester</strong></td>
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<tr>
<td>MAE 207 Mechanics of Solids II</td>
<td>MAE 202 Dynamics</td>
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<td>IEN 311 Applied Probability and Statistics</td>
<td>MAE 241 Measurements Lab</td>
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<td>MTH 211 Calculus III</td>
<td>EEN 205 Principles of Electrical Engineering I</td>
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<td>PHY 207 University Physics III</td>
<td>CHM 151 Chemistry for Engineers I</td>
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<td>CHM 153 Chemistry Laboratory for Engineers</td>
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<tr>
<td>MAE 302 Mechanical Behavior of Materials</td>
<td>MAE 301 Engineering Materials Science</td>
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<td>MAE 303 Thermodynamics I</td>
<td>MAE 310 Heat Transfer</td>
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<td>MAE 309 Fluid Mechanics</td>
<td>MAE 342 Mechanical Design II</td>
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<td>MTH 311 Ordinary Differential Equations</td>
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**SENIOR YEAR**

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<td>MAE 404 Experimental Engineering Laboratory</td>
<td>MAE 415 Automatic Control</td>
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<td>MAE 412 System Dynamics</td>
<td>MAE Technical Elective**</td>
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<td>MAE 441 Design of Fluid and Thermal Systems</td>
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<th>FIFTH YEAR</th>
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<tr>
<td>Fall Semester</td>
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<tr>
<td>MAE 501 Methods of Engineering Analysis</td>
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<tr>
<td>MAE 512 Intermediate Fluid Mechanics</td>
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**Mechanical and Aerospace Engineering Course Listing**

**OCEAN ENGINEERING/APPLIED MARINE PHYSICS**

Ocean engineering concerns engineering in the marine environment. The ocean engineer provides solutions compatible with man’s need for utilization of marine resources on one hand and his concern for ecological balance on the other. The largest structures ever known, fixed or floating, now are fabricated at sea. Delicate and complex underwater systems are designed to resist the harshness of the ocean environment. Population centers and industrial developments are clustered along our shoreline creating a number of problems which need to be solved. All these aspects of ocean engineering offer challenge and opportunities.

The College offers an M.S. in Ocean Engineering. This degree is sponsored jointly by the College of Engineering and the Rosenstiel School of Marine and Atmospheric Science.

Applied Marine Physics courses open to undergraduate students are listed under THE ROSENSTIEL SCHOOL OF MARINE AND ATMOSPHERIC SCIENCE elsewhere in this Bulletin.

For detailed information relative to graduate studies, see the Bulletin of the Graduate School.
The Rosenstiel School of Marine and Atmospheric Science was established in 1943 as the Marine Laboratory of the University of Miami. It has grown from its modest beginnings in a boathouse to be one of the nations leading institutions for oceanographic research and education.

Originally a tropical marine biological facility, the Marine Laboratory initiated a program of studies leading to the Master of Science degree in 1949. In 1953, laboratory and classroom buildings were constructed on the School’s present campus on Virginia Key, and in the late fifties, the Marine Laboratory expanded its staff and developed its oceanographic capabilities in response to the increased interest in scientific research in the United States. It became the Institute of Marine Science in 1961. Ocean-going research vessels were acquired and additional buildings were constructed to accommodate new wide-ranging projects. In 1969, the Institute, now a School, was named for Dorothy H. and Lewis Rosenstiel in recognition of a major contribution, made through the Rosenstiel Foundation, to encourage progress in the marine and atmospheric sciences at the University of Miami.

Today the Rosenstiel School has a faculty of 111 scientists who conduct sponsored research while offering studies leading to the Master of Arts, Master of Science and Doctor of Philosophy degrees.

Government agencies and private organizations support basic and applied research at the Rosenstiel School. Graduate students are an integral part of the research effort, and research programs, many multidisciplinary in nature, provide the environment within which professors and students interact.

The Rosenstiel School has a state-of-the-art catamaran, unrivaled worldwide for both shallow and deep water research. The vessel, named the F. G. WALTON SMITH, in honor of the founder of the Rosenstiel School, signals a new era in scientific research.

**ACADEMIC PROGRAMS**

Marine science is concerned with the study of the ocean in all of its aspects. It is the application of the classical scientific fields to the marine environment.

The Rosenstiel School of Marine and Atmospheric Science offers degree programs on both the undergraduate and graduate levels for students interested in marine and atmospheric science as a career.

**UNDERGRADUATE DEGREE PROGRAMS**

The Rosenstiel School and the College of Arts and Sciences jointly offer a Bachelor of Arts degree in marine affairs, and a Bachelor of Science degree in marine science/biology, marine science/chemistry, marine science/geology, marine science/physics, marine science/computer science, and meteorology.

The Bachelor of Arts degree will be useful to students planning either non-technical careers with government agencies or private industries directly or indirectly concerned with the
ocean, or graduate studies in such areas as business, law, economics, political science, education, or communication.

Marine Affairs and Policy, in cooperation with the undergraduate Marine and Atmospheric Science program, also offers a five-year BA/MA program in Marine Affairs. This program enables qualified students to earn a B.A. in MAF in four years with the opportunity to earn a M.A. in MAF at the Rosenstiel School with only one additional year.

The Bachelor of Science degree program is meant for students planning to continue with graduate studies in marine and atmospheric science science, or for those who will pursue a technical career in this area.

For more information about the undergraduate degree programs, see MARINE AND ATMOSPHERIC SCIENCE under College of Arts and Sciences elsewhere in this Bulletin.

GRADUATE DEGREE PROGRAMS

The Rosenstiel School of Marine and Atmospheric Science offers graduate degree programs leading to the Master of Science and Doctor of Philosophy Degrees, with a major in marine and atmospheric chemistry, marine biology and fisheries, marine geology and geophysics, meteorology and physical oceanography, and applied marine physics. The division of marine affairs and policy offers interdisciplinary Master of Arts and Master of Science degrees only.

Students interested in pursuing marine sciences on the graduate level should elect an undergraduate major in one of the basic scientific disciplines.

The Rosenstiel School of Marine and Atmospheric Science admits graduate students in the following categories. Regular admission is for students who wish to pursue a graduate degree. Non-degree admission provides an opportunity for graduate study to qualified applicants who do not wish to work toward an advanced degree but who have special objectives for professional study, or who already hold an advanced degree and desire additional coursework in the field. No more than twelve (12) credit hours may be taken while in non-degree status. A Certificate Program is available in all areas of study. This program provides professional training for any student who requires training in a specific research area but does not require an advanced degree. This program consists of one year, full-time study with a minimum of eighteen (18) credit hours. Transient status is a type of non-degree admission available to students enrolled in a graduate program elsewhere but desiring to earn credit at the University of Miami for the purpose of transferring it to the home institution. All graduate students are required to demonstrate the ability to prepare and teach scientific material.

An application for admission to the Rosenstiel School of Marine and Atmospheric Science consists of the application form, application fee, transcripts, results of the Graduate Record Examination, results of the TOEFL exam (for international students), and three letters of recommendation from persons knowing the applicants academic abilities. The application should be filed by January 1st in order to be considered for admission the following Fall semester. Students are normally admitted only in the Fall semester; however, under certain circumstances, applicants may be considered for Spring admission. No action is taken on an application until all required elements are received.

Because of space limitations, only a small percentage of those applying for graduate study in marine and atmospheric science can be accepted. Undergraduate scholastic performance,
the reputation of the school involved, Graduate Record Examination scores, and the letters of recommendation are all considered in evaluating an application.

A detailed description of the Rosenstiel School, its faculty, educational and research facilities, curriculum, and degree requirements, is contained in the Bulletin of the Rosenstiel School of Marine and Atmospheric Science. Information can be found on the Rosenstiel School web site located at www.rsmas.miami.edu/grad-studies.

APPLIED MARINE PHYSICS/OCEAN ENGINEERING - Dept. Code: AMP

Students who wish to enter the applied marine physics program should have strong undergraduate preparation in the basic sciences and may major in such fields as physics, mathematics, geophysics, or engineering.

Applied Marine Physics Course Listing

MARINE AFFAIRS AND POLICY - Dept. Code: MAF

The Division of Marine Affairs and Policy accepts highly-qualified students who wish to pursue an academic degree program that combines a basic curriculum in marine science with a complementary program in a non-marine science discipline. Student programs are individually designed and lead to an M.A. degree or an M.S. degree. The M.A. curriculum requires participation in the intern program in lieu of a thesis. The M.S. curriculum requires a thesis. The program is intended to provide the student with a broadened perspective of marine issues and problem-solving abilities. MAF also offers a specialization in aquaculture management. This track focuses on technological, environmental, and economic feasibility of sustainable aquaculture operations.

MAF, in cooperation with the Undergraduate Marine and Atmospheric Science Program, also offers a five-year BA/MA Program in Marine Affairs. This program enables qualified students to earn a B.A. in MAF in four years with the opportunity to earn an M.A. in MAF at Rosenstiel School of Marine and Atmospheric Science with only one additional year. Conditional acceptance to the M.A. program in MAF is based on the students GPA at the end of their sophomore year. Students must then take GRE exams and apply for acceptance to the Graduate School at Rosenstiel during their junior year.

The Division of Marine Affairs and Policy at the Rosenstiel School of Marine and Atmospheric Science and the University of Miami School of Law offer a Joint degree program in Law and MAF. Upon completion of this program, a student earns a Juris Doctor degree from the School of Law and the M.A. in MAF from Rosenstiel. A student may complete requirements for both degrees within three and one-half years in an intensive program of six semesters and two full summers. This program is geared toward students who want a career in the field of law with a specialization in marine and environmental issues.

Marine Affairs and Policy Course Listing

MARINE AND ATMOSPHERIC CHEMISTRY - Dept. Code: MAC

Undergraduate training for graduate work in marine and atmospheric chemistry should be in chemistry, physics, biology and mathematics; also useful may be courses in geology and biochemistry.
Courses at the 500 level are open to undergraduate seniors and graduate students. Courses open only to graduate students (600 level) are listed in the Bulletin of the Rosenstiel School of Marine and Atmospheric Science.

**Marine and Atmospheric Chemistry Course Listing**

**MARINE BIOLOGY AND FISHERIES - Dept. Code: MBF**

Students admitted to the graduate program in the Division of Marine Biology and Fisheries are required to have a strong undergraduate preparation in the life sciences, with additional coursework in mathematics (calculus), physics, and chemistry (through organic).

Courses at the 500 level are open to undergraduate seniors and graduate students. Courses open only to graduate students (600 level) are listed in the Bulletin of the Rosenstiel School of Marine and Atmospheric Science.

**Marine Biology and Fisheries Course Listing**

**MARINE GEOLOGY AND GEOPHYSICS - Dept. Code: MGG**

The undergraduate student wishing to prepare for graduate work in marine geology and geophysics must be well trained in the basic sciences. According to the special interests of the individual, the undergraduate training should be in physics, chemistry, geology or mathematics.

Courses at the 500 level are open to undergraduate seniors and graduate students. Courses open only to graduate students (600 level) are listed in the Bulletin of the Rosenstiel School of Marine and Atmospheric Science.

**Marine Geology and Geophysics Course Listing**

**METEOROLOGY AND PHYSICAL OCEANOGRAPHY - Dept. Code: MPO**

Students applying for admission to graduate study in the Division of Meteorology and Physical Oceanography should have a solid undergraduate background in mathematics and physics or engineering.

Courses at the 500 level are open to undergraduate seniors and graduate students. Courses open only to graduate students (600 level) are listed in the Bulletin of the Rosenstiel School of Marine and Atmospheric Science.

**Physical Oceanography Course Listing**
PHILLIP AND PATRICIA FROST SCHOOL OF MUSIC - UNDERGRADUATE
www.music.miami.edu

DEGREES

The University of Miami Frost School of Music awards the Bachelor of Music degree with majors in nine areas: Composition, Performance, Music Education, Music Engineering Technology, Music Business and Entertainment Industries, Musical Theatre, Music Therapy, Studio Music and Jazz, and Bachelor of Science in Music Engineering.

The Bachelor of Arts in music degree is a non-professional degree designed for talented musicians who wish to pursue a broad liberal arts education. Curriculum flexibility affords students the opportunity for a variety of pre-professional studies, including premedical and prelegal. A minor outside the Frost School of Music is required. A second major outside the School of Music can sometimes be pursued.

The Master of Music is offered with majors in Music Education, Music Therapy, Theory, Composition, Performance (voice, piano, conducting, harp, woodwind, multi-woodwinds, brass, percussion, and stringed instruments), Musicology, Accompanying and Chamber Music, Jazz Performance, Jazz Pedagogy, Music Business and Entertainment Industries, Studio Jazz Writing, Media Writing and Production. Music Engineering Technology is offered by the School of Music as a Master of Science Degree.

The Doctor of Philosophy degree in Music Education and the Doctor of Musical Arts degree also are offered. Refer to the appropriate section of the Graduate Bulletin for policies concerning admission, course of study, residence, research, tool requirements, examinations, candidacy, and dissertation/final project requirements.

The Frost School of Music has been a member of the National Association of Schools of Music since 1939. The requirements for entrance and for graduation as set forth in this Bulletin are in accordance with the published regulations of this Association.

MISSION

As one of the most comprehensive music units in American higher education, and as a free-standing school within a major research university, the Frost School of Music perpetuates a historic commitment to the values inherent in the juxtaposition of professional and general studies in undergraduate curricula. The comprehensiveness of the School’s undergraduate and graduate programs manifests a philosophy that places importance upon establishing and maintaining connections between its instructional and associated activities and the broad spectrum of music and music-related fields for which it seeks to prepare its students.

In broadest terms, the four-fold mission of the Frost School of Music is to provide a high quality music education and training for its undergraduate and graduate majors; foster advancements in music performance, creativity, scholarship, and teaching among its faculty; serve the general student population of the University; and act as an educational and cultural resource for the University, South Florida, and as appropriate, for national and international constituencies.
GOALS

The primary goals are:

1. to provide music majors with a high quality pre-professional education,

2. to provide opportunities for other University students to increase their musical skill, understanding, and appreciation,

3. to provide the music faculty with opportunities for creative activity and scholarly inquiry, and

4. to serve as an educational and cultural resource for the University, South Florida, and global communities.

PHYSICAL FACILITIES


Henry Fillmore Band Hall (1958) has a rehearsal hall, uniform and instrument storage, the band library, offices, and the Henry Fillmore Museum.

Nancy Greene Hall (1960) contains a rehearsal hall, studio-offices, and ensemble library.

The Percussion Building (1968) is the percussion teaching studio and office.

The Handleman Institute of Recorded Sound (1970) includes a listening room, archives, office, personal computer laboratory, and a microfilming facility.

The Bertha Foster Memorial Music Building (1960, with second story addition completed in 1970), contains practice rooms and teaching studios, pipe organ studio, an electronic music laboratory, and two studios equipped for audio and video recording.

The Dance Building contains School of Music teaching studios, dance studio, and offices of Development and Special Events.

The Gusman Concert Hall (1975) houses the administrative offices, data processing center, and the Music Engineering Technology center. The 600 seat sound chamber is one of the finest concert facilities in the Southeast.

The L. Austin Weeks Center for Recording and Performance (1994) contains the 150 seat Victor E. Clarke Recital Hall, featuring adjustable acoustics, a pre-function area, a green room, and a state-of-the-art recording studio. The recording area of the building features 48-track digital recording capabilities with a computer automated console, and a multimedia workstation.

The Marta and Austin Weeks Music Library and Technology Center (2005) contains a 15,300 square-foot library which houses collections of books, scores, recordings, special collections, reference works, and computer facilities. The 5,200 square-foot advanced technology center contains six labs, each servicing a specific program for higher-level work, including a music engineering lab, two keyboard/computer labs, a multimedia instruction and learning lab, an electronic and computer music lab, and a media-writing and production lab.
PERFORMING ENSEMBLES

Through regular rehearsals and public concerts, ensembles provide performing experience for all students on the University of Miami campus. Membership in each of these performing ensembles is based on auditions. Students interested in instrumental music may participate in any of the following:

Accompanying
Avant Garde Ensemble
“Band of the Hour” Marching Band
Brass Chamber Music
Brass Choir
Clarinet Choir
Classical Guitar Ensemble
Concert Jazz Band
Contemporary Music Ensemble
E.C.M. Ensemble
Electronic Music Ensemble
Flute Choir
Funk/Fusion Ensemble
Horace Silver Ensemble
Jazz Bass Ensemble
Jazz Guitar Ensemble
Jazz Keyboard Ensemble
Jazz Saxophone Ensemble
Mallet Ensemble
Marimba Ensemble
Monk/Mingus Ensemble
Percussion Ensemble
Rock Ensemble
Salsa Ensemble
Saxophone Ensemble
Small Jazz Ensembles
String-Keyboard Chamber Music
Studio Jazz Band
Studio Rhythm Section
Symphonic Winds
Symphony Orchestra
Synthesizer Ensemble
The Other Music Ensemble
Trombone Choir
Tuba Ensemble
University Band
Wind Ensemble
Woodwind Chamber Music
XJazz Band
Choral experience may be gained through participation in the

Chamber Singers
Civic Chorale
Collegium Musicum
Jazz Vocal I-III
Men’s Chorale
Musical Theatre Workshop
Opera Theater
University Chorale
Women’s Chorale

PUBLIC PERFORMANCES

During the academic year the Frost School of Music presents more than 300 student forums, student and faculty recitals, concerts, lectures, masterclasses, and guest artist recitals. Student ensembles and faculty present numerous masterclasses, recitals, and concerts throughout the United States and abroad.

Students are encouraged to attend recitals, concerts, masterclasses, and festivals which are presented within the Frost School of Music as well as throughout metropolitan Miami.

PROFESSIONAL SOCIETIES

In addition to other extra-curricular activities of the University, the Frost School of Music has established on its campus active chapters of Phi Mu Alpha Sinfonia, Sigma Alpha Iota, Music Educators National Conference (student), American Musicological Society, Tau Beta Sigma, Pi Kappa Lambda, International Association of Jazz Educators, Music Entertainment Industry Student Association, and the Audio Engineering Society.

SCHOOL OF MUSIC SCHOLARSHIPS

The Frost School of Music grants scholarships based on music performance, academics, and performance and academics. All domestic students applying for scholarship funds must complete a Free Application for Federal Student Aid and/or other required forms. Please consult with the Office of Financial Assistance Services for further information.

In addition to music performance scholarships, donor scholarships are awarded annually. Recipients of these scholarships are nominated by the faculty and administration after a student has been in residence for at least one academic year.

SPECIAL PROGRAMS

Workshops and clinics are offered to enrich the musical knowledge of in-service teachers and professional musicians during the academic year. The program of activities continues through the summer when special workshops and seminars are offered. Opportunities for pre-college students are provided in all areas of music and dance throughout the year.

MUSIC FOR NON-DEGREE STUDENTS

Certain music courses are available to students not enrolled in a music degree program. Pre-college students, matriculating University of Miami students, and interested community
adults may enroll in these courses. Students who are not currently enrolled at the University of Miami but who wish to pursue courses will need to apply as a special student through the Frost School of Music Office of Admission.

Non-music majors wishing to enroll in performance study are required to audition and may, with the permission of the appropriate faculty member and the undergraduate or graduate dean, register for one or two credits a semester upon payment of tuition and an applied music fee of $200.00 per credit. Performance study by non-music majors is subject to teacher availability.

ACADEMIC POLICIES

REQUIREMENTS FOR ADMISSION

ADMISSION TO THE FROST SCHOOL OF MUSIC

Students admitted to the Frost School of Music must successfully complete a dual admission process. In addition to the general requirements for admission to the University, the undergraduate student must meet the following requirements of the Frost School of Music:

1. Submit a Frost School of Music Application directly to the Frost School of Music Admission Office.

2. Submit an Application for Undergraduate Study directly to the University Office of Undergraduate Admission.

3. Demonstrate performance proficiency by auditioning on campus, at designated regional audition centers, or by recording. The audition will be evaluated by appropriate faculty committees.

4. After being admitted to the University each student will be required to participate in placement auditions and exams in theory and applied music (performance). These examinations will be given just immediately to registration in the fall and spring semesters.

5. Transfer students who are admitted to the University will receive a tentative evaluation of their previous work from the office of Admission. Validation of credits in music will be based on the results of auditions and placement examinations discussed above. The Assistant Dean for Undergraduate Studies of the Frost School of Music determines which transferred courses will meet specific requirements for graduation.

6. Admission is granted in Fall semesters only.

Upon receipt of a student’s application to the Frost School of Music, further informational literature will be supplied. Included are specific audition requirements, important deadlines, and list of courses pertinent to the intended major.

Students who are admitted to the Frost School of Music must begin a program of specialized requirements in music during their first semester.

ADMISSION TO THE UNIVERSITY (UNDERGRADUATE STUDENTS)

Application forms and bulletins for undergraduate students may be secured from the University of Miami web site at www.miami.edu. The University Office of Admission receives
and processes all undergraduate applications, evaluates credentials, and mails letters of acceptance to applicants who qualify for entrance. Because of the University’s selective admissions policy and limited enrollment only those applicants are accepted who present evidence of intellectual promise, unusual talent and potential, and strong personal qualifications. Admission as a transfer student requires a 3.0 grade point average from the previous institution. Admission to the University in all cases is determined by the University Office of Admission and the Frost School of Music.

Prospective students should make formal application for admission in the fall of the senior year in high school. The Frost School of Music does not participate in the Early Decision or Early Action program.

PLACEMENT TESTS

Upon entering the Frost School of Music, students must demonstrate through placement auditions college-level performance on their instrument and in music theory. Results of placement tests will enable music advisors to assist students in selecting the appropriate program and level of study.

ENGLISH and MATHEMATICS REQUIREMENTS

Students requiring English 105, English 106, or Mathematics 101 must enroll for these classes during the first year in residence and are not permitted to drop.

AUDIT

Due to the nature of music courses, it is not possible for a student to audit courses offered in the Frost School of Music.

PERFORMANCE STUDY

CATALOG DESCRIPTION
The study of a musical instrument privately or in a small group. Prerequisite: Audition.

PERFORMANCE MAJOR
A Performance Major aspires to a professional career in music performance.

PRINCIPAL INSTRUMENT
Non-Performance Majors study a principal instrument to develop their music performance skills to the fullest extent possible.

PERFORMANCE INSTRUCTION
The letter designations A through R classify the levels of undergraduate and graduate performance instruction. The letters A through H signify undergraduate study; letters I through L, master’s study; and letters M through R, doctoral study. Transfer students enroll in Level A for the first semester and are placed at an appropriate classification level of study based on the results of the Jury at the end of each semester.

CREDIT FOR LESSONS
The number of credit hours awarded for performance study is determined by the student’s curriculum. Students enrolled for two or more credits of performance study are required to perform a Jury at the end of each semester.
JURY
The purpose of the Jury is to evaluate student musicianship and technique progress. Students enrolled for 2 to 4 credits of private lessons are required to play a Jury before a panel of performance faculty at the end of each semester. Juries are held during Reading Days. Students perform technical requirements and repertoire as assigned by their performance study teacher.

The private teacher prepares a Jury Sheet that lists the repertoire covered during the semester and the studio grade, for each student. Following a student performance, the grades of the Jury Panel are averaged. The final grade is comprised of the grade given by the teacher (65%) and the grade of the Jury Panel (35%). The grade is recorded on the Jury Sheet and placed in the student’s file. The final grade can be lowered as a result of poor recital attendance or other requirements specific to the student’s program of study.

PERFORMANCE WARNING, PROBATION AND DISMISSAL
The following applies to all majors and programs in the Frost School of Music:

Students earning a grade of C+ or lower in performance study will be placed on Performance Warning for one semester. A subsequent grade of C+ or lower in performance study will result in Performance Probation for one semester. Following Probation, an additional grade of C+ or lower in performance study will result in dismissal from the Frost School of Music.

SUMMER LESSONS
During each of the five-week summer sessions, students may register for one credit of performance study and receive a one-hour lesson per week.

SPECIAL FEES
Students studying a secondary instrument beyond the required four semesters of secondary piano will be assessed a per-credit fee and must have the approval of the undergraduate dean and program director or department chair. Students who require an accompanist may be assessed an accompanying fee.

REQUIREMENTS FOR GRADUATION
The general requirements for graduation from the University of Miami are described in the General Information section of this Bulletin. These general requirements are included in the specific listing of requirements for various majors under the appropriate department in the Frost School of Music. Outlines of achievement levels in applied music for each major are available in the Office of the Dean of the Frost School of Music. The student should consult regularly with his/her advisor and download their Academic Credit Evaluations which track all courses taken to see that all requirements for his/her particular area of concentration degree requirements are being met. Changes or deviations from the printed requirements must be approved in writing by the Dean.

WRITING COURSES
Frost School of Music students are expected to complete five writing-intensive courses in addition to English 105 and 106. Courses designated to meet this requirement are identified in the semester course schedule.
Courses satisfying this requirement are those which involve a substantial amount of writing. The preparation of papers in these courses are corrected for diction, syntax, style, and content.

MINORS IN THE SCHOOL OF MUSIC

MUSIC MINOR

Any student wishing to declare a minor in music must audition on an instrument and register with the Frost School of Music as a minor. A fee is assessed for private instruction. Please note that a minor in certain instruments may not be available. Minors are not available in Jazz Instruments or Jazz Voice. Availability on other instruments and voice varies from year to year depending on studio space.

A minor in music consists of 20 credits:
Music theory (MTC) 111, 112, 121, 122 6 Credits
Music literature (MCY) 131, 132 or Honors Equivalent Courses 6 Credits
Music performance (Instrument/Voice, 4 semesters of 1 credit lessons) 4 Credits
Ensembles 2 Credits
Music Electives 2 Credits

MINOR IN STUDIO MUSIC AND JAZZ (INSTRUMENTAL)

A 12 credit minor is available for students enrolled in the Frost School of Music whose principal performance medium is a jazz instrument. Permission of studio teacher required. The following courses must be taken to fulfill the requirement of this minor:

Analysis and Evolution of Jazz Styles (MSJ 113) 3 credits
Introduction to Jazz Improvisation (MSJ 124) 3 credits
Jazz Improvisation Theory I (MSJ 371) 3 credits
Advanced Modern Arranging I (MSJ 519) 3 credits

MINOR IN MUSIC BUSINESS AND ENTERTAINMENT INDUSTRIES (No audition required)

A minor in Music Business and Entertainment Industries consists of 13 credits:

Multinational Recorded Music Industry (MMI 173) 3 Credits
Introduction to Music Copyright (MMI 274) 2 Credits
Artist Management and the Live Entertainment Industry (MMI 273) 3 Credits

Or

International Music Publishing (MMI 573) 2 Credits
A&R Administration and Music Licensing (MMI 574) 3 Credits
Entertainment Industry Contract Basics (MMI 575) 3 Credits
MINOR IN DANCE

A minor in dance is intended for students interested in developing basic teaching skills for elementary and secondary dance education. Prospective students interested in this minor are required to audition for acceptance as well as maintain a grade point average of 3.0 in dance courses. 20 credits are required.

Orientation to Dance (DAN 130) This course is a prerequisite for all students who are interested in the minor in Dance 2 credits
Advanced studio technique (DAN 311 or 411 and DAN 321 or DAN 421) 6 credits
Dance education and history (DAN 385 or DAN 585 and DAN 450 or DAN 550) 6 credits
Dance education electives (DAN 285, 286, 290 and 335) 2 credits
Studio Electives (DAN 111, DAN 190, DAN 121, DAN 140, DAN 211, DAN 221, DAN 235, DAN 240, DAN 340) 4 credits

MINOR IN MUSIC COMPOSITION

A minor in music composition is primarily intended for students in the Frost School of Music who are pursuing majors in other fields within the School. Students interested in this minor are required to submit a portfolio to the chairman of the department for approval before declaring the minor. The minor consists of 15 credits.

Composition I (MTC 101) 2 credits
Composition II (MTC 102) 2 credits
Composition III (MTC 201) 2 credits
Composition IV (MTC 202) 2 credits
Composition Workshop (MTC 182) 4 credits
Orchestration (MTC 416) or Twentieth Century Techniques (MTC 312) 3 credits

HONORS PROGRAM

See general Honors program described elsewhere in Bulletin.
ACADEMIC PROGRAMS

BACHELOR OF ARTS IN MUSIC

The Bachelor of Arts in music degree is a non-professional degree designed for talented musicians who wish to pursue a broad liberal arts education. Curriculum flexibility affords students the opportunity for a variety of pre-professional studies, including premedical and prelegal. A minor outside the Frost School of Music is required.

BACHELOR OF ARTS IN MUSIC (Sample Curriculum)

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<tr>
<td>MCY 101 The World of Music and Its Powers</td>
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<td>Ensemble</td>
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<tr>
<td>Natural World or People and Society Elective</td>
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<td>Foreign Language</td>
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<tr>
<td>MTC 312 Twentieth Century Techniques</td>
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<td>Ensemble</td>
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<td>Arts (A) Elective</td>
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<td>Elective (300 level or higher)</td>
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<td>Non-Music Electives</td>
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<td>People and Society Elective</td>
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</tbody>
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* Must pass with grade of C or above.

** Required if math placement is MTH 101 or lower

*** Cannot be satisfied by ensembles

+ MVP 105 Prerequisite for vocalists. (Must pass with grade of C or above)
DANCE – Dept. Code: DAN

Dance courses are open to all university students with the approval of their advisor. For further information, contact the Dance coordinator.

INSTRUMENTAL PERFORMANCE - Dept. Code: MIP

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<td>*MTC 121 Music Theory Laboratory I</td>
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<td>MCY 101 The World of Music and It’s Powers</td>
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<td>ENG 106 English Composition I</td>
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<tr>
<td><strong>MTH 101 Algebra for College Students</strong></td>
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<td>3</td>
<td>MKP 220 Computers, Keyboards and Music</td>
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<td>People and Society Elective</td>
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<td>MTC 312 Twentieth Century Techniques or MTC 313 18th Century Counterpoint</td>
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<td>MTC 311 Analysis and Experience</td>
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<td>MIP 541-549 Repertoire and Pedagogy</td>
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<td>MCY 541 Music of the Mediaeval, Renaissance, and Baroque Periods</td>
<td>3</td>
<td>MIP 399 Junior Recital</td>
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<tr>
<td>*<strong>Natural World Elective</strong></td>
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<td>Free Elective</td>
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<td><strong>Second Semester</strong></td>
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<td>Principal Instrument Forum</td>
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<td>Principal Instrument Forum</td>
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<td>Principal Instrument (G Level)</td>
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<td>Principal Instrument (H Level)</td>
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<td>Ensembles</td>
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<td>Ensembles</td>
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<tr>
<td>MIP 317 Basic Conducting</td>
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<td>MIP 499 Senior Recital</td>
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<tr>
<td>MCY or MTC 300+ Level Elective</td>
<td>3</td>
<td>MIP 418 Instrumental Conducting</td>
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<tr>
<td>Free Elective</td>
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<td>MTC 416 Orchestration</td>
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<td>Non-Music Elective</td>
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<td>MCY or MTC 300+ Level Elective</td>
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<td></td>
<td>Free Elective</td>
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* Must pass with grade of C or above.

** If math placement is higher than MTH 101, a 3-credit academic elective will be required.

*** Can be satisfied with 6 credits Natural World, or 3 credits of Natural World and 3 credits of Mathematics (MTH 103 or above).
### Keyboard Performance Course Listing

#### Freshman Year

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<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>MKP 006 Piano Forum</td>
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<td>Piano (PIA)</td>
<td>Piano (PIB)</td>
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<td>*MTC 111 Music Theory I</td>
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<td>MCM 101 The World of Music and It's Powers</td>
<td>ENG 106 English Composition II</td>
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<td>ENG 105 English Composition I</td>
<td>Natural World Elective</td>
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<td>MTH 101** Algebra for College Students</td>
<td>Non-Music Elective</td>
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#### Sophomore Year

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<td>Piano (PIC)</td>
<td>Piano (PID)</td>
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<td>MKP 191 Accompanying, Level III</td>
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<td>Piano (PIE)</td>
<td>Piano (PIF)</td>
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<tr>
<td>MIP 317 Basic Conducting</td>
<td>MIP 418 Instrumental Conducting</td>
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<td>MTC 312 Twentieth Century Techniques</td>
<td>MTC 311 Analysis and Experience</td>
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<td>MTC 313 18th Century Counterpoint</td>
<td>MCT 542 Music of the Classical, Romantic, and Modern Periods</td>
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<td>MCM 541 Music of the Mediaeval, Renaissance, and Baroque Periods</td>
<td>MKP 399 Junior Recital</td>
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* Must pass with grade of C or above.

** Required if math placement is MTH 101 or lower.

[Keyboard Performance Course Listing](#)
### Vocal Performance - Dept. Code: MVP

#### Freshman Year

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<td>*MTC 112 Music Theory II 2</td>
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<td>+MTC 122 Music Theory Laboratory II 1</td>
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<td>MVP 399 Junior Recital 1</td>
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<td>MCY 541 Music of the Mediaeval, Renaissance, and Baroque Periods 3</td>
<td>MVP 552 Vocal Performance Preparation 1</td>
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<td>MTC 311 Analysis and Experience 3</td>
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<td>MVP 438 Vocal Pedagogy 2</td>
<td>MVP 499 Senior Recital 1</td>
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<td>MTC 515 Choral Arranging 3</td>
<td>MCY 522 Operatic Literature 3</td>
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* Must Pass with grade of C or above

** Required if math placement is MTH 101 or lower.

*** Foreign language requirements: one semester each of Italian, French, and German and at least one additional semester of Italian, French, or German.

**** Vocal Performance major must pass a Proficiency Exam to enroll for MVP VOE Voice.

***** Can be satisfied with 6 credits Natural World, or 3 credits Natural World and 3 credits of Mathematics (MTH 103 or above).

+ MVP 105 Prerequisites (Must pass with grade of C or above)
# Vocal Performance Course Listing

## MUSICAL THEATRE

The program in Musical Theatre is interdisciplinary in nature, with emphasis in both music and theatre.

### MUSICAL THEATRE

<table>
<thead>
<tr>
<th>FRESHMAN YEAR</th>
<th></th>
<th>SOPHOMORE YEAR</th>
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<th>JUNIOR YEAR</th>
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* Must pass with grade of C or above

** Required if math placement is MTH 101 or lower.
*** Can be satisfied with 6 credits Natural World, or 3 credits Natural World and 3 credits Mathematics (MTH 103 or above).

+ MVP 105 Prerequisite (Must pass with grade of C or above)

**BACHELOR OF ARTS DEGREE WITH MAJORS IN MUSIC AND THEATRE**

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* Must pass with grade of C or above

*** Placement out of MTH 101 is required for enrollment in MTH 103.
+ MVP 105 Solfege may need to be taken before lab theory sequence begins. (Must pass with grade of C or above)

**MUSIC EDUCATION AND MUSIC THERAPY - Dept. Code: MED**

The Music Education curriculum is designed to prepare students to teach music in public and private schools at both the elementary and secondary grade levels. All Music Education majors must perform at a high level either vocally or on an instrument. Students must successfully complete the Florida General Knowledge Examination (FGKE) to be admitted to teacher candidacy and the Florida Teacher Certification Examination (FCTE) to graduate.

Instrumental majors must develop knowledge of and performance ability on wind, string, and percussion instruments sufficient to teach beginning students. All choral and general music majors must develop adequate vocal skills to assure effective use of the voice in teaching.

Admission to and/or retention in the music education curriculum leading to Florida Teacher Certification requires that students be formally screened with respect to specific criteria. Following are the Requirements for Admission to Teacher Candidacy and for Admission to Associate Teaching:

**Admission to Teacher Candidacy**
1. Acceptance as a major in the music education program.
2. Satisfactory performance on the FGKE and the FCTE.
3. Completion of 55 semester hours of credit. (Transfer students must have at least 12 semester hours of credit earned at the University of Miami.)
4. A 2.5 GPA in TAL and MED courses.
6. Finger printing completed.

**Admission to Associate Teaching**
1. Two recommendations from faculty members familiar with academic proficiency.
2. Completion of 90 semester hours of credit.
3. Completion of at least three-fourths of the courses in the teaching major, verified by advisor.
4. Completion of and a C- or better in the following prerequisite courses: TAL 103, 205, 506, MED 240, 241, 242, 243, 245, 430, 542, 543, 544, 549, and for instrumental emphasis, MED 244, 340. Choral emphasis, MVP 250. String emphasis, MIP 549.
5. Completion of pre-internship field experiences with above-average evaluations.
MUSIC EDUCATION

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<td>MVP 282 String Repertoire and Pedagogy (string principals only) or</td>
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## SENIOR YEAR

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| ** Two semesters of MIP 170 Marching Band required of all brass, percussion, and woodwind principals. **

** Must pass with grade of C- or above.

*** Required if math placement is MTH 101 or lower.

++ Vocal principals only

## MUSIC EDUCATION/JAZZ EMPHASIS (Instrumental)

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<td>MSJ 203 Jazz Piano</td>
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<td>MCY 542 Music of the Classical, Romantic, and Modern Periods</td>
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- # Must pass with grade of C- or above.
- * Must pass with grade of C or above.
- ** Two semesters of MIP 170 Marching Band required of all brass, percussion, and woodwind principals.
- *** Required if math placement is MTH 101 or lower.
- + Math may be substituted for one Natural World course.

### SENIOR YEAR

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### MUSIC EDUCATION/JAZZ EMPHASIS (Vocal)

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<td>MSJ 125 Introduction to Jazz Improvisation/Vocal</td>
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<td>MCY 541 Music of the Mediaeval, Renaissance and Baroque Periods</td>
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# Must pass with grade of C- or above.

* Must pass with grade of C or above.

** Required if math placement is MTH 101 or lower.

### MUSIC THERAPY

The purpose of the program in Music Therapy is to prepare individuals for careers as professional music therapists in a variety of health care and educational settings. All Music Therapy majors must demonstrate acceptable musical skills, either vocally or on a traditional symphonic instrument. In addition, students must demonstrate musical competency in the following areas: guitar, piano, voice, and percussion.

The Music Therapy curriculum is approved by the American Music Therapy Association. Graduates are eligible to sit for the Music Therapy Board Certification Exam, leading to the credential, Music Therapist Board Certified (MT-BC).
To remain in the Music Therapy program, students must maintain a minimum of 2.5 GPA. Additionally, music therapy core courses must be completed with a grade of C or better.

**MUSIC THERAPY**

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**FIRST SEMESTER**

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**SECOND SEMESTER**

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**FIRST SEMESTER**

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**SECOND SEMESTER**

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**FIRST SEMESTER**

|                      | 13 |

**SECOND SEMESTER**

### SENIOR YEAR

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<td>MED 450 Introduction to Research in Music (fall only)</td>
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<tr>
<td>PSY 352 Abnormal Psychology</td>
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<tr>
<td>Natural World Elective</td>
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**FIRST SEMESTER**

|                      | 14 |

**SECOND SEMESTER**
NOTE: MED 559/560 Internship (3 credits) required following successful completion of all coursework. Internship consists of a 6-month, full-time clinical placement at an approved site.

* Must pass with grade of C or above.

** Required if math placement is MTH 101 or lower.

### MUSIC EDUCATION and MUSIC THERAPY DOUBLE MAJOR (160-163 credits)

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<td>MKP 102 Class Piano II or Secondary Instrument</td>
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<td>MED 259 Pre-Practicum</td>
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<tr>
<td>Ensemble</td>
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<td>MIP 182 Instrumental Conducting II or</td>
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<td>MVP 181 Choral Conducting I</td>
<td>MVP 182 Choral Conducting II</td>
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<td>*MTC 222 Music Theory Laboratory IV</td>
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<tr>
<td>MKP 103 Class Piano III or</td>
<td>MKP 104 Class Piano IV or</td>
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<td>BIL 109 Human Biology (fall only)</td>
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<td>DAN 290 Introduction to Dance Movement Therapy</td>
<td>PSY 202 Introduction to Psychobiology</td>
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<td>PSY 203 Child and Adolescent Development</td>
<td>TAL 330 Introduction to the Education of Exceptional Individuals or</td>
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<td>TAL 531 Educating Exceptional Students</td>
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<td>Principal Instrument or Voice</td>
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<td>MIP 282 Choral Conducting III</td>
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<td>MCY 542 Music of the Classical, Romantic, and Modern Periods</td>
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<td>MED 249 Functional Techniques in Music Therapy</td>
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<td>MED 149 Functional Techniques in Music Therapy I</td>
<td>MED 545 Clinical Orientation in Music Therapy</td>
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<td>MED 359 Clinical Orientation in Music Therapy</td>
<td>MED 546 Music in Rehabilitation (spring only)</td>
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<tr>
<td>#MED 542 Teaching Elementary General Music K-6</td>
<td>MED 562 Psychology of Music I (spring only)</td>
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<td>MED 576 Music and Development (fall only)</td>
<td>#TAL 506 Issues and Strategies for ESOL</td>
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### SENIOR YEAR

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<tr>
<td>MED 015 Music Education Forum</td>
<td>MED 015 Music Education Forum</td>
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<td>Principal Instrument or Voice</td>
<td>Envelope</td>
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<tr>
<td>Ensemble</td>
<td>MTC 416 Orchestration or</td>
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<tr>
<td>MED Techniques Class</td>
<td>MTC 515 Choral Arranging or</td>
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<tr>
<td>MIP 549 Marching Band Fundamentals or</td>
<td>MED 543 Teaching Elementary and Secondary Instruments or</td>
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<tr>
<td>MTC 311 Analysis and Experience</td>
<td>#MED 544 Teaching Secondary General Music</td>
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<td>MED 359 Clinical Orientation in Music Therapy</td>
<td>PSY 204 Introductory Biobehavioral Statistics</td>
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<tr>
<td>MED 450 Introduction to Research in Music (fall only)</td>
<td>PSY 352 Abnormal Psychology</td>
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<tr>
<td>#MED 549 Teaching Secondary Choral Music (2-3) or</td>
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<tr>
<td>#MED 430 Teaching Jazz/Popular Music in Secondary Schools (2)</td>
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<td>Natural World Elective</td>
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### FIFTH YEAR

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<tr>
<td>MED 433 Senior Seminar in Music Education</td>
<td>MED 559 Internship in Music Therapy</td>
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<tr>
<td>MED 471 Associate Teaching in Elementary School Music (K-5)</td>
<td>MED 560 Internship in Music Therapy</td>
</tr>
<tr>
<td>MED 473 Associate Teaching in Secondary School Music (6-12)</td>
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**NOTE:** It is recommended that students plan to take general education courses in the summer. This will reduce the academic load during the regular school year.

Minimum 2.5 GPA must be maintained in music education core courses.

A grade of C or above is required in all music therapy core courses.

# Must pass with a grade of C- or above.

* Must pass with a grade of C or above.

** Required if math placement is MTH 101 or lower.

In order to apply for graduate studies in music therapy, students must complete either a bachelor’s degree in music therapy or a music therapy equivalency program.

### THE MUSIC THERAPY EQUIVALENCY PROGRAM

The equivalency program is designed for the individual who has already completed a bachelor’s degree in a related discipline, including the following courses:

Music Theory I, II, III and IV; Music History I and II; Conducting, Arranging, Applied Lessons (6 semesters), Performing Ensembles (8 semesters), Piano Competency (4 semesters of either lessons or group piano) and Introduction to Psychology.

Beyond these courses, the program consists of 50 credit hours that can be completed in two years, followed by a six-month clinical internship. Please contact the Music Therapy Program Director for a listing of the 50 credit hours.
If any of the prerequisite courses have not yet been completed, they can be taken at the University of Miami. Taking these additional courses, however, may lengthen the amount of time required to complete the equivalency program. In certain situations, alternate courses from other universities can substitute for the required courses. Depending on the nature of the course, this decision will be made by the undergraduate dean, in consultation with the Music Therapy Program Director.

In order to determine exactly how many credits are required to complete the equivalency program, the student should obtain official transcripts for their previous degree and meet with the music therapy program director. Following completion of the course and internship, students are then eligible to sit for the music therapy board certification exam and can become professional members of the American Music Therapy Association (AMTA). For students wishing to pursue graduate studies in music therapy, the equivalency program can be combined with the master’s degree in music therapy.

**Music Education and Music Therapy Course Listing**

**MUSIC MEDIA AND INDUSTRY - Dept. Code: MMI**

The Department of Music Media and Industry includes two programs, Music Engineering Technology and Music Business and Entertainment Industries.

**MUSIC ENGINEERING TECHNOLOGY**

The Music Engineering Technology curriculum is designed for musicians interested in pursuing a career in music recording, audio hardware and software design, and related professions in the audio, audio-video, multimedia and internet industries. The program is interdisciplinary in nature; it includes courses in music, music engineering, computer science, electrical engineering, and mathematics. This program includes a minor in Electrical Engineering or a double major in Computer Science. Freshman students are expected to enroll in calculus, which carries a prerequisite of Trigonometry and Analytical Geometry. Prospective students are expected to have a strong background in music performance and in mathematics.

**MUSIC ENGINEERING TECHNOLOGY with minor in Electrical Engineering**

<table>
<thead>
<tr>
<th>FIRST SEMESTER</th>
<th>SECOND SEMESTER</th>
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<tbody>
<tr>
<td><strong>MMI 013 Music Engineering Forum</strong></td>
<td><strong>MMI 013 Music Engineering Forum</strong></td>
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<td><strong>Principal Instrument/Voice Forum</strong></td>
<td><strong>Principal Instrument/Voice Forum</strong></td>
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<tr>
<td><strong>Principal Instrument/Voice (A Level)</strong></td>
<td><strong>Principal Instrument/Voice (B Level)</strong></td>
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<tr>
<td><strong>Piano</strong></td>
<td><strong>Piano</strong></td>
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<tr>
<td><strong>Ensemble</strong></td>
<td><strong>Ensemble</strong></td>
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<td><strong>MMI 150 Recording Studio Workshop</strong></td>
<td><strong>MMI 151 Desktop Audio Production</strong></td>
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<tr>
<td><strong>MTC 111 Music Theory I</strong></td>
<td><strong>MTC 112 Music Theory II</strong></td>
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<tr>
<td><strong>MTC 121 Music Theory Laboratory I</strong></td>
<td><strong>MTC 122 Music Theory Laboratory II</strong></td>
</tr>
<tr>
<td><strong>MCY 101 The World of Music and Its Powers</strong></td>
<td><strong>ENG 106 English Composition II</strong></td>
</tr>
<tr>
<td><strong>MMI 201 Introduction to Music Recording</strong></td>
<td><strong>EEN 118 Introduction to Programming</strong></td>
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<tr>
<td><strong>ENG 105 English Composition I</strong></td>
<td><strong>MTH 112 Calculus II</strong></td>
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<tr>
<td><strong>MTH 111 Calculus I</strong></td>
<td><strong>MTH 112 Calculus II</strong></td>
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<td><strong>MCY 101 The World of Music and Its Powers</strong></td>
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<td><strong>MMI 201 Introduction to Music Recording</strong></td>
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<tr>
<td><strong>ENG 105 English Composition I</strong></td>
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**Second Semester**

| **MMI 013 Music Engineering Forum** | 0 |
| **Principal Instrument/Voice Forum** | 0 |
| **Principal Instrument/Voice (B Level)** | 2 |
| **Piano** | 1 |
| **Ensemble** | 1 |
| **MMI 151 Desktop Audio Production** | 1 |
| **MTC 112 Music Theory II** | 2 |
| **MTC 122 Music Theory Laboratory II** | 1 |
| **ENG 106 English Composition II** | 3 |
| **EEN 118 Introduction to Programming** | 3 |
| **MTH 112 Calculus II** | 4 |
| **MTH 112 Calculus II** | 18 |
### SOPHOMORE YEAR

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<td>MMI 501 Transducer Theory</td>
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### JUNIOR YEAR

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<td>Principal Instrument/Voice (F Level)</td>
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<td>MMI 436 Audio Postproduction</td>
<td>MMI 503 Digital Audio II</td>
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<td>MMI 361 Acoustics</td>
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<td>EEN 312 Microprocessor</td>
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<td>MCY 542 Music of the Classical, Romantic, and Modern Periods</td>
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**NOTE:** A minimum 2.70 GPA is required to remain in the Music Engineering Technology program. A minimum 2.0 GPA is required in all EEN courses taken.

* Must pass with a grade of C or above.

** 6 semester hours of electives (300 level) which can include MMI 460 and MMI 465.
### MUSIC ENGINEERING TECHNOLOGY with Double Major in Computer Science

#### FRESHMAN YEAR

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<td>MCY 101 The World of Music and Its Powers</td>
<td>ENG 106 English Composition II</td>
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<td>MMI 203 Introduction to Music Recording</td>
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#### SOPHOMORE YEAR

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<td>MMI 501 Transducer Theory</td>
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<td>MTH 309 Discrete Mathematics I</td>
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<tr>
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<td>CSC 322 C Programming and UNIX</td>
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#### JUNIOR YEAR

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#### SENIOR YEAR

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<td>CSC 531 Software Engineering</td>
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**Note:** A minimum 2.70 GPA is required in the Music Engineering Technology program. A grade of C- or better is required in all CSC courses. The overall GPA for CSC courses must be 2.5 or better.

* Must pass with a grade of C or above

** 3 semester hours of electives (300 level) which can include MMI 460 and MMI 465.
MUSIC BUSINESS AND ENTERTAINMENT INDUSTRIES with minor in Marketing
The objective of the program in Music Business and Entertainment Industries is to prepare interested and qualified students for positions in all areas of the music industry . . . at every level, including, ultimately, top-level management. The program is interdisciplinary in nature; emphasis is placed upon courses in music, business, and music business and carries a built-in minor in marketing. Other minors offered by the School of Business Administration are also possible upon approval of the School of Business and the Frost School of Music.

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NOTE: To remain in the Music Business and Entertainment Industries program, students must maintain a minimum 2.70 G.P.A.

* Must pass with grade of C or above.

** If not initially placed in MTH 103, prerequisites must be taken as required.

Music Media and Industry Course Listing

MUSICOLOGY – Dept. Code: MCY

Musicology Course Listing

MUSIC THEORY-COMPOSITION - Dept. Code: MTC

The curriculum in Composition is designed for those students intending to pursue a career as a composer and/or to pursue graduate degrees in Theory or Composition. Prospective students are expected to furnish evidence of compositional ability.

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<td>MTC 182 Composition Workshop</td>
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### JUNIOR YEAR

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* Must pass with grade of C or above.

** Required if math placement is MTH 101 or lower.

### SENIOR YEAR

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### COMMERCIAL MUSIC AND PRODUCTION EMPHASIS

### FRESHMAN YEAR

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<td>MTC 251 Audio, Computers and MIDI I</td>
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<td>MTC 203 Pop Composition I</td>
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<td>CAP 114 Introduction to Advertising in Society</td>
<td>MMI 173 Introduction to Music Business and Entertainment Industry</td>
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<td>CBR 102 Introduction to Broadcasting and Cable</td>
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### JUNIOR YEAR

#### First Semester
- MTC 015 Commercial Music & Production Forum 0
- Principal Instrument Forum 0
- Principal Instrument/Voice (E Level) 2
- Ensemble 1
- MSJ 305 Jazz Piano Class III 1
- MTC 416 Orchestration 3
- MIP 317 Basic Conducting (Instrumental) or MVP 317 Basic Conducting (Choral) 1
- MTC 303 Media Composition I 3
- MMI 573 Music Publishing, Copyright, Distribution and Baroque Periods 3

#### Second Semester
- MTC 015 Commercial Music & Production Forum 0
- Principal Instrument Forum 0
- Principal Instrument/Voice (F Level) 2
- Ensemble 1
- MSJ 306 Jazz Piano Class IV 1
- MTC 312 Twentieth-Century Techniques 3
- MVP 318 (Choral Conducting) or MIP 418 (Instrumental Conducting) 1
- MTC 304 Media Composition II 2
- MCY 542 Music of the Classical, Romantic, and Modern Periods 3
- CBR 245 Introduction to Electronic Media Production 3

### SENIOR YEAR

#### First Semester
- MTC 015 Commercial Music & Production Forum 0
- Ensemble 1
- MMI 510 Audio Postproduction 3
- MTC 403 Media Production Project I 2
- MTC 511 Film Scoring I or MSJ 509 Jazz Composition I 2
- Non-Music Elective 3
- Humanities Elective 3
- Natural World Elective 3

#### Second Semester
- MTC 015 Commercial Music & Production Forum 0
- Ensemble 1
- MTC 499 Senior Recital 1
- MTC 404 Media Production Project II 3
- MMI 574 Music Industry Administration or MMI 530 Entrepreneurship for Musicians 3
- MTC 512 Film Scoring II or MSJ 510 Jazz Composition II 2
- Non-Music Elective 3
- Musicology Elective 3

### Music Theory - Composition Course Listing

#### STUDIO MUSIC AND JAZZ - Dept. Code: MSJ

**INSTRUMENTAL EMPHASIS**
The instrumental curriculum in Studio Music and Jazz is designed for interested and qualified students who desire to continue to develop to the highest degree their background and skills in the performance of studio music and jazz. Admission to this major pre-supposes musical training in jazz on the principal instrument.

#### STUDIO MUSIC AND JAZZ INSTRUMENTAL EMPHASIS

### FRESHMAN YEAR

#### First Semester
- MSJ 003 Jazz Forum 0
- Principal Instrument Forum 0
- Principal Instrument (A Level) 3
- Ensembles 2
- *MTC 111 Music Theory I 2
- *MTC 121 Music Theory Laboratory I 1
- MSJ 113 Analysis and Evolution of Jazz Styles or MSJ 124 Introduction to Jazz Improvisation 3
- MCY 101 The World of Music and Its Powers 1
- ENG 105 English Composition I 3
- **MTH 101 Algebra for College Students 3

#### Second Semester
- MSJ 003 Jazz Forum 0
- Principal Instrument Forum 0
- Principal Instrument (B Level) 3
- MKP 102 Class Piano 1
- *MTC 112 Music Theory II 2
- *MTC 122 Music Theory Laboratory II 1
- MSJ 113 Analysis and Evolution of Jazz Styles or MSJ 124 Introduction to Jazz Improvisation 3
- ENG 106 English Composition II 3
- People and Society Elective 3

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**SOPHOMORE YEAR**

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<td>MIP 317 Basic Conducting</td>
<td>MTC 311 Analysis and Experience or MTC 312 Twentieth Century Techniques or MTC 313 18th Century Counterpoint</td>
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<td>MSJ 520 Advanced Modern Arranging II</td>
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<td>MSJ 510 Jazz Composition II or MMI 512 Film Scoring II</td>
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* Must pass with grade of C or above

** Required if math placement is MTH 101 or lower.

*** Can be satisfied with 6 credits Natural Science and 3 credits of Mathematics (MTH 103 or above).

**VOCAL EMPHASIS**

The vocal curriculum in Studio Music and Jazz is designed for interested and qualified vocalists who desire to continue to develop to the highest degree their backgrounds and skills in the performance of studio music (including jingles), jazz, and contemporary pop music. Admission to this major pre-supposes music training in jazz.
# STUDIO MUSIC AND JAZZ VOCAL EMPHASIS

## FRESHMAN YEAR

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<td>MSJ 125 Introduction to Jazz Improvisation/Vocal</td>
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**Note:** To remain in the Studio Music and Jazz Vocal Program, students must maintain a minimum of 2.70 G.P.A. and earn a minimum grade of B in theory, voice, piano, and ensembles.

* Must pass with grade of C or above.

** Required only if math placement is MTH 101 or lower.

*** Can be satisfied with 6 credits Natural World, or 3 credits of Natural World and 3 credits of Mathematics (MTH 103 or above).
# DOUBLE MAJOR - STUDIO MUSIC AND JAZZ INSTRUMENTAL EMPHASIS and INSTRUMENTAL PERFORMANCE

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<td>Principal Instruments (MIP/MSJ - B Level)</td>
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* Must pass with grade of C or above.

** Required if math placement is MTH 101 or lower.

Studio Music and Jazz Course Listing
The University of Miami School of Nursing and Health Studies offers courses leading to the degrees of Bachelor of Science in Nursing, Master of Science in Nursing, and Doctor of Philosophy. Baccalaureate education is the primary foundation for professional nursing, as well as for graduate education; students who successfully complete the baccalaureate program are eligible to sit for the licensure examination to practice professional nursing. Graduates of diploma and associate degree programs are admitted as transfer students.

The School of Nursing and Health Studies is committed to academic excellence, the advancement of nursing as a discipline, and service to society. The undergraduate and graduate programs are designed with an emphasis on transcultural nursing. Recognizing that each ethnic community has unique health beliefs and practices and that nursing education has the responsibility for preparing professionals who can adapt nursing to specific health needs. Opportunities are available for students to study and earn course credit in a variety of international settings.

The nursing baccalaureate program is approved by the Florida Board of Nursing and accredited by the Commission of Collegiate Nursing Education (CCNE), One DuPont Circle NW, Suite 530, Washington, DC 20036, (202) 887-6791

FACILITIES:

The School of Nursing and Health Studies is located on the Coral Gables Campus. Library resources for nursing students are at the Otto G. Richter Library on the Coral Gables Campus and the Calder Medical Library on the Medical Center Campus. Clinical experiences are offered in a variety of hospitals and health related agencies in the community.

The Department of Residence Halls provides accommodations for full-time undergraduate students. Freshmen are required to live in University residence halls for two academic semesters unless living with parents in the Miami area.

ACADEMIC POLICIES

ADMISSION:

Admission to the School of Nursing and Health Studies is open to individuals who have demonstrated that they have the intellectual ability and the personal qualifications necessary for the profession of nursing. All applicants must meet the requirements for admission to the University of Miami; requests for admission should be directed to the Office of Admissions. Entrance into the first clinical nursing course is not guaranteed by admission to the University. Registered nurses must be eligible for licensure in the State of Florida.

Transfer students from accredited universities, colleges, or junior colleges may be admitted with advanced standing as space allows provided they have completed courses comparable to those required by the University of Miami. Students who are planning to take a pre-nursing program in a junior college are advised to contact the School of Nursing and Health Studies concerning prerequisites.
The School of Nursing and Health Studies is strongly committed to providing educational opportunities for persons already practicing in the health care field. An RN transition option is offered which allows RN students to earn the BSN Degree by completing three consecutive semesters of full-time coursework or six consecutive semesters of part-time coursework. Academic transcripts are evaluated on an individual basis to determine if the 60 credits of required prerequisites have been successfully completed.

**REQUIREMENTS FOR ENROLLMENT INTO CLINICAL COURSES:** To be eligible to enroll in clinical nursing courses, a student must have achieved junior standing with an overall grade point average of no less than 2.5 and earned a grade of 2.0/C or better in the following prerequisite courses or equivalent:

Transfer students must have a minimum GPA of 2.8.

Accelerated Option students must have a minimum GPA of 3.0 with a 2.75 for prerequisite courses.

To be considered for progression or admission to clinical coursework, students are allowed to repeat only 1 prerequisite course.

### Requirements for enrollment into clinical courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Basic BSN</th>
<th>Accelerated Option BSN</th>
<th>2nd Degree BSN</th>
<th>RN/BSN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry w/ Lab CHM 103/105</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Human Anatomy w/ Lab HCS 212/213</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Physiology HCS 215</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Microbiology MIC 320</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Behavioral Statistics PSY 204</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Intro to Psychology PSY 110</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>College Algebra MTH 101</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Biology w/ Lab BIL 150/151</td>
<td>✓</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Therapeutic Nutrition NUR 306</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Growth &amp; Development NUR 317</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Baccalaureate Degree</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Consult the SONHS Office of Student Services</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Students are required to have a health examination prior to enrollment in clinical nursing courses. All students must provide evidence of a current TB screening test, hepatitis B vaccination, MMR vaccination, tetanus vaccination, polio vaccination, and certification in
Basic Life Support. Uniforms are required, and a lab fee for each clinical course is payable at registration. Clinical courses require that students must have access to an automobile or other reliable transportation, as transportation to and from clinical agencies is the responsibility of the student. Students must also provide evidence of fingerprinting and background checks. See the School of Nursing and Health Studies Student Handbook for further information on these requirements.

READMISSION:

Students who have not been enrolled at the University of Miami on a continuous basis should request readmission through the Office of Admissions well in advance of the date they intend to register. Nursing students who are admitted must fulfill the requirements that are in effect at the time of their readmission.

ACADEMIC PROGRESS:

Students are expected to take the initiative in making sure that all requirements are being met in conformity with the prescribed curriculum. To be assured of uninterrupted progression through the program, students must maintain a grade point average of 2.0 or better. Students who achieve less than a C in a required nursing course or who withdraw from a required nursing course may be placed on academic warning or probation. Students may not take a required course more than two times.

Student records are reviewed at the close of each semester, and those students with a cumulative average of less than 2.0 are subject to being placed on academic probation according to the University of Miami Policy on Academic Probation and Dismissal. A grade of C- is not an acceptable passing grade on any nursing course within the undergraduate program of the School of Nursing and Health Studies.

A failed nursing course may be repeated one time. When a clinical nursing course is repeated both theoretical and clinical components must be repeated. When a course must be repeated the progression in the nursing program will be altered in order for prerequisites to be met. Such alteration will in all likelihood lengthen the time required to complete the nursing program. Students will be required to fulfill the requirements that are in effect at the time of the current program.

Students are allowed to repeat only one failed nursing course. Failure of the same course again or any other nursing course will be grounds for dismissal from SONHS.

REGISTERED NURSE LICENSURE:

Graduates of the BSN program are eligible to take the National Council Licensure Examination (NCLEX) registered nursing licensure examination after the Dean has certified the candidate. A Social Security number is required to take the NCLEX.

STUDENTS WITH DISABILITY ACCOMMODATION POLICY:

It is the policy of the University of Miami School of Nursing and Health Studies to adhere to Standards of the Americans with Disabilities Act. Any students needing special accommodations to complete a course must submit written documentation of the accommodation requested. The Office of Disability Services (ODS) is the primary office responsible for the coordination of auxiliary aids and services for students with disabilities.
Information and/or services are available to prospective and enrolled students, their parents and/or sponsors.

**FINANCIAL ASSISTANCE:**

Students interested in obtaining financial aid in the form of student loans and grants should contact the Office of Financial Assistance Services. Limited scholarships are available through the School of Nursing and Health Studies. The qualifications for these scholarships vary; further information is available from the School of Nursing and Health Studies, Student Services Office.

On-campus and off-campus work-study opportunities are also available.

**REQUIREMENTS FOR GRADUATION**

1. **STUDENT RESPONSIBILITIES:**

   Students in the School of Nursing and Health Studies are responsible for meeting the degree requirements. It is the student’s responsibility to understand fully, and comply with all the provisions of the *Bulletin* and written changes to their program of study. Students are provided assistance by advisors and faculty members. Requests for deviation from the program of study or school requirements are granted only by written approval from the Dean. Students who are in violation of the provisions of this *Bulletin* may be withdrawn unilaterally by appropriate School officials from classes, deleted as Nursing and Health Studies students or have a stop placed upon their future enrollment. The school reserves the right to change academic requirements to include course offerings to ensure that students are receiving the latest knowledge. Changes are transmitted by written notice in the current year of the School of Nursing and Health Studies Undergraduate Handbook or by the Dean.

   The general requirements for graduation from the University of Miami are described in the GENERAL INFORMATION section of the Bulletin.

   Requirements for the Bachelor of Science in Nursing include the completion of at least 56 credits of general education and prerequisite courses and 64 credits of required and elective nursing courses with an overall grade point average of 2.0 or better. Nursing students must earn a grade of 2.0 or better in each of the required prerequisite and nursing courses.

2. **SAMPLES OF PROGRAM OF STUDY:**

**ACADEMIC PROGRAMS**

**SAMPLE PROGRAMS OF STUDY: First two years of program – Example**

<table>
<thead>
<tr>
<th>FRESHMAN YEAR</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Fall Semester</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ENG 105 English Composition I</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>BIL 150 General Biology</td>
<td>4</td>
<td></td>
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<tr>
<td>BIL 151 General Biology Laboratory</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>CHM 103 Chemistry for Life Sciences I (Lecture)*</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM 105 Chemistry for Life Sciences I (Laboratory)*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTH 101 Algebra for College Students</td>
<td>3</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td><strong>Spring Semester</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENG 107 Writing about Science</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>HCS 212/213 Human Anatomy</td>
<td>4</td>
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</tr>
<tr>
<td>Arts &amp; Humanities Elective</td>
<td>3</td>
<td></td>
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<tr>
<td>Arts &amp; Humanities Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSY 110 Introduction to Psychology</td>
<td>3</td>
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<td>16</td>
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</table>
### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSC 220 Systemic Physiology</td>
<td>PSY 204 Introductory Biobehavioral Statistics</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>Arts or Humanities Elective</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Arts &amp; Humanities Elective</td>
<td>NUR 306 Principles of Nutrition</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Behavioral Science</td>
<td>MIC 320 Intro Microbiology for Nurses</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
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<td></td>
<td>12</td>
</tr>
</tbody>
</table>

*Can be taken in Fall of sophomore year.

### REQUIRED NURSING COURSEWORK FOR BASIC BSN TRACK

NUR 300 level courses are considered generally prerequisite to NUR 400 level courses.

### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUR 311 Conceptual Bases of Nursing</td>
<td>NUR 307 Pharmacotherapeutics</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>NUR 314 Health Assessment</td>
<td>NUR 331 Community Based Nursing Care of Adults and</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>NUR 315 Pathophysiology</td>
<td>NUR 334 Community Based Nursing Care of Women and</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>NUR 317 Growth and Development</td>
<td>NUR 335 Older Adults in the Community</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>NUR 322 Community Based Multicultural Nursing</td>
<td></td>
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<tr>
<td>Practice</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
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<tr>
<td></td>
<td>16</td>
</tr>
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</table>

### SENIOR YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUR 400 Theories and Evidence Practice</td>
<td>NUR 440 A Systems Approach to Population Based</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>NUR 429 Community Based Nursing Care of Adults and</td>
<td></td>
</tr>
<tr>
<td>Families II</td>
<td>NUR 441 Professional Role Synthesis</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>NUR 430 Community Based Nursing Care of Children</td>
<td>NUR 448 Community Based Psychiatric Mental Health</td>
</tr>
<tr>
<td>and Families</td>
<td>6</td>
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<tr>
<td>6</td>
<td></td>
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<tr>
<td>NUR Elective</td>
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<td></td>
<td>16</td>
</tr>
</tbody>
</table>

### Accelerated Option BSN Program

#### SUMMER

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUR 523 Introduction to Community-Based Nursing Practice</td>
<td>7</td>
</tr>
<tr>
<td>NUR 314 Health Assessment</td>
<td>3</td>
</tr>
<tr>
<td>NUR 315 Pathophysiology</td>
<td>3</td>
</tr>
<tr>
<td>NUR 307 Nursing Implications for Pharmacotherapeutics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

#### FALL

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUR 429 Community Based Nursing Care of Adults &amp; Families II</td>
<td>6</td>
</tr>
<tr>
<td>NUR 334 Community Based Nursing Care of Women and their Families</td>
<td>5</td>
</tr>
<tr>
<td>NUR 524 Community-Based Multicultural Psychiatric/Mental Health Nursing</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>17</td>
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</table>

#### SPRING

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUR 441 Professional Role Synthesis</td>
<td>7</td>
</tr>
<tr>
<td>NUR 400 Theories, Research and Evidence-Based Practice</td>
<td>3</td>
</tr>
<tr>
<td>NUR 430 Community Based Nursing Care of Children and Families</td>
<td>6</td>
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<td></td>
<td>16</td>
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</tbody>
</table>
Graduate Entry Option BSN Portion

<table>
<thead>
<tr>
<th>Summer</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>NUR 523</td>
<td>Introduction to Community-Based Nursing Practice</td>
<td>7</td>
</tr>
<tr>
<td>NUR 314</td>
<td>Health Assessment</td>
<td>3</td>
</tr>
<tr>
<td>NUR 315</td>
<td>Pathophysiology</td>
<td>3</td>
</tr>
<tr>
<td>NUR 307</td>
<td>Nursing Implications for Pharmacotherapeutics</td>
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<table>
<thead>
<tr>
<th>Fall</th>
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</thead>
<tbody>
<tr>
<td>NUR 429</td>
<td>Community Based Nursing Care of Adults &amp; Families II</td>
<td>6</td>
</tr>
<tr>
<td>NUR 334</td>
<td>Community Based Nursing Care of Women and their Families</td>
<td>5</td>
</tr>
<tr>
<td>NUR 524</td>
<td>Community-Based Multicultural Psychiatric/Mental Health Nursing</td>
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<table>
<thead>
<tr>
<th>Spring</th>
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</tr>
</thead>
<tbody>
<tr>
<td>NUR 441</td>
<td>Professional Role Synthesis</td>
<td>7</td>
</tr>
<tr>
<td>NUR 630</td>
<td>Nursing Research</td>
<td>3</td>
</tr>
<tr>
<td>NUR 430</td>
<td>Community Based Nursing Care of Children and Families</td>
<td>6</td>
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<td>16</td>
</tr>
</tbody>
</table>

Required Nursing Coursework for RN/BSN Transition Track

<table>
<thead>
<tr>
<th>Semester 1</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>NUR 302</td>
<td>Professional Concepts</td>
<td>2</td>
</tr>
<tr>
<td>NUR 314</td>
<td>Health Assessment</td>
<td>3</td>
</tr>
<tr>
<td>NUR 316</td>
<td>Application of Professional Concepts</td>
<td>5</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>NUR 402</td>
<td>Issues in Clinical Nursing</td>
<td>2</td>
</tr>
<tr>
<td>NUR4000</td>
<td>Theories, Research and Evidence-Based Practice</td>
<td>3</td>
</tr>
<tr>
<td>NUR 420</td>
<td>Community Health Nursing</td>
<td>5</td>
</tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>NUR 404</td>
<td>Nursing Management and Leadership</td>
<td>3</td>
</tr>
<tr>
<td>NUR 426</td>
<td>Professional Nursing Role Synthesis</td>
<td>5</td>
</tr>
<tr>
<td>NUR Elective</td>
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<td>2</td>
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</tbody>
</table>

Note: Course descriptions will show credits, and clock hours will be shown in parentheses as follows: (classroom hours: clinical/labouratory hours). Ex. (2:6) shows two class hours and 6 clinical/labouratory hours each week.

Part-time study is available.

Nursing Course Listing

SCHOOL OF NURSING AND HEALTH STUDIES - UNDERGRADUATE HEALTH SCIENCE

DEPARTMENT CODE: NUR

The University of Miami School of Nursing and Health Studies offers courses leading to the degree of Bachelor of Science in Health Science. Baccalaureate education provides the foundation for further education in specialized health professional fields. Pre-professional
tracks include Pre-physical Therapy, Pre-pharmacy, Pre-forensics, Health Science/Business Administration, Pre-physician Assistant and Health Science General.

**ACADEMIC POLICIES**

**ADMISSION:**

In accepting students into the Health Science program, the University does not in any way assure admittance into any professional graduate programs. Admission to any of these programs is dependent upon the academic performance in the pre-clinical course-work and is determined independently by the faculty of the school or program involved.

Because of the increasingly sophisticated skills necessary in the health sciences, to be accepted into the program, entering freshmen must have a minimum SAT score of 1100 or an ACT score of 24. Transfer students must have a minimum cumulative grade point average of 3.0 for the pre-physical therapy track or a 2.8 for the other tracks. The program director may drop from, or refuse to accept into, the program any student who falls below these minimum cumulative grade point averages.

**READMISSION:**

Students who have not been enrolled at the University of Miami on a continuous basis should request readmission through the Office of Admissions well in advance of the date they intend to register. Students must fulfill the requirements that are in effect at the time of their readmission.

**REQUIREMENTS FOR ADMITTED STUDENTS:**

The Health Science major requires courses in biology, chemistry and health science with a minimum grade of C- in each course. Students must satisfy both the general degree requirements listed below and the requirements of a specific track, to be awarded the Bachelor of Science in Health Science degree. Students must maintain at least a 2.8 GPA in the courses listed under the track requirements with no grade below a C-.

**ACADEMIC PROGRAMS**

The Pre-Physical Therapy track is a program developed in conjunction with the Physical Therapy Program of the Department of Orthopaedics and Rehabilitation in the Miller School of Medicine. The School of Nursing and Health Studies will award a Bachelor of Science in Health Science after completion of the requirements listed below. The School of Medicine will award a Clinical Doctorate (DPT) upon completion of the requirements of the Department of Physical Therapy. These requirements may be found in the Graduate School Bulletin.

The Health Science Program also offers curricula that are designed to prepare students for other health professional or graduate education programs. This includes a health science major with a minor in sports medicine, exercise physiology or sports administration as well as a minor in business administration for students interested in health care management. Also available is a pre-pharmacy track for students wishing to attend a graduate pharmacy program, a pre-forensics track for students interested in attending a forensics graduate program, and a program of study for students wishing to enroll in a physician assistant program. Programs of study can also be tailored for students wishing other health
occupation options. Students are encouraged to contact graduate programs directly to ascertain if there are specific course requirements that might differ from health science track requirements. Any course requirements may be added to a student's undergraduate curriculum track.

Sixty hours of academic credit must be obtained at the University of Miami prior to the awarding of the Bachelors degree.

No minor is offered in Health Science. Health Science students may not minor in biology.

**GENERAL DEGREE REQUIREMENTS:**

1. **English Composition - 3-6 credits**

Except as indicated below, students must take English 105 and 106 (or its equivalent) during the first year of enrollment. Admission to ENG 105 requires a placement score acceptable to the Department of English. Students whose placement scores are deemed unacceptably low will be required to take the non-credit course, ENG 103, before taking ENG 105 and 106. Such students must fulfill the English Composition requirement within the first three semesters. Students whose placement scores are high may be exempted from ENG 105 but not from ENG 106 or its equivalent.

2. **Mathematics - 4 credits**
   
a. MTH 111 or equivalent

3. **Statistics and Computer Programming - 6-7 credits**
   
a. MTH 224 or PSY 204 (MAS 201 for Bus. Admin. Track)

   b. EEN 118, IEN 124, CSC 120, or CIS 120

4. **Arts and Humanities - 12 credits**

   B.S.H.S. degree candidates must earn twelve credits in the three areas listed below. At least three credits must be earned in each area.

   a. Fine Arts: courses in the departments of Art and Art History, Dance (DAN 250 only), Musicology (only the following: either MCY 131 or MCY 132, but not both, MCY 325, MCY 361 and MCY 362), Music Theory (MTC 125 only), and Theatre Arts (THA 101 only) count toward this requirement.

   b. Literature: courses in the departments of English (200-level and higher) and Foreign Languages and Literatures (300-level and higher) count toward this requirement.

   c. Philosophy and Religious Studies: courses in the departments of Philosophy and Religious Studies count toward this requirement.

   d. An additional 3 credits from a, b, or c above or 3 credits in a foreign language other than ones native language. A First Year Seminar in the Arts and Humanities (FFA 190-199) may count towards this requirement.

5. **(People and Society) Social Science - 6 credits**
B.S.H.S. degree candidates must earn six credits in the following social science disciplines: African-American Studies, American Studies, Anthropology (except APY 203), Economics, Geography and Regional Studies (except GEG 120), History, International Studies, a Judaic Studies Social Science course, Political Science, Psychology, Sociology, and Women’s Studies. No more than three credits may be earned in any one discipline.

A First Year Seminar in the Social Sciences (FSS 190-199 may count towards this requirement).

6. **Writing - 15 credits**
May include any of the courses listed above except ENG 105 and ENG 106.

**TRACK REQUIREMENTS:**

1. **Pre-Physical Therapy Track**
   Biology 150/151, 160/161, 250, 255 and three credits of electives in biology or health science above 100 level.
   Health Science 212, 213, 215
   Chemistry - two semesters with lab, must include 104/106 or 201/205.
   Physics - two semesters with lab.
   Psychology 203 or 352
   A minor in a discipline accepted by the School of Nursing and Health Studies.

2. **Pre-Pharmacy Track**
   Biology 150/151, 160/161, 250, 255 and three credits of electives in biology or health science above the 100 level.
   Health Science 212, 213, 215.
   Physics - two semesters with lab.
   Economics 211, 212.
   Biochemistry and Molecular Biology 401.
   Communication 211.
   (Transfer students who do not complete the chemistry minor at the University of Miami must choose another minor accepted by the School of Nursing and Health Studies.)

3. **Pre-Forensics Track**
   Biology 150/151, 160/161, 250, 255 and three credits of electives in biology or health science above the 100 level.
   Health Science 212, 213, 215, 221, and BIL 251 or BIL 252.
   Psychology 110 and 352.
   (Transfer students who do not complete the chemistry minor at the University of Miami must choose another minor accepted by the School of Nursing and Health Studies.)

4. **Health Science/Business Administration Track**
   Biology 150/151, 160/161, and 12 credits of electives in biology or health science above the 100 level.
   Health Science 212, 213, 215.
   Chemistry - two semesters with lab, must include 104/106 or 201/205.
   Physics - two semesters with lab.
   Business Administration minor including ACC 211, 212, CIS 120, MAS 201, MGT 304, MKT 301, and FIN 300.
5. Pre-Physicians Assistant Track
Biology 150/151, 160/161, 250, 255 and three credits of electives in biology or health science above the 100 level.
Health Science 212, 213, 215, 221.
Physics - two semesters with lab.
Microbiology 301.
Psychology 110 and 3 additional credits in PSY.
Sociology 101.
Communication 211.
(Transfer students who do not complete the chemistry minor at the University of Miami must choose another minor accepted by the School of Nursing and Health Studies.)

6. Health Science General Track
Biology 150/151, 160/161, 250, 255 and three credits of electives in biology or health science above 100 level.
Health Science 212, 213, 215.
Chemistry - two semesters with lab must include 104/106 or 201/205.
Physics - two semesters with lab.
A minor in a discipline accepted by the School of Nursing and Health Studies.
This program may be modified to meet the needs of various students. See the Program Director for more details.
All graduate work (except for the Masters degree in law) at the University of Miami is under the direction of the Dean of the Graduate School and the Graduate Council.

All graduate students at the University of Miami are subject to the general standards and requirements of the University and its various departments in regard to attendance, examinations, payment of fees, and conduct, as well as to the specific requirements of the Graduate School. The graduate student is expected to assume the initiative in completing all requirements in the time specified.

Admission requirements are described in the *Bulletin* of the Graduate School, and may be obtained from the Graduate School, 1541 Brescia Avenue. Information is also available on the Internet at: www.miami.edu/grad.

Application forms are distributed by and processed through the various Schools and Colleges.

Prospective students should note that “graduate study” means an integrated program of advanced, specialized study, based on an undergraduate major and/or adequate background, presupposing academic and personal maturity, and making much more than average demand upon the industry, initiative, and scholarship of the student. The term must be distinguished from “post-graduation study” which means merely that courses, not necessarily of graduate level, are taken after the student has received a bachelor’s degree.

To preserve its ideals of scholarship, conduct, and character the Graduate School reserves the right and the student by his/her registration concedes the right to require the withdrawal of any student for any reason deemed sufficient by the Graduate School at any time.

**MISSION**

The mission of the Graduate School is to promote graduate education, scholarship, and research; to support individuals, departments, and programs in the pursuit of excellence; to foster innovative, multidisciplinary, and interdisciplinary activities; and to maintain high ethical and academic standards in graduate studies.

The standards of study and conduct in the Graduate School are high. They are not set and maintained by the Graduate School but rather by the faculty who determine the standards for their individual departments. The Graduate School through its Council sets no course requirements for a degree. It does set certain general residence, grade and examination standards. Fundamentally the Graduate School delegates responsibility to the student and his/her Committee. Within this broad responsibility the recommendation for the degree rests with the Committee.

**ACADEMIC POLICIES**

**RECENCY OF CREDIT**

All work, including credit transferred from other institutions, must be completed within six years of the time of admission to graduate work, for those studying for the various master’s degrees; and within eight years for those studying for doctoral degrees.
VALIDATION FOR OVER-AGED CREDITS
Graduate credits may not be applied toward a graduate degree at the University of Miami, if their age at the time of award of a degree exceeds six years for the master’s degree or eight years for the doctorate. On an individual basis, students may be permitted to validate over-aged credits by examination, with departmental approval.

REGISTRATION
Registration is normally by appointment. Any student who has not received an appointment card prior to Fall or Spring registration should call his/her respective School or College.

Those holding assistantships, fellowships and scholarships will receive the necessary tuition authorizations during registration.

FULL-TIME STUDY
The categories of full-time students include:

a. Graduate students taking eighteen or more graduate credits during the calendar year (nine credits in a regular semester, or 3 credits in a summer session).
b. Graduate teaching and research assistants taking sixteen or more graduate credits during the calendar year (eight credits in regular semester or 3 credits in a summer session).
c. Graduate students enrolled in any course numbered 700 or above, i.e., any 700-level course required for the completion of the degree.
d. All MBA for Executives and Professionals students and Master of Science in Professional Management students are considered full-time.

In all cases, determination as to whether or not a student is in full-time study is the privilege of the Dean of the Graduate School.

The maximum number of credits allowed for full-time study is 12 for each semester and three for each summer session. Exception to this policy can only be made by the Dean of the Graduate School or his designee and requires a signed recommendation from the program advisor.

The number of credits for which a regular MBA student may enroll will be determined by current academic standing.

Full-time registration is necessary during the semester or summer session in which a candidate defends the thesis or dissertation.

No full-time faculty member may be a full-time student, whether or not working toward a degree. Nor may a full-time student be a full-time faculty member.

No full-time student will be a principal investigator in any grant or contract, whether in name or fact. And no principal investigator will be a full-time student.

Exceptions to these rules may be made in cases in which students are encouraged to apply individually for small research grants that are consistent with and contribute to their field of study and their dissertation work, and, in certain programs, in which students in a terminal degree status are obliged, as a part of their degree program, to teach as de facto faculty members.
WITHDRAWALS
Withdrawals, either from individual courses or from the Graduate School, should be processed through the office of the Dean of the School of the students program. The date of withdrawal is that on which the student notifies the office of the Dean or the date of receipt of a letter requesting withdrawal. No withdrawal from the University is official until the student has consulted with the Dean of his/her School and has completed the necessary forms.

Veterans and children of deceased or totally disabled veterans attending the University as students under the government’s educational benefits bills must also clear with the main campus Veterans Affairs office in the Whitten University Center, room 121.

To officially withdraw from the MBA Program for Executives and Professionals, the student must provide written notice to Graduate Business Programs of the intent to withdraw at least seven days prior to the beginning of any semester. The student agrees and understands that he/she is responsible for paying tuition for any semester for which an official withdrawal has not been made. The student is responsible for payment of tuition for the entire semester, even if only one class was attended. If the student continues to attend class after withdrawal, the student understands that he/she will be responsible for paying tuition. The student further understands that the University of Miami will cancel the debt owed for any semester and subsequent semesters for which the student has officially withdrawn. Regardless of any corporate tuition reimbursement plan, it is the student who is ultimately responsible for payment. No refunds are made for any reason. This withdrawal policy for MBA for Executives and Professionals Program students applies to tuition only. Any unearned Title IV financial aid (e.g. Stafford loans) awarded to an MBA for Executives and Professionals student will be refunded to the federal government in accordance with federal regulations. This may result in unpaid tuition due to the University as a result of the refund of unearned Title IV financial aid to the federal government. This policy supercedes any statement in the Graduate Bulletin regarding partial refunds of tuition.

GRADES AND CREDITS
The same letter grades are used for graduate and undergraduate students, but with somewhat different meaning.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent accomplishment</td>
</tr>
<tr>
<td>B</td>
<td>Good accomplishment</td>
</tr>
<tr>
<td>C</td>
<td>Fair, but below that expected of graduate students (C- is the lowest passing grade. Some programs may require higher standards.).</td>
</tr>
<tr>
<td>S</td>
<td>Symbol used for acceptable (U-unacceptable) thesis, dissertation, practicum, and internship credit. It may be used for regular courses under special circumstances with the prior approval of the instructor, department chairman, and the Dean of the Graduate School.</td>
</tr>
<tr>
<td>D</td>
<td>Poor (not acceptable for credit toward the advanced degree).</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
</tr>
<tr>
<td>W</td>
<td>Course dropped by permission of the Dean of the Graduate School prior to the last day for withdrawing from classes as published in the official calendar of the university. Credit can be earned only by successful repetition of the course.</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete work in passing status with the instructor’s permission to complete the course. (Not to be used for thesis or dissertation credits). The “I” should be changed to a letter grade within one (1) calendar year after it is given, unless the Academic Dean of the student’s primary school or college and the Dean of the Graduate School approve the delay. If the “I” is not changed within one year, credit can be earned</td>
</tr>
</tbody>
</table>
only by successful repetition of the course. (Note: Fellowships and financial aid may be withdrawn if there is an excess accumulation of “I”s on a student’s transcript).

**IP** Denotes in progress grade given by instructor for any course (500G, 600, or 700 level) in which a student has made expected or clearly satisfactory progress during the semester, but has yet fully to complete requirements for the course. “IP” is to be given for 700-level internships, research, thesis, and dissertation courses that have not been completed. Upon satisfaction of all Graduate School requirements, the Dissertation Coordinator of the Graduate School will issue final credit for all master’s thesis and doctoral dissertation courses (e.g., 710, 720, 730, 735, 740 and 750). Zero-credit courses (e.g., 720 and 750) will be changed to S. Please note that all “IP”s must be converted to “S”, letter grade, or “I” at graduation. “IP” will also be converted to “I” upon any departure from the University for a period in excess of one year.

**NG** Symbol assigned by Enrollment Services indicating that the instructor has not yet reported the student’s grade. For a student to receive credit for the course, the instructor must report a passing grade prior to the student’s graduation.*

* Faculty Senate Legislation #85005(B)

An average of B (3.0) is required for a graduate degree, and no “D” credit may be counted toward the degree. All work leading to the graduate degree and taken as a graduate student will be counted in computing the quality point average, including courses graded “D”.

No transferred credits are calculated into the University of Miami G.P.A.

**AWARD OF ACADEMIC MERIT**
Students who obtain a 3.8 GPA or better will receive an Award of Academic Merit from the Graduate School when they graduate.

| Quality points awarded as follows: |
|---|---|
| **A+** | 4.00 |
| **A** | 4.00 |
| **A-** | 3.70 |
| **B+** | 3.30 |
| **B** | 3.00 |
| **B-** | 2.70 |
| **C+** | 2.30 |
| **C** | 2.00 |
| **C-** | 1.70 |
| **D+** | 0.00 |
| **D** | 0.00 |
| **E** | 0.00 |

The quality point average is then determined by dividing the total of quality points earned by the total of credits attempted. The symbols “S”, “W”, and “I” are not counted as credit attempted.

**REPEAT RULE**

A student may repeat a course in which a failing grade was earned, but the repetition of the course will not eliminate the previous grade from the record. A course may be repeated only once unless written authorization is provided by the Dean of the Graduate School. All grades are included in the computation of the quality point average. If a course in which an
unsatisfactory grade (as determined by the program advisor) was earned is repeated and
the repeat grade is a “C-” or higher, the number of credits required for graduation will be
increased by the number of credits repeated.

Registrations which involve repeating a course in which a grade of “A” or “B” has already
been earned may not earn quality points or credit hours, nor count as credits attempted.

LEVELS OF GRADUATE STUDY
Graduate study implies the need for a minimum of formal courses and a maximum of
independent work under wise supervision. Course work, in itself, is an inappropriate
determinant of graduate progress and achievement. The appropriate determinants are the
ability of the qualified student to master the various qualifying and comprehensive
examinations that a program requires of the student. That is, not an accumulation of
courses, but satisfactory progress through stages of achievement are the mark of a
successful graduate career. All work taken by a graduate student in the major area or area
of concentration shall be at the graduate level (500 or above). With the permission of the
major department or program of major concentration a student may take elective credits
(not prerequisite to the major) at any level provided the following limits are observed:

<table>
<thead>
<tr>
<th>TOTAL GRADUATE COURSE CREDITS</th>
<th>MAXIMUM COURSE CREDITS BELOW 500 LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-30</td>
<td>3</td>
</tr>
<tr>
<td>31 or above</td>
<td>6</td>
</tr>
</tbody>
</table>

Approval for undergraduate credits as part of the graduate degree program must be made
after admission to degree status. Award is not made retroactively, nor are credits accepted
from another institution.

GA, RA, TA Hourly Guidelines

Graduate Students with appointments as GAs, RAs, or TAs will have work assignments
limited to 20-hours per week with the exception of efforts directly required for dissertation
research.

International students may work on campus provided the student is maintaining F1 status
and does not work more than a total of 20 hours per week (including any off campus work
the student may have been authorized to perform) while school is in session.

Graduate students with Assistantships and Fellowships will be classified with the
following designations. *(GA) Graduate Assistant, *(RA) Research Assistant,
*(TA) Teaching Assistant, *(TR) Trainees *(FE) Fellows.  * Please contact the
Graduate School for specific codes.

Definitions:

FE (Fellow): Responsibilities do not include the provision of direct services to the University
and require internal/external fellowship support.
GA (Graduate Assistant): Responsibilities are mainly administrative in support of University
operations and programs.

RA (Research Assistant): Responsibilities are mainly conducting research and/or assisting
with research projects.
TA (Teaching Assistant): Responsibilities are mainly teaching and/or assisting in the area of teaching.

TR (Trainee): Designated as such by specific federal guidelines which indicate a complex process wherein the trainee takes on an increasingly independent role in the selection, conceptualization, and execution of research projects under the supervision of an experienced mentor.

In definitions where the word “mainly” is used, “mainly” is defined as greater than 50%.

Requirements for Teaching Assistants

1. Graduate teaching assistants who are the instructors of record and responsible for assigning grades in a course must have a master’s in the teaching discipline or 18 graduate credit hours in the discipline.

2. Graduate teaching assistants must be directly supervised by a faculty member in the teaching discipline, must attend regular in-service training provided by the Instructional Advancement Center (in coordination with the Graduate School), and must be reviewed by the supervising faculty member once a semester.

3. Graduate Teaching Assistants who have previous teaching experience and indication of competency may be exempted from TA Training by the Dean of the Graduate School in consultation with the Graduate Program Director in the discipline. A request for waiver must be submitted to the Dean of the Graduate School by the Graduate Program Director.

GRADUATION

It is the responsibility of the student to apply for graduation either during registration for the final semester or before the date indicated on the Graduate School calendar and the Schedule of Classes. Students who previously applied for a diploma but did not receive the degree must repeat the application procedure.

Graduation ceremonies are held in May and December only. Those completing degree requirements during the Fall, Spring or Summer sessions may, if they wish, participate in the graduation ceremonies of the previous or following May or December. Students receiving a Ph.D., D.M.A., D.A., or Ed.D. degree that are participating in the hooding ceremony and all masters marching in the graduation ceremony must have the approval of the graduate advisor, director, or appropriate person in the department/school to participate in the ceremonies.

Participation in graduation for students in all graduate programs is contingent upon the following:

1. The student must have a minimum of 3.00 cumulative grade point average;
2. The student must be admitted to candidacy one semester prior to graduation;
3. The student may not have any outstanding debt including, but not limited to, tuition, fines, and fees. Tuition for the last semester of study must be paid in full by the beginning of the final semester.
CLASS ATTENDANCE AND ABSENCES (GRADUATE STUDIES)
Regular and punctual class attendance is vital for all students. It is the student’s responsibility to know the instructor’s policies regarding examinations, penalties for absences, and late or missed work.

V.A. students will be provided a grade report at the end of each semester period. A copy of the report will be placed in the student’s permanent file maintained by the Veteran Affairs Office.

Because of the far-reaching effects of these revisions in the V.A. educational benefits program, it is suggested that you exercise care and judgment in your program planning and in the selection of your courses.

STUDENT RESPONSIBILITY

Standards of study and conduct in the Graduate School are set and maintained, not by fiat of the Graduate School, but rather by the faculty who determine the standards. The Graduate School through its Council sets no course requirements for a degree except in the case of Interdepartmental Studies in the Graduate School. It does set certain general residence, grade and examination standards. Fundamentally the Graduate School devolves responsibility upon the student and the appointed Committee. Within this broad responsibility the recommendation for the degree rests with the Committee.

All graduate students at the University of Miami are subject to the general standards and requirements of the University and its various departments in regard to attendance, examinations, payment of fees, and conduct, as well as to the specific requirements of the Graduate School. The graduate student is expected to assume the initiative in completing all requirements at the time specified.

Prospective students should note that graduate study means an integrated program of advanced, specialized study, based on an undergraduate major and/or other adequate background, presupposing academic and personal maturity, and making much more than average demand upon the industry, initiative, and scholarship of the student. The term must be distinguished from post-graduation study that means merely that courses, not necessarily of graduate level, are taken after the student has received a bachelor’s degree.

To preserve its ideals of scholarship, conduct, and character, the Graduate School reserves the right and the student by his/her registration concedes the right to require the withdrawal of any student for any reason deemed sufficient by the Graduate School at any time.

It is the responsibility of the student to be informed concerning all regulations and procedures required. In no case will a regulation be waived or an exception granted because a student pleads ignorance of the regulation or asserts that he/she was not informed of it by an advisor or other authority. The student should become especially familiar with the Bulletin, including:

1. the section presenting the requirements for the degree to be undertaken, and

2. the offerings and requirements of the major department.
After the applicant has been admitted to the Graduate School but before the first registration, the student should consult the school or college and department in which the major work will be done concerning course requirements, deficiencies, if any, the planning of a program, special regulations, etc. Departments may have degree requirements that are not listed in this Bulletin. All registrations require the signature of the dean of the school or college (or his/her representative) in which the degree is to be awarded.

Only the Council of the Graduate School may waive requirements stated in this Bulletin.

GRADUATE STUDENT CODE OF ETHICS

Graduate students agree to abide by the Graduate Student Honor Code.

The University of Miami expects all graduate students to adhere to the highest standards of ethics and academic integrity. All forms of academic fraud are strictly prohibited. These include, but are not limited to, plagiarism, cheating, collusion, falsification, violation of professional ethics or misrepresentation of research data. Students certify that all work (whether an examination, dissertation, thesis, research paper, research project, form of creative expression, experimental data, or any other academic undertaking) submitted for evaluation, presentation, or publication meets these standards. Additionally, graduate students are expected to respect and appreciate the diversity of the community and to respect the rights of others, be they property, privacy, opinion, or expression. Students found to be in violation of these standards are subject to disciplinary actions by the students department and/or the Graduate School through the process described in the Graduate Student Honor Code.

DISCIPLINARY AND GRIEVANCE PROCEDURES FOR GRADUATE STUDENTS

All graduate students are bound by the rules and regulations of the University of Miami that apply to them.

Two types of procedures exist: Academic and Nonacademic. Procedures for handling disciplinary and grievance matters are well established. Further information may be obtained from the Office of the Graduate School.

ELIGIBILITY FOR ADMISSION

In addition to holding the baccalaureate degree from an institution accredited by a regional accrediting body, the applicant for admission to the Graduate School should have an undergraduate major, or the approximate equivalent, in the field in which graduate work is to be undertaken. In general, those applying for Graduate admission should have achieved an overall average grade of "B" or better (3.0 G.P.A. on a 4.0 scale) for the junior and senior years. Foreign students will be required to give evidence of adequate knowledge of English. University of Miami faculty members above the rank of instructor are not eligible to apply for the doctorate at the University of Miami.

For specific admission requirements see also statements of the various departments and colleges.
ADMISSION

Admission of a student to the University of Miami for any semester does not imply that such student will be re-enrolled in any succeeding academic semesters.

All those wishing to take courses for graduate credit, whether or not they wish to become candidates for a degree, must make application for admission directly to the department of interest prior to registration. The applicant’s file includes:

1. The completed application form;
2. official transcripts of all college work, both undergraduate and graduate, previously taken;
3. the official score report of the appropriate entrance examination
   a. all applicants must submit recent (within five years) Graduate Record Examination scores which include the aptitude portion, as well as the most relevant advanced test in the major field if required by the department; it is a Graduate School guideline that a minimum score of 1000 for the verbal and quantitative portion of the GRE be achieved. (Students who already have a graduate degree in the same or in a related area are not required to take the Graduate Record Examination unless it is required by the department.)
   b. applicants for the Master of Business Administration, the Master of Professional Accounting, the Master of Science in Management Science (Operations Research/Applied Statistics), Computer Information Systems, or Taxation must submit the Graduate Management Admissions Test (GMAT) scores;
   c. international applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL) and the Graduate Record Examination;
4. letters of recommendation sent directly to the graduate studies chairman of the academic department;
5. other requirements as may be described by the individual departments;
6. application fee of $50.00 and;
7. all materials and the fee should be sent directly to the School or academic department as indicated on the application.

Materials submitted in support of an application cannot be released for other purposes nor returned to the applicant.

THE GRADUATE RECORD EXAMINATION

All applicants for admission to the Graduate School (except Masters students in Applied Music, Liberal Studies and Studio Art) are required to take the Aptitude Test (as well as the GRE with the analytical writing and/or Advanced Test appropriate to their graduate objective if required by the department) prior to admission and to present the scores as a part of the application file. Exceptions to be those entering with a Master’s degree should have attained a minimum “B” average (3.0 G.P.A. on a 4.0 scale) during their Master’s degree studies. Noted are:
1. Students applying to the following Business programs that require the Graduate Management Admissions Test (GMAT): Master of Business Administration, the Master of Professional Accounting, the Master of Science in Taxation, the Master of Science in Management Science (Operations Research/Applied Statistics) and the Master of Science in Computer Information Systems.
2. Students in good standing in some other accredited Graduate School who wish to take one or more courses for transfer to that other school.
3. Exceptionally qualified students who apply to take the examination too late to present scores in their application. These may be registered but will be required to take the GRE within the first semester of enrollment.
4. Students in Post-Baccalaureate status.
5. Students who already have a graduate degree in the same or in a related area from a regionally accredited institution or/and certified by the Office of International Admissions.

Information about the examination may be secured by writing to the Educational Testing Service, P. O. Box 6000, Princeton, N.J. 08541-6000 or visit the GRE website at www.gre.org for updated information. Scores must be sent directly from The Educational Testing Service (ETS) to the appropriate School, College or to the central Graduate School Office at the University of Miami. The University of Miami Institution Code is #5815.

GRADUATE MANAGEMENT ADMISSIONS TEST
All applicants for admission to the Master of Business Administration, the Master of Professional Accounting, Master of Science in Management Science (Operations Research/Applied Statistics), Master of Science in Taxation, and the Master of Science in Computer Information Systems programs must take the GMAT examination prior to admission and present the report as part of the application file. You may schedule a test date by calling 1-800-462-8669. For additional information please refer to the GMAT Website at http://www.gmat.org or visit the Graduate Business Recruiting and Admissions Office located in 221 Jenkins Building to obtain a GMAT bulletin.

CATEGORIES OF ADMISSION
1. Regular admission with or without specified deficiencies. Under circumstances in which it is difficult to evaluate the academic background of intellectually qualified applicants, they may be admitted with specified deficiencies. Such status is often appropriate for foreign students. Only one semester or one summer session of study in deficiency status is permitted and the student who fails to qualify at the end of that time will be requested to withdraw from the Graduate School.
2. Post Baccalaureate. This category provides an opportunity for graduate study for
   a. qualified applicants who, for good reason, do not wish to work toward an advanced degree. This would be appropriate for those students who have special objectives for professional study or scholarly work;
   b. students enrolled in a graduate program elsewhere but desiring to earn graduate credit at Miami for the purpose of transferring it to the other institution;
   c. students already holding the master’s degree or doctorate but who desire additional course work in their field.
Those admitted to a post-baccalaureate status should realize that their future admission to regular status is improbable unless they achieve the qualifications originally appropriate to admission to those categories. This is to say that the mere accumulation of graduate course credits is not sufficient to permit entrance into another graduate category. No more than a total of twelve (12) credit hours may be taken while in post-baccalaureate status.

Transient students described in (b) above should have sent to the Graduate Office a letter from the dean of the graduate school at which they expect to earn a degree, stating that they are in good standing there and have permission to transfer credit. If possible, this letter should indicate specific courses to be taken. The students described in (c) above should have a transcript showing their most recent graduate work and graduate degree [to be sent directly by the issuing institution to the Graduate Office]. NOTE: Graduate Business Programs permits enrollment of transient students on a space availability basis.

3. Certification/Professional Goals. This category provides an opportunity for graduate study for qualified teachers or professionals who do not wish to work toward an advanced degree but who for professional reasons need to continue to take graduate courses and have already taken 12 credits in Post-Baccalaureate Status. No credit taken in this status can be applied toward a graduate degree at the University. A letter explaining the need for the course work by the student’s employer must accompany the application.

Every applicant for admission can be assured that all credentials will be carefully studied in an effort to select appropriately qualified students. Each application for admission is examined by the members of the faculty responsible for the graduate program. The department or program informs each applicant of the results.

It is expected that most applicants for admission will be candidates for an advanced degree. Except under unusual circumstances those who already hold an advanced degree are not admitted to candidacy for the same degree. The several fields of the Graduate School vary as to whether students who do not hold the Masters degree are required to initiate graduate studies at that level; the faculties in some fields wish their students to do this.

Applicants should note the following:
1. M.B.A. applicants should send applications and all documents to the Vice Dean of the School of Business Administration; P.O. Box 248505, Coral Gables, FL 33124;
2. all other correspondence, applications and documents should be sent directly to the academic department;
3. no action is taken until a file is complete and all documents are available;
4. application files should be complete at least one month before registration, much earlier for some applications, as specified elsewhere in this Bulletin;
5. admission to graduate status does not imply admission to candidacy for a degree.
6. some departments close admissions early because of limited capacity;
7. materials submitted in support of an application are not released for other purposes and cannot be returned to the applicant.

FOR UNIVERSITY OF MIAMI UNDERGRADUATES ONLY

Senior-Graduate Status. University of Miami undergraduates within 30 credits of meeting the requirements for the Baccalaureate Degree may be considered for concurrent admission to graduate study in non-degree senior-graduate status, and in this status may take and receive credit for graduate courses, while completing the requirement for the baccalaureate.

Admission to Senior-Graduate Status requires:
1. an academic record strong enough to justify regular admission to the department concerned on the basis of the academic record alone (at least 3.0 GPA);
2. the submission of a special form (which can be obtained at the Graduate School) which will not require the fifty dollar ($50.00) application fee;
3. the written approval of the Chairman of the Department, the Dean of the Undergraduate School or College, and of the Graduate Dean prior to registration on the special form.

Admission to Senior-Graduate status does not automatically admit the student, upon graduation, to status as an applicant for a graduate degree at the University of Miami.

The graduate credits earned may NOT be used to meet undergraduate graduation requirements or be used to meet the 120 credit hour requirements at the University of Miami.

No more than six (6) hours credit may be taken in one semester, and no more than a total of twelve (12) hours credit may be taken while in Senior-Graduate Status. Students may take no more than 13 credits of combined undergraduate and graduate courses per semester.

Students electing Senior Graduate status must register and be processed centrally at the Registration Office, University Center.

READMISSION

Students who have not been continuously enrolled for regular sessions must request readmission. Contact the appropriate departmental office well in advance of registration. If additional college work has been completed elsewhere since the last enrollment at the University of Miami, an official transcript of this will be required.

DEGREE PROGRAMS

All students registering in the Graduate School work toward a specific degree in a specific subject. Degree programs in traditional subjects are administered by the traditional subdivisions of the faculty and their departments. Degree programs and subjects, for which no department has been established, or for subjects which bridge existing departments, are administered by standing committees of the faculty under the supervision of the Graduate Council. The following table lists the graduate degree programs and concentrations offered. Full details on these programs will be found under the heading “Departments, Programs and Courses of the Graduate School.”

The University of Miami offers majors leading to graduate degrees as follows:

- **MASTER OF ARCHITECTURE (M. Arch.)**
- **MASTER OF ARCHITECTURE IN SUBURB AND TOWN DESIGN (M.Arch.S.T.)**
- **MASTER OF ARCHITECTURE IN COMPUTING (M.Arch.C.)**
- **MASTER OF ARTS (M.A.)** with concentrations in the following:
  - Art History
  - Communication
  - Communication Studies
  - Geography and Regional Studies
  - History
  - International Administration
<table>
<thead>
<tr>
<th>Film Studies</th>
<th>International Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television Broadcast and Print Journalism</td>
<td>Latin American Studies</td>
</tr>
<tr>
<td>Public Relations</td>
<td>Marine Affairs and Policy</td>
</tr>
<tr>
<td>Spanish Language in Journalism</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Economics</td>
<td>Philosophy</td>
</tr>
<tr>
<td>English</td>
<td>Sociology</td>
</tr>
</tbody>
</table>

**MASTER OF ARTS IN LIBERAL STUDIES (M.A.L.S.)**

**MASTER OF BUSINESS ADMINISTRATION (MBA)**

**MASTER OF SCIENCE IN EDUCATION (M.S.Ed.)** with concentrations in the following:

<table>
<thead>
<tr>
<th>Early Childhood Special Education</th>
<th>Prekindergarten/Primary Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary Education</td>
<td>Reading/Learning Disabilities</td>
</tr>
<tr>
<td>Emotional Handicaps/Learning Disabilities</td>
<td>Research and Evaluation</td>
</tr>
<tr>
<td>Exercise Physiology</td>
<td>Sports Administration (Focus athletics or recreational sports)</td>
</tr>
<tr>
<td>Higher Education/Enrollment Management</td>
<td>Sports Medicine</td>
</tr>
<tr>
<td>Marriage and Family Therapy</td>
<td>Teaching English to Speakers of Other Languages</td>
</tr>
<tr>
<td>Mental Health Counseling</td>
<td></td>
</tr>
</tbody>
</table>

**MASTER OF FINE ARTS (M.F.A.)** with concentrations in the following:

<table>
<thead>
<tr>
<th>Art (Studio Work)</th>
<th>Motion Pictures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Writing</td>
<td>Production</td>
</tr>
<tr>
<td></td>
<td>Producing</td>
</tr>
<tr>
<td></td>
<td>Screenwriting</td>
</tr>
</tbody>
</table>

**MASTER OF MUSIC (M.M.)** with concentrations in the following:

<table>
<thead>
<tr>
<th>Accompanying and Chamber Music</th>
<th>Multiple Woodwinds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choral Conducting</td>
<td>Music Business and Entertainment Industries</td>
</tr>
<tr>
<td>Composition</td>
<td>Piano Performance</td>
</tr>
<tr>
<td>Electronic Music</td>
<td>Music Education</td>
</tr>
<tr>
<td>Instrumental Conducting</td>
<td>Music Theory</td>
</tr>
<tr>
<td>Instrumental Performance</td>
<td>Music Therapy</td>
</tr>
<tr>
<td>Jazz Pedagogy</td>
<td>Musicology</td>
</tr>
<tr>
<td>Jazz Performance</td>
<td>Performance</td>
</tr>
<tr>
<td>Keyboard Performance and Pedagogy</td>
<td>Studio Jazz Writing</td>
</tr>
<tr>
<td>Media Writing and Production</td>
<td>Vocal Performance</td>
</tr>
</tbody>
</table>

**MASTER OF SCIENCE (M.S.)** with concentrations in the following:

<table>
<thead>
<tr>
<th>Applied Marine Physics</th>
<th>Marine Biology and Fisheries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>Marine Geology and Geophysics</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Marine and Atmospheric Chemistry</td>
</tr>
<tr>
<td>Computer Information Systems</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Meteorology and Physical</td>
</tr>
<tr>
<td>Engineering</td>
<td>Oceanography</td>
</tr>
<tr>
<td>*Environmental Health and Safety</td>
<td>*Occupational Ergonomics and Safety</td>
</tr>
<tr>
<td>*Information Technology</td>
<td>Physics</td>
</tr>
<tr>
<td>*Management of Technology</td>
<td>Professional Management</td>
</tr>
<tr>
<td>Management Science</td>
<td>Psychology</td>
</tr>
<tr>
<td>Marine Affairs and Policy</td>
<td>*Quality Management</td>
</tr>
<tr>
<td></td>
<td>*Statistics</td>
</tr>
</tbody>
</table>

*Concentrations under Interdepartmental Studies*
• MASTER OF SCIENCE IN ARCHITECTURAL ENGINEERING (M.S.A.E.)
• MASTER OF SCIENCE IN BIOMEDICAL ENGINEERING (M.S.B.E.)
• MASTER OF SCIENCE IN CIVIL ENGINEERING (M.S.C.E.)
• MASTER OF SCIENCE IN ELECTRICAL AND COMPUTER ENGINEERING (M.S.E.C.E.)
• MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING (M.S.I.E.)
• MASTER OF SCIENCE IN MECHANICAL ENGINEERING (M.S.M.E.)
• MASTER OF SCIENCE IN MUSIC ENGINEERING TECHNOLOGY (M.S.M.E.T.)
• MASTER OF SCIENCE IN NURSING (M.S.N.)
• MASTER OF PROFESSIONAL ACCOUNTING (M.P.Acc.)
• MASTER OF SCIENCE IN TAXATION (M.S.Tax.)
• MASTER OF PUBLIC ADMINISTRATION (M.P.A.)
• MASTER OF PUBLIC HEALTH (M.P.H.)

• SPECIALIST IN EDUCATION (Ed.S.) with concentrations in the following:
  | Early Childhood Special Education | Prekindergarten/Primary Education |
  | Elementary Education              | Reading and Learning Disabilities |
  | Emotional Handicaps/Learning Disabilities | Teaching English to Speakers of Other Languages (TESOL) |

• SPECIALIST IN MUSIC EDUCATION (SPEC.M.)

• DOCTOR OF ARTS (D.A.) with concentrations in the following:
  | Mathematics | Physics |
  | Mechanical Engineering |

• DOCTOR OF MUSICAL ARTS (D.M.A.) with concentrations in the following:
  | Accompanying and Chamber Music | Keyboard Performance and Pedagogy |
  | Choral Conducting              | Multiple Woodwinds |
  | Composition                    | Performance (Applied Music) |
  | Instrumental Conducting        | Jazz Performance |
  | Jazz Composition               |

• DOCTOR OF PHYSICAL THERAPY (D.P.T.)

• DOCTOR OF PHILOSOPHY (Ph.D.) with concentrations in the following:
  | Applied Marine Physics | History |
  | Biochemistry and Molecular Biology | Industrial Engineering |
  | Biomedical Engineering | Interdepartmental Studies |
  | Chemistry | International Studies |
  | Civil Engineering | Marine and Atmospheric Chemistry |
  | Communication | Marine Biology and Fisheries |
  | Counseling Psychology | Marine Geology and Geophysics |
  | Economics | Mathematics |
  | Educational Research | Mechanical Engineering |
  | Electrical and Computer Engineering | Meteorology and Physical |
  | English | Oceanography |
  | Epidemiology | Microbiology and Immunology |
  | Ergonomics | Molecular and Cellular Pharmacology |
  | French | Molecular Cell and Developmental |
  | Geography and Regional Studies | Biology |
  | Music Education | Nursing |
  | Neuroscience | Philosophy |
  | | Physical Therapy |
  | | Physics |
  | | Physiology and Biophysics |
  | | Psychology |
  | | Research and |
  | | Evaluation/Exercise |
  | | Physiology |
  | | Sociology |
  | | Spanish |
  | | Teaching and Learning |
  | | Reading |
  | | Special Education |
  | | Teaching English to |
  | | Speakers of Other |
  | | Languages |
INTERDISCIPLINARY AND INTERDEPARTMENTAL PROGRAMS

INTERDEPARTMENTAL GRADUATE STUDIES - Dept. Code: IDS

Advances in knowledge and an increasing concern for society with its complex needs have led researchers into areas that can no longer be encompassed by a single academic discipline. There is an increased tendency for faculty and students from different disciplines to work together in a variety of laboratories, departments and centers that cut across disciplinary lines.

In order to facilitate such interaction, highly qualified students may pursue a privileged course of graduate studies. The program is designed for the truly exceptional student, is built around the student, and brings together the particular interests of two or more disciplines. The ultimate goal is to develop a researcher who is neither over-specialized nor under-educated.

THE PH.D. PROGRAM IN INTERDEPARTMENTAL GRADUATE STUDIES

Applications for admission to the program by students wishing to be considered for University fellowships must be completed by November 15th.

- A Subcommittee of the Graduate School will review all proposals for admission.
- Final approval for admission to the program will be given by the Dean of the Graduate School on recommendation of the Subcommittee.
- The student’s program will be directed by a committee appointed by the Dean of the Graduate School in consultation with the student and his/her advisor.
- The curriculum, examination and dissertation requirements must conform to those set forth under general requirements for the Ph.D. degree.
- Additionally, the course work must have the overall character of an in-depth program, i.e., the major amount of course work must be in departments which have been authorized to offer the Ph.D. degree.
- The student, with an advisor and four other faculty members must submit an individualized program to the Dean of the Graduate School for review and approval or disapproval by the Graduate Council.
- The composition of the students committee and its actions will be reported to the Graduate Council by the Dean of the Graduate School.

For further information, contact the Graduate School at 284-4154.

ENVIRONMENTAL HEALTH AND SAFETY

An interdepartmental program leading to an M.S. degree in Environmental/Occupational Health and Safety is offered through a cooperative arrangement between the Department of Epidemiology and Public Health and the Department of Industrial Engineering.

The interdepartmental program provides graduate level study to qualified students who are interested in one or more areas of Environmental or Occupational Health and Safety, such as

- Occupational Safety,
- Industrial Hygiene,
Industrial Toxicology,
Environmental and/or Public Health,
Epidemiology,
Biostatistics,
Ergonomics,
Occupational and Preventive Medicine.

The program consists of core courses which are supplemented by appropriate electives in an area of concentration or emphasis.

- The core of 18 credits is chosen from the following (or equivalent as approved by the program committee):

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPH 501: Medical Biostatistics I (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>EPH 521: Fundamentals of Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>IEN 551: Accident Prevention Systems</td>
<td>3</td>
</tr>
<tr>
<td>IEN 558: Industrial Hygiene I</td>
<td>3</td>
</tr>
<tr>
<td>IEN 559: Industrial Hygiene II</td>
<td>3</td>
</tr>
<tr>
<td>IEN 557: Ergonomics and Human Factors Engineering</td>
<td>3</td>
</tr>
<tr>
<td>IEN 657: Ergonomics and Occupational Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>EPH: Epidemiology and Public Health Elective</td>
<td></td>
</tr>
<tr>
<td>IEN 658: Ergonomics and Special Populations</td>
<td>3</td>
</tr>
</tbody>
</table>

A thesis and a non-thesis option are available.

- The non-thesis option consists of the core requirement plus 18 credits chosen from elective courses approved by a standing program committee.
- The thesis option consists of the core requirement, credits chosen from elective courses, and six credits for the Masters thesis.

For further information, contact the Department of Industrial Engineering at 284-2344.

**MASTER OF SCIENCE OCCUPATIONAL ERGONOMICS AND SAFETY**

**OBJECTIVE**

- The objective of the program is to prepare engineers and occupational safety and health specialists to meet the changing demands of industry, government, and service organizations, such as insurance and utility industries.
- The curriculum is designed to meet both the immediate and long-term needs of these organizations in the areas of workplace and job design, safety, and accident prevention.
- A unique feature of the training program is the emphasis on the holistic approach for injury and disability prevention.
- The holistic approach involves primary prevention, application of ergonomic and safety principles to job and workplace design, secondary prevention, rehabilitation, functional restoration and quick return to gainful employment, and tertiary prevention, re-engineering of the work environment to deter re-injuries and match the workers’ residual abilities.
ADMISSION AND PROGRAM REQUIREMENTS

- This non-thesis program will include 33 semester credit hours of course work in the areas of ergonomics and safety and 3 hours of independent research project or internship in an industrial or health care related facility.
- Research areas will include musculoskeletal injuries, occupational stress, automation, and design for older workers and special populations.
- Applicants are required to hold a Bachelor of Science degree in engineering, psychology, or health related fields such as environmental health or physical therapy.
- Applicants must meet the regular admissions criteria of the Graduate School, which includes a 3.0 CGPA and a minimum score of 1000 on the verbal and quantitative portion of the GRE.

MINIMUM PREREQUISITES FOR STUDENTS WITH NON-ENGINEERING BACKGROUND

<table>
<thead>
<tr>
<th>Chemistry</th>
<th>Physics or Statics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculus</td>
<td>Probability and Statistics</td>
</tr>
<tr>
<td>Fundamentals of Industrial Safety Engineering (required of all students)</td>
<td></td>
</tr>
</tbody>
</table>

- (IEN 351 - Industrial Safety Engineering, can be used for graduate credits if not part of undergraduate requirements)

FINANCIAL ASSISTANCE

- Internships are available through the Department of Industrial Engineering.

CORE COURSES

<table>
<thead>
<tr>
<th>IEN 551</th>
<th>Accident Prevention Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEN 651</td>
<td>System Safety Engineering</td>
</tr>
<tr>
<td>IEN 558</td>
<td>Industrial Hygiene I</td>
</tr>
<tr>
<td>IEN 559</td>
<td>Industrial Hygiene II</td>
</tr>
<tr>
<td>IEN 557</td>
<td>Ergonomics and Human Factors Engineering</td>
</tr>
<tr>
<td>IEN 657</td>
<td>Ergonomics and Occupational Biomechanics</td>
</tr>
<tr>
<td>IEN 612</td>
<td>Design of Experiments</td>
</tr>
<tr>
<td>EPH 521</td>
<td>Fundamentals of Epidemiology</td>
</tr>
<tr>
<td>IEN 694</td>
<td>Masters Project (Internship)</td>
</tr>
</tbody>
</table>

ELECTIVES (9 CREDITS REQUIRED)

Suggested List of Electives:

<table>
<thead>
<tr>
<th>IEN 656</th>
<th>Human Information Processing and System Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEN 658</td>
<td>Ergonomics and Special Populations</td>
</tr>
<tr>
<td>IEN 659</td>
<td>Work Physiology</td>
</tr>
<tr>
<td>EPH 541</td>
<td>Integrated Aspects of Environmental Health</td>
</tr>
<tr>
<td>PSY 634</td>
<td>Program Evaluation</td>
</tr>
<tr>
<td>IEN 572</td>
<td>Management of Technology</td>
</tr>
<tr>
<td>MGT 651</td>
<td>Behavioral and Organizational Systems</td>
</tr>
<tr>
<td>MGT 602</td>
<td>Human Resource Management</td>
</tr>
</tbody>
</table>

- (Note: All courses are 3 credit hours unless otherwise indicated)

For further information, contact the Department of Industrial Engineering at 284-2344.
UM INTERNATIONAL EDUCATION AND EXCHANGE PROGRAMS - Dept. Code: SAP
Opportunities for study abroad may be available for some graduate degree programs. The particular courses must be developed by the student and the department in which the degree is to be earned.

Normally master’s students may only apply six credits of work not taken at the University of Miami to their degree.

For further information contact: UM International Education and Exchange Programs, PO Box 248005, Coral Gables, FL 33124-1610, (305) 284-3434, e-mail: ieep@miami.edu.

In some departments it is possible to earn graduate credits for study taken abroad. Curriculum must be worked out by the student in conjunction with an advisor.

MANAGEMENT OF TECHNOLOGY (MOT)
Enlargement of the world-wide manufacturing base now includes countries other than western industrial countries, resulting in increased competition for both domestic and international markets.

This shift in manufacturing capabilities, and the speed and scope of change in technological innovations, has brought technology and the management of technology to the center of world-wide attention.

It is now generally agreed that competitive power in world markets depends largely upon timely identification of technological opportunities, their integration into operations and subsequent transfer into the marketplace.

In order to survive and to succeed in this dynamic environment, management must appreciate the importance of technological matters in corporate policy, and must be able to respond in a timely and rational manner to the challenges that are created by fast technological changes.

Therefore, decision makers, as well as engineers with technical management responsibilities, must be conversant in technological issues that affect a firm’s business strategy.

This requires the understanding of technological innovation and technology transfer processes, as well as the effect of these new technologies on management practice, organizational structure, operational procedures, labor relations and marketing.

In recognition of the need in both private and public sectors for managers and engineers who are knowledgeable in technological issues and problems the Department of Industrial Engineering in the College of Engineering and the Department of Management in the School of Business Administration, at the University of Miami, jointly offer an interdisciplinary Master of Science Program in the Management of Technology.

• The program consists of lectures, group discussions, case studies, and projects to form the basis and demonstrate the effects of technological changes in various parts of business activities and ways and means for dealing with them. Integration of new and advanced technologies in various industries is discussed and demonstrated.

• The program is a 36-credit non-thesis option selected from the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEN 572</td>
<td>Management of Technology</td>
</tr>
<tr>
<td>IEN 513</td>
<td>Quality Management in Service Organizations</td>
</tr>
<tr>
<td>IEN 663</td>
<td>Project Management Techniques</td>
</tr>
</tbody>
</table>
MGT 540 Behavioral Aspects of Productivity
MGT 651 Behavioral and Organizational Systems
MGT 652 Organizational Theory
MGT 658 Strategic Management
MGT 671 The Management of Innovation
IEN 571 Engineering Entrepreneurship
MGT 698 Selected Topics (Accounting -Finance -Marketing and Managerial Interface)
IEN 672 Strategic Management of Technology
IEN 661 Engineering Cost Management
IEN 565 Design of Integrated Manufacturing Systems
IEN 655 Human Factors in Management of Technology
IEN 662 Productivity Planning and Improvement

- Some courses may be substituted with the approval of the Program Director.
- For further information, contact the Department of Industrial Engineering, 284-2344, or the Department of Management, 284-5846.

MASTER OF SCIENCE DEGREE WITH A CONCENTRATION IN QUALITY SCIENCE

Competitiveness in world markets is critical to the well-being of the American industrial enterprise.

Competitiveness is enhanced by process improvement and innovation, which are achieved through the improvement of quality.

The benefits of enhanced quality are: reduced rework, greater productivity, lower unit cost, price flexibility, improved competitive position, increased demand, larger profits, more jobs and more secure jobs.

Customers get high quality at a low price, vendors get predictable long-term sources of business, and investors earn increased profits. Everybody wins.

However, if productivity alone is stressed to achieve competitiveness, quality can be sacrificed, and lower output may actually result.

Employee morale will plunge, costs will rise, customers will be unhappy, stockholders will be concerned, and competitive position will decline. Everybody loses.

In recognition of the need in both the public and private sectors for managers and engineers who are knowledgeable in the theories and practices of quality management, the Department of Management Science in the School of Business Administration and the Department of Industrial Engineering in the College of Engineering, jointly offer an interdisciplinary Master of Science Program with a concentration in Quality Management.

The aims of the program are:

1. To educate students in the theories, principles, administrative systems, tools, and methods of Quality Management.
2. To provide graduates with the knowledge, skills, and abilities they will need to work effectively in an organization.
3. To prepare students for responsible positions of employment that require an understanding of Quality Management.
4. To have our students recognized as experts in the theory and practice of Quality Management.

The Masters of Science Program in Quality Management consists of 36-credits with a thesis option. The course work is shown below:
MAS 611 | Principles of Quality Management
---|---
IEN 590 | Special Topics in Industrial Engineering [Understanding the Theory of Variation]
IEN 512 | Statistical Quality Control and Quality Management
IEN 612/MAS 603 | Design of Experiments
MAS 607 | Survey Sampling
MKT 698 | Topics in Marketing [Voice of the Customer]
MKT 661 | Marketing Research
IEN 617 | Quality through Design
IEN 699 | Advanced Topics [Analysis of Quality Systems]
ACC 608 | Managerial Accounting
MAS 630 | Quality Management in Practice
MAS 710/IEN 710 | Masters Thesis

For further information, please contact: Department of Management Science, 284-6595.

**STATISTICS**

The Interdepartmental Statistics program provides graduate level study to qualified students who are interested in statistical analysis in government, business, medicine, biology, economics, the social sciences, and research.

The primary purpose of the program is to train statisticians in both the theory and applications of statistics.

A secondary objective of this program is to prepare students to continue their studies for a Ph.D. in statistics.

Functional proficiency in statistics will be stressed and the computer will be heavily utilized in the program.

The Interdepartmental M.S. degree in statistics is a cooperative effort between the Department of Management Science (School of Business Administration) and the Department of Mathematics (College of Arts and Sciences). The curriculum for this program encompasses 30 credit hours (10 courses).

The core of 18 credits is listed below:

- MTH 533. Introduction to Real Analysis I
- MTH 524. Introduction to Probability Theory
- MTH 525. Introduction to Mathematical Statistics
- MAS 601. Applied Regression Analysis
- MAS 602. Applied Multivariate Statistics
- MAS 603. Design of Experiments

- Nine of the remaining 12 credits in the program will be drawn from statistics courses offered in several departments, depending upon the student’s interests and chosen field of application.
- The final 3 credits will be devoted to conducting an independent research project. A comprehensive oral examination is required.

For further information, contact:
THE MASTER’S DEGREE - GENERAL

The minimum residence requirement is two semesters in full-time study or the equivalent in part-time work. In practice, most students need at least three semesters, or two semesters plus summer work, to complete degree requirements.

FOREIGN LANGUAGE

The requirements in a foreign language or languages are established by the student’s major department or program. In those cases where the department deems it necessary that the student have competency in a foreign language, the student will be required to demonstrate such competence by examination in one or more languages. The choice of language or languages required will be by the major department or program with the approval of the Dean of the Graduate School. Students should immediately ascertain the requirements of their major department and inform themselves of the procedures for taking the examination(s).

ADMISSION TO CANDIDACY

When students have been admitted to graduate study and commence upon their graduate work, they are not yet candidates for a degree. Before they proceed too far, it is necessary for them to decide on their objectives and plan their whole program; and it is necessary for the Graduate School to decide whether they are acceptable students and suitable candidates for the degree in question. This is the point in the student’s graduate career known as Admission to Candidacy.

The student should normally have met all requirements for admission to candidacy upon completion of one year (or 12 graduate credits) in residence. (Part-time students apply upon completion of 12 graduate credits.) If for some reason delayed beyond this point, application must be made in advance of the students enrolling for the final session of work, or granting of the degree will be delayed. No student may receive the degree in the same semester or summer session in which s/he is admitted to candidacy.

At the time of applying for admission to candidacy the student must have:

1. a planned and approved program;

2. removed all deficiencies;
3. taken the Graduate Record Examination or the Graduate Management Admissions Test and submitted satisfactory scores; it is a guideline of the Graduate School that a minimum score of 1000 for the verbal and quantitative GRE be achieved prior to admission. Individual departments or programs may have their own guidelines and requirements. Please check their guidelines and requirements directly.

4. completed language and statistics requirements, if any;

5. chosen the thesis topic, if a thesis is to be written;

6. an average of B (3.0) in work undertaken as a graduate student and leading to the degree.

Application is made on a form available in the office of the Graduate School. The application is reviewed by the department concerned and by the Dean of the Graduate School. Students must be admitted to candidacy before a defense of thesis is scheduled.

THESIS

Decision as to the thesis subject normally must be made at the time of applying for admission to candidacy, and must be approved by the major department. The thesis committee, appointed when the student is admitted to candidacy, will consist of not less than three members. At least one of these must be a regular member of the Graduate Faculty of the University of Miami, and one must be from outside of the department awarding the degree. The committee is nominated by the Chairman of the department or program concerned and approved and appointed by the Graduate Dean. The duties of the thesis committee are similar to those of the dissertation committee. Thesis Committees cannot be appointed prior to admission to candidacy. The student who presents a thesis must enroll for a total of six hours of thesis credit. Ordinarily no more than six credits may be granted.

FINAL EXAMINATION

A final public oral defense of the thesis is required. However, none but the members of the thesis committee may interrogate the candidate. In addition there may be required, if desired by the major department, a final written integration examination to test the candidate’s ability to integrate the whole graduate program and the thesis in relation to it. These examinations must be held at least two weeks prior to commencement.

Three typewritten, unbound copies of the thesis, in approved form on proper paper (the original and two legible copies), conforming in style to the standards set by the Graduate School, must be deposited with the Office of the Graduate School on or before the date specified in the calendar published each session. It is the duty of the student to acquire a copy of the Guidelines for Preparing Theses from the Graduate School Office, and to conform to the requirements therein. Each thesis must be accompanied by 2 certificates of approval of oral defense of thesis signed by all members of the Committee. Forms should be obtained in the Graduate School Office.
RESEARCH IN RESIDENCE

Once a student has completed all course and required research credits, he or she must enroll in Research in Residence status until the degree has been granted. Research in Residence status is considered full-time enrollment. Time restrictions on obtaining degrees will be strictly enforced and can be waived only by the Dean of the Graduate School. Research in Residence students, while not required, may purchase or receive any perquisites that are normally available to graduate students.

COMPREHENSIVE EXAMINATION

In most departments a comprehensive examination, either written, oral or both, is a requirement. When the thesis is not a part of the program, an examining board, at least one of whose members must be a regular member of the Graduate Faculty, will be appointed by the department when the student has been admitted to candidacy.

Students must have qualified for admission to candidacy for the degree prior to the semester or summer session in which the comprehensives are taken, and be able to complete the required credits, except thesis, by the end of that semester or summer session.

A student failing the comprehensive may be allowed one opportunity to retake it if the students committee so advises. The re-examination may not be taken during the same semester or summer session, and must be taken within one calendar year.

TRANSFER OF CREDIT

Upon recommendation of the major department and the approval of the Graduate School, a maximum of six semester hours of graduate credit, with grades of B or above, may be transferred from another accredited graduate institution, in partial satisfaction of a Masters degree requiring less than 36 semester hours. Nine hours may be approved for transfer to a degree program requiring 36 semester hours or more. Work taken more than six years prior to transfer will not be accepted. Work taken by extension or correspondence is not acceptable. All work transferred is subject to examination by the University of Miami. In no case will credit be transferred until the student has completed acceptably an equivalent number of credits at the University of Miami. The satisfaction of the requirements of another university does not relieve the student from the University of Miami’s requirements. An official transcript of work to be transferred must be on file in the Graduate Office. Credits that pertain to or have been counted toward another degree cannot be transferred. Students enrolled in the Master of Business Administration program are not eligible for credit transfers or course waivers.

No transferred credits are calculated into the University of Miami G.P.A.

A SECOND MASTERS DEGREE

A student enrolled in a University of Miami masters degree program or holding a University of Miami masters degree may earn a second masters degree in a related area at the University by completing a minimum of 21 hours toward the second degree, as long as all departmental and admission requirements for the degree are met. Each degree must have a separate thesis if two thesis options are elected.
MASTER OF ARTS AND MASTER OF SCIENCE

Requirements:

A. Thirty graduate credits leading to the degree, with an average grade of B and no single grade below C-.

B. A thesis, comprehensive examination, or a specified number of credit requirements. Six credits of the required 30 must be earned in thesis work if the thesis option is chosen.

C. A major, consisting of at least 18 credits, of which six must be for the thesis when the thesis option is elected. The remaining 12 credits must be taken in fields designated by the major school. A graduate student may not change his/her major without permission of the Chairman of the department concerned.

D. A reading knowledge of one or more foreign languages if specified in the major department requirements.

E. Specific requirements of the major department as indicated below in the appropriate sections.

F. Requirements for admission, grades, residence, admission to candidacy, and other matters as indicated in the appropriate paragraphs above.

MASTER OF BUSINESS ADMINISTRATION

The MBA is offered to students with accredited undergraduate degrees. The undergraduate work need not be in the field of business administration. The MBA program is innovative, flexible, and career focused. It is designed to meet the needs of the student with an undergraduate background in business, as well as the student who is just entering the business arena. The curriculum not only prepares business leaders of the future, but also adds a valuable dimension to other professions.

The MBA Program is a 48-credit, lock-step program that can be completed in less than two calendar years, regardless if the student’s undergraduate degree is in business or in a non-business discipline. The program is composed of 24 courses, nine of which are electives that may be used towards a concentration. There are four semesters in total. Each semester consists of two terms. Students are registered for three courses per term, for a total of six courses per semester. Waivers and course transfers are not permitted. Electives are offered on the basis of student demand.

THE MBA PROGRAMS FOR EXECUTIVES AND PROFESSIONALS

The MBA program provides business executives and professionals the opportunity to earn the MBA and other graduate degrees by attending class only on Saturdays. Saturday programs include:

1. MBA for Executives and Professionals/Management
2. MBA for Executives and Professionals/International Business
3. MBA for Executives and Professionals/Health Administration and Policy
4. MBA for Executives and Professionals/Master of Science in Industrial Engineering
5. MBA for Working Professionals (combination Monday evening and Saturday classes)/International Business
The School’s international outreach is demonstrated by MBA programs for Working Professionals in the Caribbean.

**REQUIREMENTS FOR ALL MBA PROGRAMS:**

A. Requirements for admission, grades, residence, admission to candidacy, and other matters are as indicated in the appropriate previous sections of this Bulletin.
B. Graduation will require an unrounded cumulative grade average of 3.0 or better for all courses taken as a graduate student and leading to the MBA degree at the University of Miami.
C. Students cannot deviate from “lock-step” format of the curriculum.
D. Students must complete all courses in the program at the University of Miami. Course transfers or waivers are not permitted.

**DOCTOR OF PHILOSOPHY**

**GENERAL**

The Graduate School does not specify course requirements for the Ph.D. However, the Graduate School will not, ordinarily, approve the taking of the qualifying examination until the student has had a minimum of one continuous academic year of graduate work in courses, seminars, and directed or tutorial study. Sixty credits beyond the baccalaureate degree are the minimum requirement for the Ph.D., and not less than half of the total credits must be in work open only to graduate students. At least 24 must have been taken in residence at the University of Miami. A minimum of 12 dissertation credits must be taken. Graduate students studying for the Ph.D. who have received their master’s degree in the same field must take at least twenty-four (24) hours in residence at the University of Miami in doctoral status.

The specific course requirements for the Ph.D. are established by the major department or program which may require such additional graduate credit as it deems necessary. Such requirements will be found in that part of the Bulletin which lists course offerings.

**REGISTRATION**

To maintain status as a graduate student, registration in each fall and spring semester is required. Otherwise, admission lapses and permission to re-enter must be granted. Doctoral students for whom course work is no longer appropriate and who are engaged on their dissertation should consult the following section.

**DISSERTATION**

A student must take a minimum of 12 hours of dissertation research except where otherwise stated. Not more than 12 hours of research may be taken in a regular semester, nor more than six in a summer session. Most departments require 12 hours of dissertation research. When students have (a) passed their qualifying examination and (b) are engaged as assistants, the maximum allowable credit stated above may still be taken.
Leave of absence at this time assumes that no scholarly work in connection with the degree is being carried on by the student. Leave may be obtained by petition to the chairman of the major department followed by approval of the Graduate Dean. No credit is given for research until the dissertation is completed and successfully defended. Until then a grade of IP is registered. Credit is not granted for research in residence, but a fee is charged for each enrollment.

RESEARCH IN RESIDENCE

Once a student has completed all course and required research credits, he or she must enroll in Research in Residence status until the degree has been granted. Research in Residence status is considered full time enrollment. Time restrictions on obtaining degrees will be strictly enforced and can be waived only by the Dean of the Graduate School. Research in Residence students, while not required, may purchase or receive any perquisites that are normally available to graduate students.

RESIDENCE

The student must spend at least two consecutive semesters beyond the first year’s graduate work, wherever taken, in full-time study at the University of Miami. With departmental approval, a) one summer of full-time study in sessions I and II can be substituted for one semester of residence, or b) full-time study for two successive summers can be substituted for two regular semesters. Students will find that time is an important factor in their progress, for until the students have reached a satisfactory level of achievement as ascertained by the major department, they normally will not be permitted to carry out full-time research. Residence requirements may be altered only by the Dean of the Graduate School.

THE SUPERVISORY AND DISSERTATION COMMITTEES

A supervisory committee is usually appointed when a student is formally admitted to a doctoral program. The committee must be comprised of at least four members; this includes the committee chair, who shall be a member of the program or department of concentration, as well as a regular member of the Graduate Faculty. Of the remaining members, it is also required that two shall be from Graduate Faculty, and one from outside the program or department of concentration. A department, program, or school or college may require additional members.

This committee is nominated by the chairperson of the program or department concerned. It is appropriate for the chairperson to consult with the student regarding the membership of the committee. The Supervisory Committee is empowered to plan the course of study for the student; to determine deficiencies, if any; to set language and other requirements; to request applicable transfer of credit where appropriate and to make up and administer the qualifying examination.
When the student is admitted to candidacy, a Dissertation Committee is formed. This may be the Supervisory Committee, but it may also be a committee formed anew to undertake the duties of advising and passing upon the dissertation. The Dissertation Committee is nominated by the department or program concerned, and is approved and appointed by the Dean of the Graduate School. As with the Supervisory Committee, it must be comprised of at least four members; this includes the committee chair, who shall be a member of the program or department of concentration, as well as a regular member of the Graduate Faculty. Of the remaining members, it is also required that two shall be from Graduate Faculty, and one from outside the program or department of concentration. A department, program, or school or college may require additional members. The duties of the Dissertation Committee are:

1. to consult with and to advise students on their research;
2. to meet, at intervals, to review progress and expected results;
3. to read and comment upon the draft dissertation;
4. to meet, when the dissertation is completed, to conduct the final oral examination and to satisfy itself that the dissertation is a contribution to knowledge and that it is written in lucid and correct English and submitted in approved form.

The candidate is well advised to have a final acceptable typescript of the dissertation in the hands of each member of his/her committee at a time reasonably in advance of the final defense of the work.

Five copies of the dissertation in approved form on proper paper and eight copies of an abstract of not over 350 words will be handed in to the Office of the Graduate School on or before the date specified in the calendar published each session, accompanied by 2 certificates of approval of doctoral dissertation defense. It is the duty of the student to acquire a copy of the Guidelines for Preparing Dissertations from the Graduate School Office and to conform to the requirements therein. All dissertations are published by University Microfilms, Inc.

No student gains the right to be recommended for the degree simply by fulfilling requirements. This right is reserved to the students Committee.

**QUALIFYING EXAMINATIONS**

A written qualifying examination is to be taken by each doctoral degree (Ph.D., D.A., D.M.A., Ed.D.) candidate at the time that the student and the Supervisory Committee deem appropriate. The school or major department may specify that its students must take an oral examination as well. In those cases, normally, the student shall pass the written examination before the oral examination is conducted. Upon completion of the examination process, the Supervisory Committee shall notify the Graduate School and the instructional school or department that the student has passed or failed the examination. A student who fails the examination will be given one opportunity to retake it, with the permission of the Supervisory Committee. Some programs do not administer qualifying examinations during the summer months, but many do; check with the graduate studies director for the departmental schedule in this regard. Language and other research tool requirements must be completed prior to taking the qualifying examination, and the applicant must hold a 3.0 average on all credits attempted with no single grade below C at the University of Miami while a graduate student.
It is only upon satisfactory completion of the qualifying examination that the student becomes a candidate for the doctorate.

**ADMISSION TO CANDIDACY**

When the student has met all requirements and passed the qualifying examinations, admission to candidacy for the degree is approved. No student may receive the degree in the same semester or summer session in which he or she is admitted to candidacy. The student must be admitted to candidacy before the defense of dissertation is scheduled.

**FINAL EXAMINATION**

A final public oral defense of the dissertation is required. However, none but the members of the dissertation committee may interrogate the candidate. In addition there may be required, if desired by the major department, a final written integration examination to test the candidate's ability to integrate the whole graduate program and the dissertation in relation to it. These examinations must be held at least two weeks prior to commencement.

**RECENTY OF CREDIT**

Degree requirements must be completed within eight years of the time of admission to graduate work, and/or within four years of passing the qualifying examination.

**TRANSFER OF CREDIT**

Transfer of graduate credit from another institution will not be made until the student has completed a like amount of credit at the University of Miami, and the transfer has been approved by the Supervisory Committee and the Dean of the Graduate School. Credit transferred is subject to the same recency rules as all other credit counted toward the degree, and is also subject to examination by the University of Miami. An official transcript of work to be transferred must be on file in the Graduate Office. Credits that pertain to or have been counted toward another degree cannot be transferred.

**LEAVE OF ABSENCE**

Leave of absence assumes that no scholarly work in connection with the degree is being carried on by the student. Leave may be obtained by petition of the chairperson of the major department followed by the approval of the Graduate Dean.

**DOCTOR OF ARTS**

**GENERAL**

The program leading to the Doctor of Arts degree is designed to:

1. prepare students for careers as teachers in higher education;
2. improve the academic competencies of current secondary, community, and four-year college teachers; and
3. provide advanced graduate training for professionals in scholarly enterprises such as cultural centers, museums, and language institutes.

Normally, three years study beyond the bachelor’s degree completes the program.

The amount of required coursework parallels other doctoral programs. But the cognate and elective components permit a breadth of disciplinary knowledge, and areas of concentration may extend across related disciplines. The experiences and training of each Doctor of Arts applicant help form individualized programs of study. Seminars in curriculum design, evaluation, student growth and development, and organization and administration of higher education selectively complement each student’s program. In place of developing a lengthy dissertation, students in the Doctor of Arts program prepare a briefer, scholarly treatise or project.

Applicants generally possess a Master of Arts, Master of Science, or Master of Arts in Community College Teaching degree. The Doctor of Arts program consists of:

1. work in the area of concentration at the doctoral level,
2. coursework in a related cognate field and elective,
3. a professional education component,
4. scholarly investigation and reporting,
5. an undergraduate teaching internship, and
6. examinations.

Departments offering the Doctor of Arts are: Civil Engineering, Mathematics, Mechanical Engineering, and Physics.

**ADMISSION**

The regular admission process to a Doctor of Arts program includes:

1. the completed application form;
2. the official transcripts of all college work, both undergraduate and graduate, previously taken;
3. the official report of the appropriate entrance examination: the Graduate Record Examination (the aptitude portion, as well as the relevant advanced tests in the major field and analytical writing part, as required by the department or program); international applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL);
4. letters of recommendation sent directly to the graduate studies chairman of the academic department;
5. the financial aid form, if desired;
6. an application fee of $50.00; and
7. other requirements as may be described by the individual departments.

Applicants should note the following:

1. Letters of recommendation, financial aid forms and all other correspondence, application, and documents should be sent directly to the graduate studies chairperson of the academic department;

2. No action is taken until a file is complete and contains all documents (a decision on a completed file generally requires four to six weeks);

3. Application files should be complete at least one month before registration, much earlier for some applications as specified elsewhere in this Bulletin;

4. Admission to graduate status does not imply admission to candidacy for a degree; and

5. Some departments close admissions early because of limited facilities.

**GENERAL COURSE DISTRIBUTION**
**FOR STUDENTS ENTERING WITH A BACCALAUREATE DEGREE**

<table>
<thead>
<tr>
<th>Major and Cognate Fields</th>
<th>48 credits</th>
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</thead>
<tbody>
<tr>
<td>Electives</td>
<td>9 credits</td>
</tr>
<tr>
<td>Professional education</td>
<td>12 credits</td>
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<tr>
<td>(choose four):</td>
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<tr>
<td><em>Higher Education in the United States</em> (EPS 603)</td>
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<tr>
<td><em>Nature of Collegiate Instruction</em> (EPS 643)</td>
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<tr>
<td>and two of the following:</td>
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<tr>
<td><em>The Community College</em> (EPS 543)</td>
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<tr>
<td><em>The Nature of the College Student</em> (EPS 631)</td>
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<tr>
<td><em>Curricula in Higher Education</em> (EPS 642)</td>
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<tr>
<td><em>Organization and Administration of Higher Education I</em> (EPS 533)</td>
<td></td>
</tr>
<tr>
<td>Internship in College Teaching (EPS 687)</td>
<td>3 credits</td>
</tr>
<tr>
<td>Research Project (740)</td>
<td>6 credits</td>
</tr>
</tbody>
</table>

At least 24 credits in the major and cognate fields must be taken in residence at the University of Miami in doctoral status. (Two semesters in residence, as defined in this Bulletin, are required for students in doctoral status.) One-half of the total course credits must be in work open only to graduate students.

Specific course requirements for the Doctor of Arts degree are listed by department or program elsewhere in this Bulletin. Additional graduate credit may be required for individual programs.

**FOR STUDENTS ENTERING WITH A MASTERS DEGREE**

Doctor of Arts students must complete a minimum of 24 course credits in the major and cognate fields at the University of Miami in doctoral status. Each department has the right to require additional graduate courses for a student’s particular program of study. One-half the total course credits must be in work open only to graduate students. Two semesters in residence, as defined in this Bulletin, are required for students in doctoral status.
Major and Cognate Fields 24 credits
Professional Education (as outlined above) 12 credits
Internship in College Teaching (EPS 687) 3 credits
Research Project (740) 6 credits

RECENCY OF TRANSFER OF CREDIT

Degree requirements must be completed within eight years of the time of admission to graduate work.

Transfer of credit from another institution will not be made until the student has completed a like amount of credit at the University of Miami and the transfer has been approved by the Dean of the Graduate School. Credit transferred is subject to the same recency rules as all other credit counted toward the degree, and is also subject to examination by the University of Miami. Credits that pertain to and have been counted toward another degree cannot be transferred.

No transferred credits are calculated into the University of Miami G.P.A.

REGISTRATION

To maintain status as a graduate student, registration in each fall and spring semester is required. Otherwise, admission lapses and permission to re-enter must be granted.

No credit is given for research 740 until the treatise is completed and successfully defended; then a grade of S is registered.

Credit is not granted for research 750, but a fee is charged for each enrollment. Once the student has completed the research requirement (740), residence must be maintained. This is accomplished by continuous registration each succeeding semester. The student will, at those times, enroll in research 750.

If a student continues to do research or consult periodically with University faculty or carry out pertinent graduate studies, but does so away from the campus, registration in research 750 is required until the degree is completed. Arrangements for this registration should be made with the Graduate School Office.

RESIDENCE

The student must spend at least two consecutive semesters beyond the first year’s graduate work, wherever taken, in full-time study at the University of Miami.

With departmental approval,

a. one summer of full-time study in sessions I and II can be substituted for one semester of residence, or

b. full-time study for two successive summers can be substituted for two regular semesters.
LEAVE OF ABSENCE

Leave of absence assumes that no scholarly work in connection with the degree is being carried on by the student. Leave may be obtained by petition to the chairperson of the major department followed by the approval of the Graduate Dean.

EXAMINATIONS

Examinations in the course of the Doctor of Arts program of studies include: a comprehensive or qualifying examination extending over the primary fields and a final oral examination covering the scholarly treatise. When appropriate, a committee will be formed by the department to administer the examination. The student may not take the comprehensive examination until he/she has completed at least forty (40) hours of graduate coursework.

CANDIDACY

Application for admission to candidacy status must be made following the completion of:

1. All coursework, excluding research and internship credits;
2. All departmental required research tools - foreign languages, statistics, e.g. - where applicable;
3. The qualifying examination successfully passed; and
4. The formation of the research supervisory committee.

Candidacy applications which require the completion date of the qualifying exam, the research topic, and the names of the research supervisory committee are available in the Graduate School Office, 1541 Brescia, Coral Gables Campus. No student may receive the Doctor of Arts degree in the same semester or summer session in which he/she is admitted to candidacy.

INTERNSHIP

An internship in a community college, a liberal arts college, or an undergraduate college of a university is required. It consists of a demonstration of a useful synthesis of educational principles and substantive knowledge. Students with little or no prior college teaching experience will demonstrate this by teaching a minimum of a first or second year course within their major field for one semester and under the joint tutelage of a faculty member in their major field and a professor of education.

Students who have had substantial teaching experience will engage in an internship experience to improve their instructional skills. This individualized experience will be arranged for each student with the guidance and approval of a major advisor and a professor of education.

SUPERVISORY AND RESEARCH PROJECT COMMITTEES

After admission to the Doctor of Arts program, an advisor will assist the student in planning a course of study.
To arrange for the preparation and administration of an examination, a supervisory committee will be appointed. It will consist of not less than five members-three from the student's major field. Other members may be selected from the student's cognate fields and the School of Education. The chairman and two members of the committee must be regular members of the Graduate Faculty. The committee is nominated by the department or program concerned, and is approved and appointed by the Dean of the Graduate School.

When the student is admitted to candidacy, a treatise committee is formed. This may be the supervisory committee, but can also be a newly formed committee to undertake the duties of advising and approving the treatise. The Treatise Committee is nominated by the department concerned, and is approved and appointed by the Dean of the Graduate School. As with the Supervisory Committee, it will consist of not less than five members, three from the Graduate Faculty, one from outside the program or department of concentration, and the chairman, who will be a regular member of the Graduate Faculty. The duties of the treatise committee are:

1. To consult with and to advise the student regarding research.
2. To meet at intervals to review progress and expected results.
3. To read and comment upon the draft of the treatise.
4. To meet, when the treatise is completed, to conduct the final oral examination, and to satisfy itself that the treatise is a piece of scholarly research written in lucid and correct English submitted in approved form.

No student gains the right to be recommended for the degree simply by fulfilling requirements. This right is reserved to the students committee.

**SCHOLARLY TREATISE OR PROJECT**

Evidence of scholarly investigation and writing is required in the form of a study related to some aspect of undergraduate instruction or curriculum (project) or mastery of subject matter area (treatise).

Regulations governing preparation of the treatise or project and final oral defense are the same as those for the dissertation of the Doctor of Philosophy degree. Five copies of the treatise in approved form on proper paper and eight copies of an abstract of not over 350 words will be handed in to the Office of the Graduate School on or before the date specified in the calendar published each session. It is the duty of the student to acquire a copy of the Guidelines for Preparing Dissertations from the Graduate School Office and to conform to the requirements therein. (The format for the treatise or project is the same as that for the dissertation.)

The candidate is well advised to have a final acceptable typescript of the treatise in the hands of each member of his/her committee at a time reasonably in advance of the final defense of the work.
The School of Architecture at the University of Miami offers both a professional and a post-professional Master of Architecture degree.

Admission to the graduate program in the School is subject to the rules, regulations and procedures of the Graduate School as stipulated in the University Graduate Bulletin.

It is the responsibility of each student to understand these requirements and to ensure that they are met.

The School is a member of the Association of Collegiate Schools of Architecture.

The School of Architecture’s location in Coral Gables within the Miami metropolitan area provides an outstanding laboratory for research and advanced study; the challenges of conservation and development are intense in one of the nation’s fastest growing urban areas.

These challenges result in an increasing demand for skilled professionals.

Students have the opportunity to work with the faculty in the exploration of theoretical issues as well as in the resolution of practical problems.

The School of Architecture values and sustains a creative, open and supportive environment, emphasizing personalized instruction in small classes and studio courses.

The school’s resources, including an accredited undergraduate program in architecture and a state-of-the-art computer laboratory, are enhanced by the interdisciplinary opportunities offered by the other schools and colleges of the University of Miami. A distinguished faculty is joined each semester by internationally renown visiting scholars and designers.

All students admitted full time to the Master of Architecture program may be eligible for partial tuition scholarships and/or graduate assistantships, based on academic record.

Scholarships may vary in amounts and are intended to assist the recipient pursue studies as required by the program.

Scholarships will be awarded on a competitive basis.

Graduate assistantships require service in the form of teaching, research assistance, or other appropriate educational activities as designated by the director of the graduate program.

I. MASTER OF ARCHITECTURE: PROFESSIONAL DEGREE

A. The Master of Architecture is designed for college graduates seeking a first professional degree in architecture. It consists of the following two tracks:

• 3.5-year Track: A 3.5-year program for students holding undergraduate degrees in non-design fields. Completion of 105 credit hours required.

• Advanced Standing Track: A program for students holding a previous non-professional degree in architecture or a closely related field. Completion of 51-60 credit hours required.

B. This program is fully accredited by the National Architectural Accreditation Board, which asks each school to include the following paragraph on professional degrees in all literature:
In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit US professional degree programs in architecture, recognizes two types of degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted five-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards.

C. Masters degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, compromise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

II. MASTER OF ARCHITECTURE: POST PROFESSIONAL DEGREE

A. The Master of Architecture post-professional program provides an environment for serious inquiry into the nature of architecture.

B. Post-professional study is available to students holding an accredited degree in architecture who wish to develop a specialization in architectural theory and practice.

C. Three areas of study offer students the opportunity to investigate specific aspects of architecture and to elaborate their understanding for future teaching, research, publications and professional practice.

1. Master of Architecture: Suburb and Town Design
   a) This concentration consists of three semesters of directed study to explore in-depth the existing state of suburbs and cities, study precedents and propose design solutions.
   b) The faculty is dedicated to seeking alternatives to modern patterns of urban growth.
   c) The Miami metropolitan area provides a laboratory for the identification of urban problems and for the exploration of design solutions.
   d) Each semester is comprised of a design studio and a seminar in parallel, studying both the real and ideal solutions for three aspects of town planning: new town design, housing and the redesign of existing situations.
   e) The School of Architecture faculty teaches the curriculum with field condition input from visiting faculty and other experts such as developers, marketing experts and bankers.

2. Master of Architecture: Computing in Design
   a) This research program offers students the opportunity for in-depth study of computing in architecture.
   b) The program may be completed in three semesters and includes courses in computer modeling and rendering, animation, geographic information systems and interactive media in design.
   c) These courses are offered by research and practice faculty in the schools advanced computing graphics laboratory.

3. Master of Architecture: Research
a) This program allows students to specialize in a specific area of study within the context of the discipline.
b) Each student must complete 36 credits, normally over three semesters. A specific program of study, reflecting the proposed professional objectives, is established for each student.
c) In addition, a six-credit thesis is required.
d) An advisory committee of the faculty of the school supervises the progress of the students.
e) The program is based on studio work combined with cross-disciplinary and specialized studies.
f) The program culminates in a comprehensive project tailored to meet the needs of the individual student.

III. Master of Architecture: Professional Degree
- 3.5 Year Track - For students with prior non-architecture degrees

<table>
<thead>
<tr>
<th>Fall Semester I</th>
<th>Spring Semester II</th>
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<tbody>
<tr>
<td>ARC 501 Architecture Design and Theory I</td>
<td>ARC 502 Architecture Design and Theory II</td>
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<tr>
<td>ARC 511 Drawing</td>
<td>ARC 513 Computing</td>
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<tr>
<td>ARC 561 Building Construction</td>
<td>ARC 531 Building Structures</td>
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<tr>
<td>ARC 567 History of Architecture I: Ancient, Medieval and Renaissance</td>
<td>ARC 568 History of Architecture II: Baroque through Contemporary</td>
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</tbody>
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<thead>
<tr>
<th>Fall Semester III</th>
<th>Spring Semester IV</th>
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<tbody>
<tr>
<td>ARC 503 Architectural Design and Theory III</td>
<td>ARC 607 Architecture Design</td>
</tr>
<tr>
<td>ARC 532 Building Structures II</td>
<td>ARC 533 Building Structures III</td>
</tr>
<tr>
<td>ARC 562 Building Systems I</td>
<td>ARC 563 Building Systems II</td>
</tr>
<tr>
<td>Architecture Elective</td>
<td>ARC 622 Seminar on Housing</td>
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<thead>
<tr>
<th>Fall Semester V</th>
<th>Spring Semester VI</th>
</tr>
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<tbody>
<tr>
<td>ARC 608 Architecture Design</td>
<td>ARC 609 Architecture Design</td>
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<tr>
<td>History of Architecture Elective</td>
<td>ARC 652 Management of Professional Practice</td>
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<tr>
<td>Architecture Electives - 2 courses</td>
<td>Architecture Electives - 2 courses</td>
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<table>
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<tr>
<th>Fall Semester VII</th>
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<tbody>
<tr>
<td>ARC 610 Architecture Design Degree Project</td>
<td></td>
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<tr>
<td>Architecture Electives - 3 courses</td>
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</tbody>
</table>

- Curriculum notes: this program assumes that the student has completed college level mathematics and physics.

IV. Master of Architecture: Professional Degree
- Advanced Standing Track - For students with non-professional degrees in architecture

<table>
<thead>
<tr>
<th>Fall Semester I</th>
<th>Spring Semester II</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC 607 Architecture Design</td>
<td>ARC 608 Architecture Design</td>
</tr>
<tr>
<td>Architecture Electives - 3 courses</td>
<td>Architecture Electives - 3 courses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fall Semester III</th>
<th>Spring Semester IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC 609 Architecture Design</td>
<td>ARC 610 Architecture Design Degree Project</td>
</tr>
<tr>
<td>Professional Requirements and Electives</td>
<td>Professional Requirement and Electives</td>
</tr>
</tbody>
</table>
• Architecture and professional courses completed in a pre-professional bachelors degree program will be evaluated to identify courses that may be waived in the Master of Architecture Professional Degree Program.
• A maximum of 54 credits, including three design studios, may be waived; generally architecture and professional courses with a grade of B- or higher will be accepted.
• Requirements for the degree will be contingent on the evaluation of the student’s prior work.

V. Master of Architecture: Suburb and Town Design

• Post-professional Degree

<table>
<thead>
<tr>
<th>Fall Semester I</th>
<th>Spring Semester II</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC 601 Town Design</td>
<td>ARC 602 Housing Design</td>
</tr>
<tr>
<td>ARC 621 Seminar on Town Design</td>
<td>ARC 622 Seminar on Housing</td>
</tr>
<tr>
<td>Architecture Elective</td>
<td>Architecture Elective - 2 courses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summer Semester III</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC 603 Redesign of Suburbia</td>
</tr>
<tr>
<td>ARC 623 Seminar on Redesigning Suburbia</td>
</tr>
</tbody>
</table>

VI. Master of Architecture: Computing in Design

• Post-professional degree

<table>
<thead>
<tr>
<th>Fall Semester I</th>
<th>Intersession</th>
<th>Summer Semester III</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC 595 Database Management Systems and Programming</td>
<td>ARC 529 Research in Design-Methods and Procedures</td>
<td></td>
</tr>
<tr>
<td>ARC 515 Computer Modeling</td>
<td>Architecture Elective</td>
<td></td>
</tr>
<tr>
<td>ARC 691 Seminar in Computing and Design</td>
<td>Architecture Elective</td>
<td></td>
</tr>
<tr>
<td>Architecture Elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring Semester II</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC 594 Geographical Information Systems in Urban Design</td>
<td>ARC 710 Masters Thesis</td>
</tr>
<tr>
<td>ARC 593 Computer Animation</td>
<td>Architecture Elective</td>
</tr>
<tr>
<td>ARC 596 Interactive Multimedia in Design</td>
<td></td>
</tr>
</tbody>
</table>

VII. Master of Architecture: Research

• Post Professional Degree
  • An individual curriculum is developed for each student in consultations with the research program faculty and the director of graduate studies.
  • A course in thesis preparation, ARC 529, and Thesis, ARC 710, (6 credits) are required.
  • Master of Architecture degree conferred.

VIII. AWARDS AND SCHOLARSHIPS

• American Institute of Architects Henry Adams Medal awarded by the American Institute of Architects to the highest ranking graduating student for scholarship and excellence in architecture.
• American Institute of Architects Henry Adams Certificate awarded to the second highest ranking graduating student for scholarship and excellence in architecture.
• Alumni Scholarship awarded annually to an architecture student who has demonstrated academic merit and financial need.
ANTHROPOLOGY - Dept. Code: APY

The Department of Anthropology does not have a graduate program. The courses may be taken for graduate credit with the consent of the major department.

ART AND ART HISTORY - Dept. Codes: ART, ARH

Two programs serve the needs of graduate students in Art and Art History.

Master of Fine Arts program in the studio areas of
- Painting
- Sculpture
- Graphic Design/Multimedia
- Ceramics/Glass
- Printmaking
- Photography/Digital Imaging

Master of Arts program in Art History

MASTER OF ARTS

The M.A. degree is designed for students in art history who plan academic, museum or gallery careers. It entails a minimum of 36 credits in art history and related courses, including six credits of thesis. M.A. students must pass a slide examination and a comprehensive examination. Reading knowledge of a foreign language appropriate to the study of Art History (e.g., French, German, Italian, Spanish) is required.

REQUIREMENTS FOR THE MASTER OF ARTS DEGREE IN ART HISTORY ARE:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art History at 500 level or above</td>
<td>21 credits</td>
</tr>
<tr>
<td>Electives not restricted to courses in Art</td>
<td>9 credits</td>
</tr>
<tr>
<td>Thesis</td>
<td>6 credits</td>
</tr>
</tbody>
</table>

Admission to the Master of Arts program requires a minimum of eighteen semester hours of undergraduate study in Art History.

Applicants for admission are required to submit an example of an art history research paper they have done in addition to the general requirements of transcripts, GRE scores and letters of recommendation. It is highly recommended that applicants have reading knowledge of a foreign language (e.g., French, German, Italian, Spanish).

A maximum of six semester hours of graduate credit may be transferred from another institution, providing that the credits have been taken within six years prior to matriculation at the University of Miami and have been passed with a grade of B or higher.

Applicants for admission to the Master of Arts program are responsible for the submission of the following materials to the Graduate Secretary in Art and Art History:
- All transcripts of college-level academic work;
GRE scores (and TOEFL score for foreign students);
A research paper from an undergraduate art history course;
Three letters of recommendation;
Application form.

Applicants for the M.A. degree are considered in the Spring and Fall. The deadlines for applying are February 15 for Fall admission and September 15 for Spring admission.

FINANCIAL AID: Graduate Teaching Assistantships and tuition waivers are awarded by the department in both studio areas and Art History.

The G.R.E. is required for the M.A., but not for the M.F.A. degree.

All M.F.A. and M.A. students with Teaching Assistantships must contribute to the teaching program as an essential part of their responsibilities.

MASTER OF FINE ARTS

The Master of Fine Arts degree is the terminal degree for students interested in the creation of art who plan to pursue careers as practicing artists/teachers.

The students will take a minimum requirement of 60 credit hours in approved graduate courses.

Teaching assistants can opt to take 10 credits each semester, or will take 9 credits each semester the first year, 12 credits each semester the second year, and 9 credits each semester the third year.

A Supervisory Committee will be assigned when the student is formally admitted to the program.

It will be comprised of at least four members.
The Supervisory Committee chair will be from the student’s area of concentration and a member of the graduate faculty.
The head of the Supervisory Committee will select the membership of the Committee after conferring with the student.
The Supervisory Committee will formally review the student’s progress; the student may be put on probation at the end of any semester, and given one semester to improve or be removed from the program.

Application for candidacy may be made any time after the completion of 30 credits, but must be attained prior to registration for the final semester.

The Supervisory Committee will determine whether the student should be admitted to candidacy.
When the student is admitted to candidacy, a Thesis Committee is formed with at least four members, who need not be the same as the Supervisory Committee.
The Chair should be from the student’s area of concentration and a member of the graduate faculty.
Two others should be department faculty, and the fourth person must be from outside the studio faculty.
This committee will consult with and advise the student on his or her work, meet twice a semester to review progress, read and comment on the thesis document, and conduct a final oral exam during the thesis exhibition.

The thesis exhibition will be scheduled after the successful completion of ART 599, the show will be installed after the candidate has submitted an accepted thesis document. All incompletes must be cleared before the exhibition can be scheduled.

No student gains the right to be recommended for the degree simply by completing requirements. This right is reserved to the students Thesis Committee in coordination with the Graduate Program Director.

REQUIREMENTS FOR THE MASTER OF FINE ARTS DEGREE IN STUDIO:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARH 598, ART 604, ART 681 (3 seminars)</td>
<td>9</td>
</tr>
<tr>
<td>Area of studio concentration</td>
<td>24</td>
</tr>
<tr>
<td>Art History at 500 or 600 level</td>
<td>6</td>
</tr>
<tr>
<td>Electives, not restricted to courses in Art or Art History</td>
<td>12</td>
</tr>
<tr>
<td>ART 599 Exhibition Preparation</td>
<td>3</td>
</tr>
<tr>
<td>Thesis, consisting of a body of studio work accompanied by a written document.</td>
<td>6</td>
</tr>
</tbody>
</table>

Applicants for admission to the Master of Fine Arts program are responsible for the submission of the following materials to the Graduate Secretary in Art and Art History:

1. All transcripts of college-level academic work;
2. 20 slides of studio work; OR 20 images on a CD/DVD
3. Three letters of recommendation;
4. Application form.

Applicants for MFA degrees are considered in the Spring and Fall. February 15 is the postmark deadline for Fall admission and September 15 is the postmark deadline for the Spring admission. Teaching Assistantships are available only with Fall admission. The deadline for international applications for the following Fall semester is January 15.
Applicants to the Ph. D. track who were admitted on the Master’s track and wish to complete the M.S. degree, should follow the same procedures as all other applicants, but they must include letters of support from three U of M Biology faculty. Such applicants will be judged by the same criteria that are applied to other Ph.D. applicants. Applicants must send the following to the Director of Graduate Studies in Biology:

A. completed application form;

B. all undergraduate and graduate official transcripts (photocopies are not accepted);

C. official scores from recent Graduate Record Examinations (within five years), including the aptitude portion; the Biology subject matter test is also recommended (photocopies of scores are not accepted).

D. international applicants whose native language is not English must additionally submit the TOEFL (Test of English as a Foreign Language) and the TSE (Test of Spoken English) official scores (photocopies of scores are not accepted).

E. letters of recommendation, from three science instructors/ supervisors that address: nature and duration of relationship to applicant; motivation; ability to conceptualize and deal quantitatively with biological problems, and research potential

F. cover letter that identifies interests, suggests possible research projects and states career goals;

G. copies of any research papers (e.g., publications, manuscripts, senior reports, etc.);

H. written confirmation of a faculty sponsor; applicants MUST secure the sponsorship of a faculty member as a condition for admission; the research interests of the applicant and the faculty sponsor should be well-matched; the sponsor will be the major advisor.

I. application fee of $50.

A limited number of applicants to the Ph.D. program may be invited to interview at departmental expense.

Materials submitted in support of an application cannot be released for other purposes or returned to the applicant.

DEGREE REQUIREMENTS

All students are required to satisfy the general requirements for the appropriate degree that are listed in the Graduate Studies Bulletin, whether or not they are listed among the Biology requirements.

MASTER OF SCIENCE -This degree may be attained by either of the two following routes.

A. M.S. with thesis (a three year program)

1. Credits: a total of 30 credits are required:
   • 24 course credits, including at least one graduate course in statistics. Students are encouraged to take courses from more than one area; they are encouraged to select courses and independent studies that will prepare them
for research, as listed under the Ph.D. requirements. No more than 9 credits from the independent study series (BIL 671-675) may be used to fulfill the 24 course credits. At times these course numbers are used by professors to teach a new course or a special topics course, in which case the corresponding credits can be counted as a non-independent study credit. Course selection requires committee approval

- 6 research credits (BIL 710); no more than 6 M.S. research credits are allowed.
- The minimum acceptable grade average in all coursework towards the degree is a "B (3.0)" and no grade may be below a "C."

2. Research Proposal: public presentation and successful defense to the committee of a written research proposal.

3. Admission to candidacy: application is made by recommendation of the committee on a form available in the grad school.

4. Thesis: A well-written and successfully defended thesis of publishable quality; a defense is successful if all members of the committee sign the grad school form and the signature page of the dissertation.

5. Other requirements described under "The Master’s Degree," including but not limited to:

- a total of at least 30 credits (course credits plus research credits). The Graduate School and the Department concur in requiring at least 24 course credits and exactly 6 research credits (BIL 710) for a thesis M.S.
- once a student has completed all required credits, she/he must enroll in "Research in Residence" (BIL 720) status until the degree is granted. This course carries 0 credits, but is considered full-time enrollment. Even though no credit is earned, a tuition charge equivalent to 1 course credit normally applies to this course.

6. About the committee:

- A single committee will combine the responsibilities of the supervisory and thesis committees.
- The supervisory committee will be determined by the student in consultation with his or her advisor. The committee will consist of a minimum of three faculty, one of whom must be from outside the department, and one of whom must be a member of the graduate faculty. There is no sub-disciplinary representation requirement.
- The thesis committee is formed officially when the student is admitted to candidacy. It may be comprised of the same individuals as are on the supervisory committee, or it may be formed anew. The student in consultation with the advisor suggests the membership of the committee to the graduate school. The committee will consist of a minimum of three faculty, one of whom must be from outside the department, and one of whom must be a member of the graduate faculty. There is no sub-disciplinary representation requirement.
- The thesis committee is nominated by the department, but it must be approved and appointed by the Dean of the Graduate School. There is a special form that must be filed with the graduate school.
- Committee meetings are required at least once a year (recommended at least once a semester); the student is responsible for arranging meetings; the student should consult with the committee about major changes in research goals and about problems. Memos summarizing each meeting should be in the student’s file.
7. About the time table:

- A written thesis proposal is due no later than the middle of the second semester. Please take note of this deadline. The scope of the M.S. thesis should be in line with the time table.
- Admission to candidacy normally occurs after completion of one year or 12 credits of graduate work and successful defense of the thesis proposal.
- Analysis of data and a polished draft of the thesis should be completed and in the hands of the committee by the middle of the sixth semester. Please take note of this deadline. The scope of the M.S. thesis should be in line with the time table.
- Defense of the thesis and its submission to the Graduate School must meet or precede the deadline for graduation immediately following the sixth semester unless an extension has been approved by GAAC upon recommendation of the thesis committee. Notice of the defense must be submitted on a special form to the graduate school in advance of the defense and must be posted publicly in the department.
- The oral defense of the thesis must be given during regular sessions of the Fall or Spring semesters, not during summer sessions, intersessions, reading days or finals weeks.
- No student may receive the degree in the same semester in which she/he is admitted to candidacy.
- The indicated dates form firm deadlines. A student's committee, however, may submit a written petition to GAAC for an extension of time detailing reasons for the request. An extension will only be granted under extraordinary circumstances and will be effective upon written approval by GAAC.
- Proposals to change the schedule for any reason should be preceded by a study of the graduate bulletin sections on leaves of absence, full time student status and recency of credit and explicitly address how the proposed change of schedule relates to these matters. The memo requesting the change should also address the proposed financial support.

B. M. S. without thesis (a two year program)

1. Credits:

- A total of 36 course credits are required by the Biology Department, including at least one graduate course in statistics. Students are encouraged to take courses from more than one core area, listed under the Ph.D. requirements. No more than 9 credits from the independent study series (BIL 671-675) may be used to fulfill the 36 course credits. At times these course numbers are used by professors to teach a new course or a special topics course, in which case the corresponding credits can be counted as a non-independent study credit. Course selection requires committee approval.
- The minimum acceptable grade average in all coursework towards the degree is a "B (3.0)" and no grade may be below a "C."

2. Admission to candidacy (application is made on a form available in the grad school).

3. Passing a written comprehensive exam given by the committee.

4. About the committee
A single committee will combine the responsibilities of the initial supervisory and the comprehensive examination committees. The committee will be determined by the student in consultation with her/his advisor. The committee will consist of a minimum of three faculty, one of whom must be from outside the department, and one of whom must be a member of the graduate faculty. There is no sub-disciplinary representation requirement.

The examination committee is formed officially when the student is admitted to candidacy. It may be comprised of the same individuals as are on the supervisory committee, or it may be formed anew. The student in consultation with the advisor suggest the membership of the committee to the graduate school. The committee will consist of a minimum of three faculty including the student's advisor, one of whom must be from outside the department, and one of whom must be a member of the graduate faculty. There is no sub-disciplinary representation requirement.

The examination committee is nominated by the department, but it must be approved and appointed by the Dean of the Graduate School. There is a special form that must be filed with the graduate school.

Committee meetings are required at least once a year (recommended at least once a semester); the student is responsible for arranging meetings; the student should keep the committee advised of major changes in the graduate program plan; memos summarizing each meeting should be in the student's file.

5. Other requirements described under "The Master's Degree," including but not limited to:

Note that although the Graduate School requires only 30 credits for an M.S. degree, the Department requires 36 course credits for a non-thesis M.S.

6. About the time table:

- Admission to candidacy normally occurs after completion of one year or 12 credits of graduate work.
- The comprehensive exam must be passed by the end of the fourth semester.
- No student may receive the degree in the same semester in which she/he is admitted to candidacy.
- The indicated dates form firm deadlines. A student's committee, however, may submit a written petition to GAAC for an extension of time detailing reasons for the request. An extension will only be granted under extraordinary circumstances and will be effective upon written approval by GAAC.
- Proposals to change the schedule for any reason should be preceded by a study of the graduate bulletin sections on leaves of absence, full time student status and recency of credit and explicitly address how the proposed change of schedule relates to these matters. The memo requesting the change should also address the proposed financial support.

C. DOCTOR OF PHILOSOPHY

1. Credits: a total of 60 credits (including both course and research credits) beyond the Bachelor’s degree are required:

- At least 18 course credits that are not from the independent study series, including at least one graduate course in statistics. The independent study series is BIL 671-675. However, at times these course numbers are used by professors to teach a new course or a special topics course, in which case the corresponding credits can be
counted as a non-independent study credit. Course selection requires committee approval.

- At least 12 research credits (BIL 730). There is no cap on the number of Ph.D. research credits, but once the overall number of required credits (see below) has been reached, there is no need to take additional research credits.
- An additional 30 credits from any combination of graduate courses (500 and 600 level regular courses and independent study courses) and research credits (700 level) to bring the total number of credits beyond the Bachelor's Degree to 60 credits. (One example: 18 required course credits + 12 required research credits + 15 additional course credits + 15 additional research credits = 60 total; another example would be 18 additional course credits and only 12 additional dissertation credits, etc.)
- Students who already have a Master's Degree in the same field may not need as many course credits (consult Graduate School rules on transfer credits), but at least 24 credits must be taken in residence at UM.
- The committee may decide that students with previous graduate level courses may be exempt from some of the course requirements.
- The minimum acceptable grade average in all coursework towards the degree is a "B (3.0)" and no grade may be below a "C."

**CONCEPTUAL AREAS:** Students are encouraged to take courses and independent studies from at least 3 main conceptual areas and urged to take courses and independent studies that will prepare them for research and for the comprehensive qualifying exam. Students are also encouraged to participate in seminars and study groups. They are also encouraged to take special courses in other departments of UM, at our Coalition for Excellence in Tropical Biology partner institutions, from the Organization for Tropical Studies, or other special interdisciplinary courses. Such courses should be appropriate to their course of study and research area as determined by their committees. Conceptual areas offered in our department include: EVOLUTION (graduate level evolution courses are in the series 520's or 620's, also 519 is included); ECOLOGY (graduate level ecology courses are in the series 530's or 630's), BEHAVIOR (graduate level behavior courses are in the series 540's or 640's); GENETICS AND MOLECULAR BIOLOGY (graduate level genetics courses include BMB 509, and BIL 530 in addition the series 550's or 650's); and PHYSIOLOGY AND CELL BIOLOGY (graduate level physiology courses are in the series 560's or 660's). Special concentrations in our department and/or in collaboration with other departments include: Tropical Biology, Mathematical Ecology, Neuroscience and Behavior.

2. Comprehensive qualifying exam should be passed by the end of the third semester.

- A single committee (see number 9 below about the committee membership) will advise the student on both comprehensive and research training. To fulfill the comprehensive function, the committee will be responsible for ensuring breadth, significant background and depth in at least 3 conceptual areas (examples include but are not limited to the areas listed above).
- To establish intellectual communication between the committee members and students early on, the committee will begin to work with the student in the first semester. Faculty will suggest reading lists, courses and/or independent study, as needed, to prepare the student with sufficient background for the comprehensive examination which will include 3 areas, one of which is the research area. The committee and student will interactively define the scope of comprehensive training and thus of the comprehensive examination in these 3 areas.
- The comprehensive examination will be held in the third semester. The committee will designate a chair to administer the examination. The written part of the exam will not be open book and it will be administered on campus for a discrete period of
time (up to 4 hours) by the examination chair. All members of the committee will grade all the questions. There will be an oral exam about one week later, after the committee has read the written answers, for the purpose of further exploring the student’s grasp of the subject matter.

- Each committee member will decide on a pass/fail grade based on the total picture (written plus oral). For the student to pass the examination, 3 of the 4 examiners must vote a grade of pass. An oral and written summary of the committee’s evaluation must be prepared by the chair of the examination committee and given to the student and to GAAC. If the student does not pass the examination, there will be a chance to retake it the following semester. In the case of failure a second time, he/she will be terminated from the program.

3. Research proposal: public presentation of a research proposal and defense of a written research proposal to the complete research committee (see below) should be completed by the middle of the fourth semester. Students are encouraged to follow the format of a grant proposal to a major funding agency. At the proposal defense, the student will receive either a pass or a fail. A grade of pass will be recorded if no more than one member of the complete research committee (see below) votes to fail the student. If the student fails the proposal defense, she/he will be given a second chance to defend no later than the sixth week of the fifth semester. If the defense is failed a second time, the student will be terminated from the program.

4. Admission to candidacy: (application is made on a form available in the grad school and in the department). This normally will occur at the end of the fourth semester. Requirements are passing the comprehensive examination and successfully defending a written research proposal.

5. Teaching: All students on the Ph. D. track in Biology are required to serve satisfactorily at least one semester as a teaching assistant in one of the courses offered as part of the Department’s training program.

6. Grants: Submission of a grant proposal to a major funding agency (e.g., NSF, NIH, National Geographic, World Wildlife Fund, etc.). All students are required to seek outside funding for their research. This must be a research project proposal. Application for an NSF pre-doctoral fellowship does not meet this requirement, but application for an NSF dissertation improvement grant does qualify.

7. Ph. D. Dissertation: A well-written and successfully defended dissertation containing an original contribution to the field and of quality appropriate for publication in a scientific journal; a defense is successful if all members of the committee sign the grad school form and the signature page of the dissertation. A public dissertation seminar is also made at the time of the defense.

8. Other requirements described under "Doctor of Philosophy," including but not limited to:
   - a total of at least 60 credits (course credits plus research credits).
   - once a student has completed all required credits, she/he must enroll in "Research in Residence" (BIL 750) status until the degree is granted. This course carries 0 credits, but is considered full-time enrollment. Even though no credit is earned, a tuition charge equivalent to 1 course credit normally applies to this course.

9. A single committee will advise the student on both comprehensive and research training. The committee will be responsible for ensuring breadth, significant background and depth in at least 3 conceptual areas (examples include but are not limited to the areas listed above). The research function of the committee is to advise the student on research, including preparation, training, project choice, project design, implementation and evaluation of the research. The committee will go through several phases and its membership will be determined by the advisor and student together, contingent upon approval of GAAC and/or the Graduate School, as appropriate at each phase:
   - The initial committee will consist of at least 4 faculty, 2 appointed to ensure breadth of training (from two areas outside the research area) and 2 from the
research area. It will be formed to help the student choose courses during the first few weeks of the first semester. This committee will decide whether students having a M.S. in biology (botany, zoology, etc.) from another institution can substitute a graduate level course taken elsewhere for a departmental course requirement; it will also decide which additional courses should be taken for both research and breadth. The choice of areas will be briefly outlined in a memo to GAAC.

- **The initial committee of at least 4 faculty** will be responsible for preparing and administering the comprehensive examination.
- **The complete committee of at least 5 faculty** including one from outside the department, should be formed by the end of the third semester; all five members should participate in the proposal evaluation which will take place in the fourth semester. The committee will consist of a minimum of five faculty, which includes the committee chair, who must be a member of the Graduate Faculty. Of the remaining members, it is also required that two shall be from the Graduate Faculty.
- **The dissertation committee (of five)** is formed officially when the student is admitted to candidacy. It will usually be comprised of the same individuals as are on the complete research committee, or it may be formed anew. The student and advisor consult on the membership of the committee, and the department nominates the committee to the graduate school. The committee will consist of a minimum of five faculty, which includes the committee chair who is the advisor, who must be a member of the Graduate Faculty. Of the remaining members, it is also required that two shall be from the Graduate Faculty and one from outside the department of concentration. The dissertation committee is nominated by the department, but it must be approved and appointed by the Dean of the Graduate School. There is a special form that must be filed with the graduate school.
- **Committee meetings are required at least once a year** (recommended at least once a semester in the early phases). The student is responsible for arranging meetings; the student should consult with the committee about any major changes in research goals and any problems; memos summarizing each meeting should be in the student’s file.

10. About the time table:

- **The written comprehensive qualifying examination** must be passed by the end of the third semester.
- **A polished, written dissertation proposal** must be defended to the committee in the fourth semester together with a public presentation of the proposal. This must take place by mid-April of the spring semester or mid-November of the fall semester.
- **Admission to candidacy** normally occurs after the comprehensive qualifying exam and proposal defense are passed upon the recommendation of the committee and the approval of the Graduate School. Application for admission to candidacy is made to the graduate school on a special form.
- **Analysis of data and a polished draft of dissertation** should be completed and in the hands of the dissertation committee no later than the middle of the tenth semester.
- **Defense of the dissertation and its submission to the Graduate School** must meet or precede the deadline for graduation immediately following the tenth semester unless an extension has been approved by GAAC upon recommendation of the dissertation committee. Notice of the defense and of the public seminar must be submitted on a special form to the graduate school in advance of the defense and must be posted publicly in the department.
- **The oral defense of the dissertation** must be given during regular sessions of the Fall or Spring semesters, not during summer sessions, intersessions, reading days or finals weeks.
No student may receive the degree in the same semester in which she/he is admitted to candidacy.

The indicated dates form **firm deadlines**. A student's committee, however, may submit a written petition to GAAC for an extension of time detailing reasons for the request. **An extension will only be granted under extraordinary circumstances and will be effective upon written approval by GAAC.**

Proposals to change the schedule for any reason should be preceded by a study of the **graduate bulletin** sections on **leaves of absence**, **full time student status** and **recency of credit** and explicitly address how the proposed change of schedule relates to these matters. The memo requesting the change should also address the **proposed financial support** of the student beyond the 10 semesters of normal departmental support.

11. Public presentations must be during regular semesters. The public presentation associated with the defense of the proposal and the public seminar associated with the defense of the dissertation must be given during regular sessions of Fall or Spring semesters, not during summer sessions, inter-sessions, reading days, or finals weeks.

**IMPLEMENTATION**

All Graduate students will be reviewed each fall semester by GAAC.

A. The advisor will review the student's progress to date.

B. The student will provide updates for a student progress database every October.

C. The student will provide written evidence that the advisor and committee have reviewed her/his progress and plans.

D. Each student will receive a letter summarizing the results of the discussion concerning his/her progress.

E. All graduate students shall have the right to respond to GAAC, and, if necessary, the graduate faculty in matters pertaining to the review.

F. Possible outcomes of the review:

1. Student making satisfactory progress
2. Student not making satisfactory progress; recommendations for improvement
3. Student not making satisfactory progress; his/her tenure terminated

**FINANCIAL SUPPORT**

A. The Department intends to support all doctoral students in good standing for up to 10 semesters. Support beyond 10 semesters is contingent upon GAAC approval.

B. Students who do not provide annual updates for the student progress database will not be eligible for continued funding. Students who will be off-campus are still responsible for making sure that GAAC receives the data.

C. Students holding full fellowships or research assistantships will not normally be given teaching assignments, nor will students be permitted to hold fellowships and research assistantships simultaneously. Exceptions require GAAC approval.

**CHEMISTRY - Dept. Code: CHM**

www.as.miami.edu/chemistry

Prospective graduate students are expected to have completed, during their undergraduate training:

The candidate must hold a B.S./B.A. degree from an accredited institution. Consideration is given to applicants who have successfully completed general chemistry (two semesters), organic chemistry (two semesters), physical chemistry (two semesters), and the related...
laboratories. A course in advanced inorganic chemistry is strongly recommended, and remedial work in this area may be required of students who have not taken such a course. The mathematics and physics courses that are normally included in a B.S. program in chemistry are also required.

Undergraduate deficiencies are treated as such and must be overcome during the first year of graduate study.

**M.S. Degree**
The MS degree requires a minimum of 30 credits. The department will cover tuition costs up to 30 credits for students on assistantships and fellowships. At least 22 credits must be formal lecture courses. The remaining 8 credits must be broken down as follows:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry Seminar (CHM 679)</td>
<td>1</td>
</tr>
<tr>
<td>Chemistry Seminar (CHM 680)</td>
<td>1</td>
</tr>
<tr>
<td>Master's Thesis (CHM 710)</td>
<td>6</td>
</tr>
</tbody>
</table>

Students must take a minimum of 9 credits of formal lecture courses in the fall semester of their first year and a minimum 9 credits of formal lecture courses in the spring semester of their first year. The remaining 4 credits of formal lecture courses must be taken in the second year. Of the 22 credits 3 core courses totaling 9 credits should be taken by all graduate students.

- The required number of credits in the chemistry seminars (CHM 679 and 680) must be taken in the first and second year.
- The required number of credits in research (CHM 710) must be taken in the second year.
- A written comprehensive exam must be passed before the end of the first year.
- A dissertation based on research of a quality acceptable for publication in a recognized scientific journal must be completed before the end of the second year.

The remaining courses may be selected from 600-level chemistry courses or 500- or 600-level courses in other departments.

The M.S. degree may be earned with or without a thesis.

In order to qualify to do an MS degree, an advanced comprehensive exam must be passed.

The exam is administered at the end of the first year of coursework.

**Ph. D. Degree**
The general requirements for the doctorate in Chemistry are set forth in this Bulletin under the heading Doctor of Philosophy. The Department of Chemistry has the following specific requirements:

The PhD degree requires a minimum of 60 credits. The department will cover tuition costs up to 60 credits for students on assistantships and fellowships. At least 22 credits must be formal lecture courses. The remaining 38 credits could be broken down as follows:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry Seminar (CHM 679)</td>
<td>4</td>
</tr>
</tbody>
</table>
Chemistry Seminar (CHM 680)    2
Problems in Research Planning (CHM 688)   2
Doctoral Dissertation (CHM 730)    30

Students must take a minimum of 9 credits of formal *lecture courses* in the fall semester of their first year and a minimum of 9 credits of formal lecture courses in the spring semester of their first year. The remaining 4 credits of formal lecture courses must be completed in the second year. Of the 22 credits, 3 core courses totaling 9 credits should be taken by all graduate students.

- The required number of credits in the *chemistry seminar* (CHM 679) must be taken in the first and second year.
- The required number of credits in the *chemistry seminar* (CHM 680) must be taken in the second and fourth year.
- The required number of credits in *research* (CHM 730) must be taken in the second, third and fourth year.
- A *written comprehensive exam* must be passed before the end of the first year.
- An *oral comprehensive exam* must be passed before the end of the second year.
- An original *research proposal* (CHM 688) must be presented and defended before the end of the third year.
- A *dissertation* based on research of a quality acceptable for publication in a recognized scientific journal must be completed before the end of the fifth year.

Chemistry Course Listing

**COMPUTER SCIENCE**  Dept. Code:  **CSC**

[www.cs.miami.edu](http://www.cs.miami.edu)

The Computer Science department offers the Master of Science in Computer Science. Prerequisites and requirements for these degrees are described below:

**MASTER OF SCIENCE IN COMPUTER SCIENCE**

Prerequisites
Completion of the following courses, or their equivalents, is prerequisite to entry into the program: CSC 120, CSC 220, CSC 314, CSC 517, CSC 527, MTH 111, MTH 224, and MTH 309.

Students may be admitted with deficiencies; these must be completed in addition to the degree requirements.

Requirements
Students must complete either the thesis option or the coursework option.

1. **Thesis option:**
   - CSC 710 - Masters Thesis (6 credits) and coursework, one of:
   - 9 credits from CSC 6XX courses and 15 credits from other approved courses.
   - 6-8 credits from CSC 6XX courses and 19-21 credits from other approved courses.
   - 3-5 credits from CSC 6XX courses and 25-27 credits from other approved courses.

2. **Coursework option:**
   36 credits of approved courses, including at least 18 credits from CSC 6XX courses.
   At least 18 credits, exclusive of the thesis credits, must be earned in courses offered by the Department of Computer Science.
Each program must include both theoretical and experimental topics.

Recommended subjects include:

Operating Systems, Programming Languages, Analysis of Algorithms, Theory of Computation, and Computer Architecture or Software Development. The approval is made by the Computer Science Graduate Committee and the Department Chairman or designate.

Programs may thus be individually tailored to meet varied backgrounds and objectives.

It is recognized that there are still individuals with undergraduate degrees in other fields wishing to pursue graduate work in Computer Science, and other individuals with work experience in the field wishing to advance their formal training in Computer Science.

**Approved Graduate Computer Science Courses**
The basic guidelines for approval of a students program are recommendations appearing in the Communications of the Association for Computing Machinery (ACM), the professional society in Computer Science.
The approved Graduate Computer Science Courses are listed below:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC 506</td>
<td>Logic</td>
</tr>
<tr>
<td>CSC 517</td>
<td>Data Structures and Algorithm Analysis</td>
</tr>
<tr>
<td>CSC 518</td>
<td>Interpreters and Compiler Theory</td>
</tr>
<tr>
<td>CSC 519</td>
<td>Programming Languages</td>
</tr>
<tr>
<td>CSC 521</td>
<td>Principles of Computer Operating Systems</td>
</tr>
<tr>
<td>CSC 523</td>
<td>Principles of Filing and Database Systems</td>
</tr>
<tr>
<td>CSC 524</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>CSC 527</td>
<td>Theory of Computing</td>
</tr>
<tr>
<td>CSC 529</td>
<td>Introduction to Computer Graphics</td>
</tr>
<tr>
<td>CSC 531</td>
<td>Introduction to Software Engineering</td>
</tr>
<tr>
<td>CSC 540</td>
<td>Algorithm Design and Analysis</td>
</tr>
<tr>
<td>CSC 544</td>
<td>Computer Modelling</td>
</tr>
<tr>
<td>CSC 545</td>
<td>Introduction to Artificial Intelligence</td>
</tr>
<tr>
<td>CSC 555</td>
<td>Multimedia Systems</td>
</tr>
<tr>
<td>CSC 595-599</td>
<td>Topics in Computer Science</td>
</tr>
<tr>
<td>CSC 606</td>
<td>Logic Programming</td>
</tr>
<tr>
<td>CSC 609</td>
<td>Data Security and Cryptography</td>
</tr>
<tr>
<td>CSC 611</td>
<td>Theory of Computation</td>
</tr>
<tr>
<td>CSC 612</td>
<td>Complexity Theory</td>
</tr>
<tr>
<td>CSC 613</td>
<td>Computer System Performance</td>
</tr>
<tr>
<td>CSC 620</td>
<td>Data Management</td>
</tr>
<tr>
<td>CSC 621</td>
<td>Computer Networks</td>
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<tr>
<td>CSC 622</td>
<td>Theory of Computation</td>
</tr>
<tr>
<td>CSC 623</td>
<td>Complexity Theory</td>
</tr>
<tr>
<td>CSC 624</td>
<td>Computer System Performance</td>
</tr>
<tr>
<td>CSC 625</td>
<td>Data Management</td>
</tr>
<tr>
<td>CSC 626</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>CSC 627</td>
<td>Theory of Computation</td>
</tr>
<tr>
<td>CSC 628</td>
<td>Complexity Theory</td>
</tr>
<tr>
<td>CSC 629</td>
<td>Computer System Performance</td>
</tr>
<tr>
<td>CSC 630</td>
<td>Data Management</td>
</tr>
<tr>
<td>CSC 631</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>CSC 632</td>
<td>Theory of Computation</td>
</tr>
<tr>
<td>CSC 633</td>
<td>Complexity Theory</td>
</tr>
<tr>
<td>CSC 634</td>
<td>Computer System Performance</td>
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<tr>
<td>CSC 635</td>
<td>Data Management</td>
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<tr>
<td>CSC 636</td>
<td>Computer Networks</td>
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<tr>
<td>CSC 637</td>
<td>Theory of Computation</td>
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<tr>
<td>CSC 638</td>
<td>Complexity Theory</td>
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<tr>
<td>CSC 639</td>
<td>Computer System Performance</td>
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<tr>
<td>CSC 640</td>
<td>Data Management</td>
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<tr>
<td>CSC 641</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>CSC 642</td>
<td>Theory of Computation</td>
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<tr>
<td>CSC 643</td>
<td>Complexity Theory</td>
</tr>
<tr>
<td>CSC 644</td>
<td>Computer System Performance</td>
</tr>
<tr>
<td>CSC 645</td>
<td>Data Management</td>
</tr>
<tr>
<td>CSC 646</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>CSC 647</td>
<td>Computational Geometry</td>
</tr>
<tr>
<td>CSC 648</td>
<td>Automated Reasoning</td>
</tr>
<tr>
<td>CSC 649</td>
<td>Advanced Multimedia Systems</td>
</tr>
<tr>
<td>CSC 650</td>
<td>Directed Reading</td>
</tr>
<tr>
<td>CSC 651</td>
<td>Topics in Computer Science</td>
</tr>
<tr>
<td>CSC 652</td>
<td>Seminar for Beginning Graduate Students</td>
</tr>
<tr>
<td>CSC 653</td>
<td>Object-Oriented Software Engineering</td>
</tr>
<tr>
<td>CSC 654</td>
<td>Computer Architecture</td>
</tr>
<tr>
<td>CSC 655</td>
<td>VLSI Systems</td>
</tr>
<tr>
<td>CSC 656</td>
<td>Introduction to Digital Image Processing</td>
</tr>
<tr>
<td>CSC 657</td>
<td>Machine Learning</td>
</tr>
<tr>
<td>CSC 658</td>
<td>Modeling and Analysis of Computer Networks</td>
</tr>
<tr>
<td>CSC 659</td>
<td>Advanced Computer Architecture</td>
</tr>
<tr>
<td>CSC 660</td>
<td>Data Security and Cryptography</td>
</tr>
<tr>
<td>CSC 661</td>
<td>Fault-Tolerant Computer Design</td>
</tr>
<tr>
<td>CSC 662</td>
<td>Information Theory</td>
</tr>
<tr>
<td>CSC 663</td>
<td>Computer Vision</td>
</tr>
<tr>
<td>CSC 664</td>
<td>Modeling and Analysis of Computer Networks</td>
</tr>
<tr>
<td>CSC 665</td>
<td>Discrete Mathematics II</td>
</tr>
</tbody>
</table>

MTH 509 - Discrete Mathematics II
## Evaluation

<table>
<thead>
<tr>
<th>Computer Science Course Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 620 - Information Systems Analysis and Design</td>
</tr>
<tr>
<td>CSC 623 - Theory of Relational Databases</td>
</tr>
<tr>
<td>CSC 624 - Mobile Wireless Systems</td>
</tr>
<tr>
<td>CSC 628 - Parallel Algorithms</td>
</tr>
<tr>
<td>CSC 644 - Advanced Computer Modelling</td>
</tr>
<tr>
<td>CSC 645 - Introduction to Expert Systems</td>
</tr>
<tr>
<td>CSC 646 - Neural Computing</td>
</tr>
</tbody>
</table>

## CREATIVE WRITING

**www.as.miami.edu/english**

The Department of English offers a two-year program in fiction or poetry writing leading to the Master of Fine Arts degree. The program provides an opportunity for students of superior ability in imaginative writing to develop their skills and critical judgment through the practice of writing and the study of literature.

The creative writing program is a member of the Associated Writing Programs.

For further information, please consult the description of the M.F.A. in English.

## ENGLISH - Dept. Code: ENG

**www.as.miami.edu/english**

The Department of English offers programs leading to the degrees of M.A. and Ph.D. The Ph.D. program is an innovative scholarly course of study offering substantial work in all areas of English, American, and Anglo-Irish literature, with some opportunities for advanced work in comparative literature.

**A. Master of Arts**

1. **Program of Study**
   A student may pursue a program with or without a thesis.
   For the program with a thesis,
   - a candidate must complete a minimum of 36 credits on the graduate level.
   - Of the 36 credit total, 18 must be at the 600-level.
   - Six credits in thesis work will count toward the 36.
   For the program without a thesis,
   - a candidate must complete a minimum of 36 credits on the graduate level.
   - Of the 36 credits, 18 must be at the 600-level.
   For either program up to six hours of graduate credit from related fields may be included with the consent of the Director of Graduate Studies.
   No more than three credits will be allowed in directed reading courses.

2. **Language Requirements**
   A reading knowledge of a foreign language is required.

3. **Examinations**
Candidates electing to write a thesis will, in addition, be given a final oral examination as defense of thesis or creative work.

For further information, consult the material on the M.A. as stated elsewhere in this Bulletin.

B. Doctor of Philosophy

1. Prerequisite
Students are not admitted to the Ph.D. program until they have earned the M.A. in English.

2. Courses
Ph.D. students must complete at least 18 credits of 600-level courses in literature or literary theory after being formally admitted to the Ph.D. program. No transfer credits or other courses outside the department may count toward the 18 credits.

3. Language Requirements
A reading knowledge of one foreign language is required.

4. Qualifying Examination
All Ph.D. students are required to pass a qualifying examination. Students may not take the qualifying examination until they have
   • completed the required 18 credits of Ph.D. coursework,
   • satisfied the foreign language requirement
   • enrolled for English 697, Readings for the Qualifying Examination.

5. Dissertation
Students may proceed with the dissertation after the dissertation committee has been appointed and the dissertation proposal has been accepted by the committee and approved by the department. The dissertation itself must be an investigation of a substantial critical or scholarly topic. A final oral defense of the dissertation is required. Further information on the department’s graduate programs is contained in the Guide for Graduate Students, available from the Department of English.

English Course Listing

FOREIGN LANGUAGES AND LITERATURES
Dept. Codes: FLL, FRE, GER, ITA, LAT, POR, SPA
www.fll.miami.edu/fll

The Department of Foreign Languages and Literatures offers programs leading to the Ph.D. in Romance Studies with concentrations in French and Spanish. Graduate course work comprehends all major periods and areas, providing the breadth needed for interdisciplinary work and required of today’s teachers. The program is designed to prepare students for careers as university professors, teachers and research scholars. It includes training in advanced language, teaching, and research skills that may also contribute to other professions. For additional information on teaching and research opportunities, faculty, program policies and application requirements, visit http://www.fll.miami.edu/fll/graduate. The Ph.D. in Romance Studies is satisfied through: 1.
a) for students entering with a B.A. equivalent, passing satisfactorily a minimum of 45 credits in approved courses, with at least 24 graded credits at the 600 level; or
b) for students entering with an M.A. in the language of study, passing satisfactorily a minimum of 36 credits in approved courses, with at least 18 graded credits at the 600 level

2. passing “Introduction to Foreign Language Teaching” (FLL 503), “Introduction to Literary Theory” (FLL 505), and a minimum of 3 graded credits in each of the following areas:

<table>
<thead>
<tr>
<th>FRENCH</th>
<th>SPANISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle Ages</td>
<td>Middle Ages</td>
</tr>
<tr>
<td>16th Century</td>
<td>Golden Age</td>
</tr>
<tr>
<td>17th Century</td>
<td>18th-19th Century Spain</td>
</tr>
<tr>
<td>18th Century</td>
<td>20th Century Spain</td>
</tr>
<tr>
<td>19th Century</td>
<td>Colonial Latin America</td>
</tr>
<tr>
<td>20th Century</td>
<td>19th Century Latin America</td>
</tr>
<tr>
<td>Francophone Studies</td>
<td>20th Century Latin America</td>
</tr>
</tbody>
</table>

3. in addition to proficiency in English and the language of study, demonstrating reading knowledge of Latin and either
a) reading knowledge of two other languages, or
b) holistic knowledge of one other language by passing a course at the 300-level or above;

4. passing a breadth exam that covers either three periods in one region or two periods in two regions;
5. passing a qualifying exam, on an approved topic;
The exam includes three general approaches that focus on literature, theory, and a cognate discipline (e.g. history, sociology, art, film, etc.);
6. successfully defending a dissertation prospectus;
7. completing and defending satisfactorily a dissertation;
8. satisfying the requirements of the Graduate School as stated in the Bulletin.
A 5-year B.S./M.S. in Geological Sciences and Marine Geology allows qualified students to complete a master’s degree in one year of study beyond the B.S.

The B.S. degree in Geological Sciences is offered through the Department of Geological Sciences in the College of Arts and Sciences.

The Master of Science (M.S.) degree in Marine Geology and Geophysics is offered through the Division of Marine Geology and Geophysics in the Rosenstiel School of Marine and Atmospheric Science (RSMAS).

Undergraduate requirements are listed under the B.S. degree above.

By the spring of their Junior year students should have obtained a graduate faculty advisor, selected an approved topic for research, and begun work on their senior thesis as preparation for the M.S. In the senior year, students will increase their focus on graduate courses and work closely with their graduate faculty advisor.

Contact Dr. Harold Wanless at the departmental office (305-284-4253) for more information.

**Geological Course Listing**

**HISTORY - Dept. Code: HIS**

[www.as.miami.edu/history](http://www.as.miami.edu/history)

I. REQUIREMENTS FOR THE M.A. DEGREE IN HISTORY

A. Admissions

1. A student with a bachelor’s degree from an accredited institution may apply for admission to the masters program.
2. Applicants must meet the admissions requirements set by both the Graduate School and the Department of History.
3. The formal application must contain:
   a) A completed application form.
   b) A completed financial aid application, if seeking aid.
   c) Three letters of recommendation, preferably from applicant’s former professors.
   d) Recent Graduate Record Examination scores on the General Test.
   e) TOEFL scores (for international students).
   f) Official transcripts.
   g) A detailed statement from the student indicating:
      1) the student’s background and education;
      2) the student’s interests (field, topic, etc.);
      3) why the student wants to pursue a graduate degree in history at the University of Miami;
      4) what the student plans to do with the degree upon completion.

All applicants are encouraged to submit a sample of their best written work such as a copy of a paper written for an undergraduate or a graduate history course.

In rare cases the student who fails to meet minimum requirements may be admitted on a provisional basis for one semester. During that semester the student must demonstrate, by successful performance in courses, that he or she is capable of continuing in the program on a regular status before being admitted for a second semester.

The department reviews student progress each year in the Spring semester. Students who are judged to not be performing up to departmental standards and making good progress towards a degree may be dropped from the program.

B. The Program
1. Students have the option of two plans of study toward the Master of Arts Degree in History.
      At least 24 graduate course credits in residence including HIS 695, of which 12 must be at the 600-level; six additional credits in HIS 710, for which the students must present a thesis that is either the result of original research or a critical review of the historical literature in an approved topic.
   b) Plan B: M.A. without Thesis. At least 30 graduate course credits, including HIS 695, 24 of which must be in residence, of which 18 must be at the 600-level.

C. The student must pick a major field and a second field in consultation with the major advisor. The student is expected to take the necessary course work to pass the comprehensive exam (see below) in these two fields.

D. The student must take HIS 695 by the end of his or her first year.

E. M.A. Committees and Advising
   1. Each entering student will be assigned a faculty advisor. The student has the option at any time to request a change of major advisor, in consultation with the Director of Graduate Studies.
   2. During the first year the student (under Plan A) will select a department faculty member as his/her thesis advisor. Each student, with the aid of the advisor, will establish a three-member Comprehensive Examination Committee.
   3. The Committee will be composed of the student’s advisor, one member from the second field, and one member from inside or outside the Department.

F. The M.A. Comprehensive Examination
   1. The comprehensive examination for the Master of Arts Degree in history will be an oral examination that will normally not exceed more than one and a half hour in duration.
   2. Students selecting the thesis option should also expect extensive questioning on the thesis.

G. Thesis Requirements (Plan A)
   1. Six credits of thesis research (HIS 710);
   2. A written thesis, in accordance with Graduate School regulations, approved by the candidate’s committee.

H. Language Requirements
Students must demonstrate competence (reading knowledge) in one or more foreign languages if so required by their major advisor.

II. REQUIREMENTS FOR THE PH.D. DEGREE IN HISTORY

A. Admissions
   1. For admission to the doctoral program the applicant’s record should offer promise of superior achievement.
   2. Students with an M.A. degree from an accredited institution may apply for admission to the doctoral program.
3. In exceptional cases, students with a B.A/B.S. degree may be admitted directly to the doctoral program by vote of the Graduate Committee of the Department.

4. Students admitted into the M.A. program who perform at a superior level can receive accelerated transfer into the Ph.D. program by vote of the Graduate Committee of the department.

5. The items needed for a formal application are identical to those needed for the M.A. program.

6. Applicants must meet the admissions requirements set by both the Graduate School and the Department of History.

7. The department reviews student progress each year in the Spring semester. Students who are judged to not be performing up to departmental standards and making good progress towards a degree may be dropped from the program.

B. The Program
1. For students entering the Ph.D. program with an M.A., at least 24 graduate course credits, including HIS 695, must be completed in history and its cognate fields in residence beyond the master’s degree.
2. For students admitted into the program without the M.A., at least 48 graduate course credits, including HIS 695, must be completed in history and its cognate fields in residence.
3. In addition, the student must complete at least 12 credits of dissertation research (HIS 730) beyond the graduate course-credits requirement.

C. Ph.D. Committees and Advising
1. Each student will be assigned a faculty advisor. The student has the option at any time to request a change of major advisor, in consultation with the Director of Graduate Studies.
2. Each student with the help of the advisor, will select a committee of at least 4 members, including the advisor and directors of the student’s fields (see below).

D. Fields
The student must pick a major field, a second and third history field, and a cognate field in consultation with the major advisor. The student is expected to take the necessary course work to pass the comprehensive exam (see below) in these fields.

E. First Year
The student must take HIS 695 by the end of his or her first year.

F. Language Requirement
1. Competence (reading knowledge) of at least one foreign language is required.
2. More than one foreign language may be required if the major advisor deems it necessary.
3. In special cases six hours of advanced study taken at this institution in a skills area such as quantitative methods may be substituted in lieu of the language with the consent of the major advisor and Graduate Director.
4. The language requirement may also be met through formal course work or by an examination administered by the Department of Foreign Languages and Literatures. In the case of languages not covered by that department, special arrangements will be made by the department.
5. If the language requirement has not been met, students must, in conjunction with their advisor, prepare a plan that specifies how they shall meet the requirement.
6. The entire language requirement must be completed before a student can take the qualifying examination.

G. Qualifying Examination
1. The qualifying examination is given only after the completion of all required course work, the recommendation of the major advisor, and the approval of the Graduate Director and Chair of the Department.
2. The student is expected to take the comprehensive exam by the end of the semester after the completion of class work.
3. The student will take written examinations in the three history fields.
4. The different sections of the written exam will normally be administered over a period of two successive weeks.
5. Each examination will be comprised of three or four questions and will be four hours in duration.
6. Only after the advisory committee deems that the student has successfully passed the written examinations for each field, will the student be permitted to take the oral examination.
7. The oral examination will cover the three history fields and the cognate field, and will generally be two hours in duration. The student will be advanced to candidate status after passing the qualifying examination and submitting an acceptable dissertation prospectus.

H. Dissertation
1. Successful doctoral dissertations are required to make a significant contribution to the candidate’s field of specialization is a primary requirement.
2. The dissertation must meet the highest standards of substance and form and demonstrate an ability to conduct and report independent scholarly investigation.
3. Upon completion of the dissertation, and approval by the dissertation committee, the student presents a dissertation defense in the form of an oral examination lasting approximately two hours which is open to the University community.

Deadlines
A. January 20: Applications for admission and aid for Fall semester.
B. October 15: Applications for admission only for Spring semester.

History Course Listing

MASTER OF ARTS IN INTERNATIONAL ADMINISTRATION (MAIA)
www.miami.edu/maia

The Master of Arts in International Administration, known as the MAIA program, is an interdisciplinary degree program designed to integrate theory and real-world experiences in international affairs. The degree is awarded by the College of Arts and Sciences.

The MAIA program is designed to provide students with the skills and knowledge needed to advance professionally and to build a solid international career. The degree features advanced study in specialized subject matter with an emphasis on research skills and practical applications. MAIA is a university wide program with the participation of eight departments, five schools and upward of twenty faculty members. The faculty is drawn from the best resources of the University of Miami and from highly skilled professionals from the fields of diplomacy, journalism, law, international business, and other related areas. The
program is directed by the assistant provost for university-wide international studies, a professor of International Studies.

For complete information on the faculty and staff of the MAIA program, and for many other details of the program, please visit the MAIA web site: www.miami.edu/maia.

Core Requirements

Six core courses are required of all MAIA students. Students then complete the degree with three graduate-level electives, which may be chosen from among other UM graduate offerings. Finally, all MAIA students must enroll in and complete a practicum, details of which are described below. The core courses are taught in an integrated fashion, designed to give students the maximum learning experience in an efficient manner. The courses are a mixture of theory and practice, skills and knowledge, geared toward the demands of international professional careers.

In the core courses, students will:

• develop skills in writing, speaking, and numerical and historical analysis
• learn how to collect, interpret and report complex social, political, and economic data
• increase skills in methods of research, communications skills
• master strategic and tactical thinking and negotiation
• build practical and theoretical knowledge in international relations, international economics, intercultural communication, and public administration in an international context.

Core courses include:

• International Administration (INS 512)
• World Affairs (INS 514)
• Information/Communication in International Administration (INS 513)
• Strategic Thinking: Negotiation and Bargaining: Advanced International Administration (INS 516)
• International Economics for MAIA (INS 621)
• International Organizations (INS 501)

Practicum in International Administration (INS 517)

The purpose of the practicum is to give students the opportunity to apply academic theory and acquired skills in international administration under real world conditions. Students are expected to complete the practicum during the summer months with a minimum time commitment of at least 200 hours. A final report/case study analysis is required as part of successful completion of the practicum. A fuller guide to the practicum and the requirements for the practicum is provided to students during meetings with the practicum advisor.

Other Requirements for Graduation

In addition to completing 30 credits at the graduate level, which must include the six required core courses and the practicum course, students must satisfy the following additional program requirements.

The information technology boot camp is an intensive six-day program, which is generally the new student's introduction to MAIA and is taken just prior to the start of the semester of admission. This boot camp is a special edition of the UM Office Specialist (UMOS), a
certification course created by the University of Miami to establish a nationally recognized standard of business computer skills. The MAIA/UMOS boot camp is an intensive, hands-on computer course that trains, tests and certifies all the core skills for Microsoft Windows, Word, Excel, Access, PowerPoint, FrontPage and Outlook.

The budgeting and financial management boot camp is a two-day, non-credit workshop that covers key subjects essential to successful budgeting and financial control for NGOs and other not-for-profit companies. It is taught by a professional financial manager and is offered once a year.

MAIA students must demonstrate proficiency in a second language prior to graduation. They are tested by staff and faculty with the Intensive Language Institute of the Division of Continuing and International Education. If students need additional language training after the testing result, they will be recommended to enroll in non-credit language courses to attain the necessary proficiency.

All MAIA students must complete their degree with three graduate level elective courses. Electives must be approved by MAIA directors and students are encouraged to use the electives to create a specialization in an area of study. For example, students may specialize in marine affairs by taking courses at RSMAS, public health by taking courses in the School of Medicine’s MPH program, or public administration by taking courses in the School of Business’ MPA program. Students may also seek elective credits within other disciplines in the College of Arts and Sciences to round out the program. Electives may be taken at Charles University, Prague or at the School of International Relations at the St. Petersburg State University, Russia.

Students must also select an area of regional focus. While enrolling in the program’s six core courses, students would gear final presentations, group projects, and class reports with an emphasis on their chosen region of expertise. Students are then assigned to regional advisors chosen from among UM’s faculty experts in that area or region of the world.

**Dual Degree Program: MAIA/MPH**

The MAIA program and the School of Medicine’s Department of Epidemiology offer a dual degree sequence leading to the award of both the Master of Arts in International Administration and the Master of Public Health degrees. This sequence is particularly appropriate for individuals seeking careers in the growing field of international public health. A major advantage of this program is that the two offering bodies have agreed to accept a number of courses from each other’s programs as partially fulfilling requirements for the two degrees.

**INTERNATIONAL STUDIES - Dept. Code: INS**

[www.as.miami.edu/internationalstudies](http://www.as.miami.edu/internationalstudies)

The Department of International Studies offers interdisciplinary programs leading to M.A. and Ph.D. degrees in International Studies. The M.A. and Ph.D. programs in International Studies are structured into four general fields: International Relations, International Economics and Development, Comparative Studies, and Regional and Spatial Perspectives. MA students are required to choose one concentration field; Ph.D. students are required to choose two concentration fields.

**FIELDS**
**International Relations:** includes courses in areas such as international relations theory; security and peace studies, conflict and conflict resolution; international law and organization; foreign policy and diplomacy; geopolitics, and related fields.

**International Economics and Development:** includes courses in international economics; economic development; international political economy; international trade, and related courses.

**Comparative Studies:** includes courses in comparative politics; comparative analysis; comparative regimes; comparative political economy, democratization; civil-military relations; and courses in several areas, especially in Latin America (including comparative political economy, culture and thought, security, and drug trafficking, and the politics of subsets of countries such as the Southern Cone, Mexico and northern South America).

**Regional and Spatial Perspectives:** includes courses that deal with issues of place, region and nature; environmental studies, development and the environment, human and social geography, and other social science areas.

The doctorate concentrates on preparing scholars with a specialized base of knowledge in a particular area. It is designed to accommodate a small number of superior students chosen from applicants with a strong social-science background, as well as those combining appropriate education with previous experience in related areas of business or government. Individual courses of study accommodate special interests, prior training, and career objectives to ensure flexibility in planning a program, as long as distribution requirements are met.

I. M. A. DEGREE REQUIREMENTS
   1. A minimum of 30 credits (10 courses)
   2. A foreign language competency examination.
   3. A comprehensive examination based on the student’s primary concentration or an oral defense of a written thesis (in which case six credits of INS 710 are needed, and a minimum 3.5 GPA after the first 18 credits)

II. PH.D. DEGREE REQUIREMENTS
   A. A minimum of 36 course credits in doctoral status and 12 dissertation credits (INS 730).
   B. Students without an M.A. degree should expect coursework significantly beyond this minimum to meet the University requirement of at least 60 credits beyond the baccalaureate, including thesis and dissertation credits, for award of the Ph.D. degree. These students are required to take an additional M.A. exam and be evaluated for permission to continue their doctoral program.
   C. Students entering the doctoral program with an M.A. degree in international studies or related disciplines must take a minimum of 24 course credits.
   D. All Ph.D. students are required to complete the required course work, pass a foreign language competency exam, and pass two written and oral comprehensive exams.

International Studies Course Listing

**LATIN AMERICAN STUDIES - Dept. Code: LAS**
www.as.miami.edu/lasp
www.as.miami.edu/ids
MASTER OF ARTS IN LATIN AMERICAN STUDIES

A. The M.A. in Latin American Studies is a 36-credit interdisciplinary degree, with a strong emphasis on Latin American politics and U.S.-Latin American relations as well as opportunities to specialize in History, Literary and Cultural Studies, and other fields.

B. The program consists of a core Latin American seminar and a minimum of nine additional seminars to be taken as electives.

C. Students are required to write a masters thesis or pass a comprehensive exam.

D. Students must demonstrate advanced language competence in either Spanish or Portuguese by passing a course taught in the target language at the 500-level or above, or by passing an equivalent language competency exam. Students must also demonstrate basic knowledge of a second Latin American language by passing a course at the 105 level or equivalent.

E. The Latin Americanist faculty have research expertise and teach a broad variety of graduate level seminars on topics ranging from
   1. Globalization and social change.
   2. Latin American literary, film, and cultural studies.
   3. Social and political movements.
   4. Regime transitions, democratization, and citizenship.
   5. Museums and representations of identity.
   6. Civil-military relations.
   7. Political economy of market reforms.
   8. Colonial and post-colonial studies.
   10. Latin American political thought.

F. With approval from the Director of Latin American Studies degree programs, students may also take their elective credits with Latin Americanists in other Schools such as Communication, Law, Business, or Marine Sciences.

REQUESTS FOR INFORMATION
For more information, contact:

LAS Degree Programs
University of Miami
1111 Memorial Drive
Coral Gables, FL 33124-2302
(305) 284-3117
FAX (305) 284-2796
lasgrad@miami.edu
www.as.miami.edu/ids

Latin American Studies Course Listing

LIBERAL STUDIES - Dept. Code: MLS
www.as.miami.edu/mals

The Liberal Studies program is founded on an interdisciplinary approach to issues and questions central to the history and development of human culture. It is designed to provide
a broad understanding of these issues and questions through a focused and systematic program of study drawing upon faculty from various disciplines in the humanities, the social sciences, and the basic sciences.

THE MASTER OF ARTS IN LIBERAL STUDIES

The Master of Arts degree requires 24 credits, plus a six-credit thesis for which an additional six credits of coursework may be substituted and participation in the MALS Writing Seminar. The curriculum is drawn from additional courses designed for MALS students, as well as other graduate level courses with the approval of the director.

For the program with a thesis, a candidate must complete a minimum of 30 credits on the graduate level which includes:

- Three 3-credit core courses.
- 15 approved graduate credits.
- Six credits for thesis.

For the program without a thesis, a candidate must complete a minimum of 30 credits on the graduate level which includes:

- Three 3-credit core courses.
- 21 approved graduate credits.
- A portfolio representative of works completed.

For further information regarding this program, please write to: Master of Arts in Liberal Studies Program 125-G Memorial Classroom Building Coral Gables, FL 33124-2302

Call 305-284-6731 and/or email ptaksier@miami.edu or gclasby@miami.edu

Liberal Studies Course Listing

MARINE SCIENCE - Dept. Code: MSC

www.rsmas.miami.edu

The Marine and Atmospheric Science program is an undergraduate program. Graduate courses in the marine and atmospheric sciences are offered through the Graduate School and the Rosenstiel School of Marine and Atmospheric Science and are listed under the following divisional headings:

- Applied Marine Physics,
- Marine and Atmospheric Chemistry,
- Marine Biology and Fisheries,
- Marine Geology and Geophysics,
- Meteorology and Physical Oceanography.

Courses at the 500-level may be taken for undergraduate credit with departmental consent.

MATHEMATICS - Dept. Code: MTH

www.math.miami.edu

The Mathematics Department offers graduate degree programs leading to the
• Master of Arts
• Master of Science
• Doctor of Arts
• Doctor of Philosophy

Prerequisites and requirements for these degrees are described below:

**MASTER OF ARTS IN MATHEMATICS**
A. Prerequisite:
A minimum of nine credits in mathematics courses numbered 200 and above is required.
B. Requirements:
1. A total of 30 credits must be earned. At least 18 credits in mathematics courses are needed. All courses from other departments must be numbered 600 or above and be pertinent to secondary teaching of mathematics.
2. A three-hour written examination covering the material in MTH 504, 508 or 509 or 561, 524, 525, 531, and 533 must be passed. These courses will form a part of the students program except where an equivalent course was passed at the undergraduate level.

**MASTER OF SCIENCE IN MATHEMATICS**
A. Prerequisite:
A minimum of 15 credits in mathematics courses numbered 200 and above is required.
B. Requirements:
1. A total of 30, 33, or 36 credits in approved courses must be earned, depending on whether at least 15, 12-14, or 9-11 credits, respectively, are in mathematics courses numbered 600 and above.
2. A minimum of 24 credits must be earned in mathematics courses.
3. At least two of the basic sequences 531-532, 533-534, and 561-562 are required.
4. Three written exams, at least two of which are on the basic sequences of the above list, must be passed.

**DOCTOR OF ARTS IN MATHEMATICS**
The following requirements are in addition to the general requirements for the Doctor of Arts Degree as described by the Graduate School (see section on Doctor of Arts elsewhere in this Bulletin).
1. A minimum of 24 credits must be earned in mathematics courses numbered 600 and above, and at least three of the basic sequences, 630-631, 632-633, 640-641, and 661-662 or their equivalents are required.
2. Three written exams on the basic sequences must be passed.

**DOCTOR OF PHILOSOPHY IN MATHEMATICS**
The following requirements are in addition to the general requirements for the Doctor of Philosophy Degree as described by the Graduate School (see section on Doctor of Philosophy elsewhere in this Bulletin).
1. A minimum of 36 credits must be earned in mathematics courses numbered 600 and above.
2. All four basic sequences 630-631, 632-633, 640-641, and 661-662 or their equivalents are required.
3. A preliminary exam must be passed.
4. Three written exams must be passed. Two of these must be from the above basic sequences; the other may be another from the basic sequences or in the candidate’s area of specialty.
4. A proficiency in one of the languages French, German, or Russian must be demonstrated.

**MASTER OF SCIENCE IN STATISTICS**
The university offers an interdepartmental M.S. degree in statistics. The program is a cooperative effort between the Department of Mathematics and the Department of Management Science. For details, see the section of this Bulletin entitled Interdisciplinary and Interdepartmental Programs.

[Mathematics Course Listing](#)

**PHILOSOPHY - Dept. Code: PHI**
[www.as.miami.edu/phi](http://www.as.miami.edu/phi)

The requirements for the Master of Arts degree in philosophy may be satisfied in two ways.

A. The first is through
   1. passing satisfactorily a minimum of 24 course credits in philosophy, at least 12 of which must be at the 600 level;
   2. presenting and defending orally an acceptable thesis;
   3. satisfying the requirements of the Graduate School as stated in this Bulletin.

B. The second is through
   1. completing satisfactorily a minimum of 45 course credits in philosophy, at least 24 of which must be at the 600 level;
   2. passing a comprehensive examination;
   3. satisfying the requirements of the Graduate School as stated in this Bulletin.

The requirements for the Ph.D. degree in philosophy.

A. Course requirements
   Satisfactory completion of a minimum of 45 course credits in philosophy, at least 24 of which must be at the 600 level. Students are required to pass the following 500-level courses:
   1. Logic requirement: PHI510
   2. Ethics requirement: PHI530 or 533.
   3. One course from the epistemology and metaphysics group: PHI540-545.
   4-5. Two courses from the history group: PHI540-545.

B. Qualifying examination
   A comprehensive qualifying examination must be taken before the student’s dissertation proposal is approved. It is a broad examination in a general area of philosophy close to the student’s proposed dissertation topic or intended area of specialization, for example, epistemology, philosophy of mind, metaphysics, or ethics and political philosophy. The examination is based on a list of core texts in the area in question, but some of the required texts are chosen for each student individually by the committee for qualifying examinations. Students can apply for Ph.D. candidacy after they have passed this examination and their dissertation proposal has been approved.

C. The language requirement
A student who submits a dissertation proposal must possess the linguistic proficiency required by the proposed dissertation topic. This is determined by the dissertation proposal committee on the basis of examinations or coursework.

D. Ph.D. dissertation
Presentation and oral defense of an acceptable dissertation.

E. The requirements of the Graduate School as stated in this Bulletin

Philosophy Course Listing

PHYSICS - Dept. Code: PHY
www.physics.miami.edu

All graduate students in physics must plan their entire program with the advice and approval of a departmental advisor.

The program of graduate studies in physics emphasizes research work, but also includes teaching experience as an essential element. Research and thesis opportunities are at present available in the fields of atmospheric and ocean optics, elementary particle theory, nonlinear dynamics, plasma physics, solid state physics, experimental astrophysics and cosmology.

In addition to the general requirements for graduate degrees, the Physics Department makes the following specific requirements.

A. Submission of scores on the Graduate Record Examination (Aptitude Test and Advanced Test in Physics) with the application for admission.
B. The following specific courses, or their equivalent, are required for the Ph.D. degree: PHY 520, 540, 560, 561, 615, 616, 623, 624, 650, 651, 670, 671.
C. A minimum of 24 course credits (including PHY 601-604) are required for the Ph.D., of which at least six credits must come from the following list: PHY 610, 611, 612, 620, 630, 654, 666, 672.
D. No more than three credits for reading courses and two credits for Physics Seminar (PHY 601-604) may be counted for the M.S. degree and no more than four credits of Seminar for the Ph.D. degree. Up to six credits may be earned in thesis work for the M.S. degree.
E. The physics department offers a comprehensive graduate examination each year. A passing grade at an appropriate level is required for either the M.S. or the Ph.D. A student is required to take the exam each year and is allowed two attempts toward a passing grade.
F. Courses taken outside the department should be relevant to the students program and approved by the graduate advisor.
G. Students are required to participate in research at the earliest opportunity. Specifically, upon passing the written graduate examination and before the end of the following semester, the student is required to select a faculty member who consents to serve as the students Ph.D. thesis advisor. Student and thesis advisor are to form, in a timely fashion, a dissertation committee to review an oral presentation of the student’s initial research activities and future plans. Should a student need to select a new thesis advisor, this selection must be made without delay, and the review process must be repeated.
H. Renewal of financial support from the department is contingent, each semester, upon satisfactory performance of teaching duties and research activities, and upon timely progress towards completion of all requirements for the Ph.D. degree.

DOCTOR OF ARTS IN PHYSICS
Those interested in the Doctor of Arts degree should contact the Department Chairman.

Physics Course Listing

PSYCHOLOGY - Dept. Code: PSY

www.psy.miami.edu

I. The principal goal of the graduate program in Psychology is that of preparing the student for a career contributing to the growth of scientific knowledge in psychology.

II. Applicants for admission to graduate status in psychology shall have
   A. a minimum average of B over-all
   B. at least 18 hours of psychology that must include courses in Introductory Psychology, Statistics, and Experimental Psychology or Research Methods.
   C. Students lacking the necessary preparation must ordinarily make up deficiencies prior to admission to the Graduate School.

III. All applicants must present the Graduate Record Examination (Aptitude Tests; Advanced Test in Psychology preferred). In all cases admission to graduate degree programs in Psychology is competitive, since available resources do not permit admission of all qualified applicants.

IV. The Ph.D. programs are categorized into three Divisions:
   • Health Psychology (including Health Clinical Psychology, Behavioral Medicine and Behavioral Neurosciences)
   • Child Psychology (including Clinical Child Psychology, Pediatric Health Psychology Applied Developmental Psychology)
   • Adult Psychology (including Adult Clinical Psychology)
   1. All Ph.D. programs in Psychology require a minimum of 72 credits, including thesis and dissertation credits:
   2. Psychology 680 and 681 will not be counted toward the 72 credit minimum.
   3. A Master of Science in Psychology based upon 24 credits of course work and six credits of Masters thesis research is required in all programs.
   4. In cases in which a student has a prior graduate degree, the number of credits required for the Ph.D. may be reduced at the discretion of the Department.
   5. All programs in Clinical Psychology require an internship.

V. All students must successfully complete six foundation courses
   A. PSY 604, 605, 620, 625, 640 or 641, and 683.
   B. methodological courses 631, 632, and 698.
   C. A minimum grade average of B is required for all students.
   D. All students seeking an advanced degree in Psychology must participate substantially in the teaching of course offerings in the Psychology Department as an essential part of their education.

Psychology Course Listing

RELIGIOUS STUDIES - Dept. Code: REL

The Department of Religious Studies does not offer a graduate degree program. The graduate level courses may be taken for graduate credit with the consent of the major department.
SOCIOLOGY - Dept. Code: SOC
www.as.miami.edu/sociology

The Master of Arts degree in Sociology provides students with a basis in theory, methods, and statistics. Through the thesis requirement, the program affords students their first independent research experience. An M.A. degree prepares students for career opportunities in community college teaching, a variety of research positions within the discipline, or Ph.D. education.

I. The Ph.D. program in Sociology
   A. focuses on medical sociology, criminology, and race/ethnic relations.
   B. The program is intended to provide a professional basis for careers in research, public service, or college/university teaching.
   C. Admission to Ph.D. candidacy is dependent upon successful completion of required courses and qualifying examinations.

An undergraduate major in sociology is normally required for admission to graduate work in sociology. Without this preparation, but with a strong background in related areas and a satisfactory GRE score, a student may be admitted with the provision that remedial coursework be completed.

II. The requirements for the Master of Arts degree with a major in Sociology are:
   A. 30 credits at the graduate level (500 or 600), of which 6 must be taken in thesis work.
   B. A maximum of 6 hours can be transferred from acceptable graduate institutions.
   C. Course work must include Sociology 601, 602, 604, 610, 611, and one of 615, 616, or 617.
   D. 3 hours of course work may be earned in a related discipline. Such course selections must have prior departmental approval.
   E. Submission and successful defense of a thesis in accordance with current Graduate School policy.
   F. The completion of all other requirements stated in sections of the Bulletin that specify Requirements for the Masters Degree, and General Information.

III. The requirements for the Ph.D. degree with a major in Sociology are:
   A. A master’s degree.
   B. A minimum of 42 credits (including the dissertation) beyond the master’s degree.
   C. Demonstration of computer competency.
   D. Passing four written qualifying examinations.
   E. Written presentation and oral defense of an acceptable dissertation.
   F. The satisfactory completion of the requirements of the Graduate School as stated in this Bulletin.

For more details, consult the Guide to Graduate Study in Sociology available through the Sociology Department.
SCHOOL OF BUSINESS ADMINISTRATION – GRADUATE
www.bus.miami.edu

BUSINESS ADMINISTRATION - GRADUATE BUSINESS PROGRAMS

The School of Business Administration offers the Doctor of Philosophy in Economics and the Master degree in Business Administration. The requirements for the Doctor of Philosophy degree are the same as those listed in the general section of this Bulletin.

MASTER OF BUSINESS ADMINISTRATION

The University of Miami School of Business Administration offers advanced instruction in business and administration leading to the Master of Business Administration degree. The administrative skills and abilities attained in the MBA program can be applied to any organizational structure and elective credits may be used to explore a particular field of interest.

YEAR ONE
FALL SEMESTER – Building Management Skills

Term 1-1
ACC 670 Financial Reporting and Analysis
MGT 675 Business Policy and Strategy
ECO 680 Essentials of Economics

Term 1-2
ACC 671 Accounting for Decision Making
MAS 631 Statistics for Managerial Decision Making
MGT 620 Managing Through People

SPRING SEMESTER – Making Management Decisions

Term 1-3
FIN 641 Valuation and Financial Decision Making
MAS 632 Management Science Models for Decision Making
MKT 640 Foundations of Marketing Management

Term 1-4
FIN 642 The Financial Environment
MGT 643 Principles of Operations Management
CIS 610 Foundations of Management Information Systems

YEAR TWO
FALL SEMESTER – Expanding Career Opportunities
INTERNSHIPS
The School of Business Administration does not award internship credit toward the MBA, but does encourage students to augment their classroom experience through a comprehensive internship program. For further information, contact the Sanford L. Ziff Graduate Career Services Center.

THE MBA PROGRAMS FOR EXECUTIVES AND PROFESSIONALS
The MBA program provides business executives and professionals the opportunity to earn the MBA and other graduate degrees by attending class only on Saturdays. Saturday programs include:

1. MBA for Executives/Management
2. MBA for Executives/International Business
3. MBA for Executives/Health Administration and Policy
4. MBA for Executives/Master of Science in Industrial Engineering
5. MBA for Working Professionals (combination Monday evening and Saturday classes)/International Business

To obtain detailed program curricula, please reference the current program brochure which can be requested by contacting the Office of Recruiting and Admissions at (305) 284-4607.

The School’s international outreach is demonstrated by MBA programs for Working Professionals in the Caribbean.

MASTER OF SCIENCE IN PROFESSIONAL MANAGEMENT (MSPM)

This Executive/Working Professional program is taught in Spanish.

- Textbooks are in English, therefore a reading knowledge of English is required.

The program is designed especially for managers and executives domiciled or who work extensively in Latin America.

This 36 credit hour program is taught in five, two-week sessions.
Each session students take two classes and earn six credit hours. Additionally, there is a six credit supervised, independent directed study course related to the students business to be completed by the end of the program. The courses are organized in a sequential order. The same group of students progress through the entire program.

**Session 1**

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<td>ACC 602 Analysis of Financial Statements</td>
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<tr>
<td>CIS 621 Management Information Systems</td>
<td>3</td>
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<tr>
<td>ESP 734 Research Project (Introduction)</td>
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**Session 2**

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<td>MKT 660 Foundations of Marketing Management</td>
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**Session 3**

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<td>MGT 659 Management of Multinational Enterprise</td>
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**Session 4**

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<td>ACC 604 Seminar in Cost Accounting</td>
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**Session 5**

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<td>BSL 612 Legal Aspects of International Business</td>
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<tr>
<td>MGT 658 Strategic Management</td>
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**TOTAL CREDITS** 36 credits

**DUAL DEGREE PROGRAMS**

The JD/MBA degrees - The School of Law and the School of Business will each accept the transfer of six credits from the other schools program, thus enabling students to earn both degrees simultaneously with twelve fewer credits than if the degrees were earned independent of each other.

- Students who apply to the joint JD/MBA program must apply and be admitted to the School of Law first and then to the School of Business Administration. JD students must apply and be admitted to the MBA program and enroll by the beginning of the fall semester of their third year of Law School.
- JD/MBA students will be admitted to the MBA program for the Fall semester only.

**RESEARCH INSTITUTES**

**INSTITUTE FOR THE STUDY OF QUALITY IN MANUFACTURING AND SERVICE**

The University of Miami Institute for the Study of Quality in Manufacturing and Service (UMISQ) is a joint effort between the School of Business Administration and the College of Engineering.

The mission and objectives of the Institute are stated below.

**Mission**

To promote the improvement and innovation of quality on local, national, and international levels through the acquisition, dissemination, and application of knowledge in the areas of science, technology, and management as related to Quality Science in general, and Six Sigma Management specifically.

**Objectives**

1. To pursue a continuous program of faculty development in Quality Science.
2. To conduct research in Quality Science and to publish its results through appropriate professional and academic outlets.

3. To educate and train management, labor, UM students, and others in the theories and practices of Quality Science in general, and Six Sigma Management specifically.

4. To provide a wide range of services designed to disseminate information in the area of Quality Science in general, and Six Sigma Management specifically.

5. To remain financially self-sufficient.

The Institute pursues its objectives through involvement of faculty, students, and practitioners in the business and engineering communities.

INTELLIGENT COMPUTER SYSTEMS RESEARCH INSTITUTE

The Intelligent Computer Systems Research Institute is a center for research and information dissemination in applied artificial intelligence.

Applied Artificial Intelligence is the use of science and technology to assist the human mind (and body as in an intelligent robot) to do something it already does, or would like to be able to do faster, more elegantly, even innovatively.

The devices, the artifacts—computers, knowledge machines, logical circuits, inference engines, software—to accomplish such ends are designed and programmed by humans.

Multidisciplinary studies will cover areas of computer technology and software as applied to business, education, engineering, law, medicine, government, communications, and other fields in which the computer enhancement of mental capabilities should be significant.

The Institute acts as a repository and communicator of applied artificial intelligence knowledge.

THE GRADUATE STUDENT ASSOCIATION

The Graduate Student Association (GSA) is the student government organization representing students in the Graduate School (and all schools and colleges included under the Graduate School). Established in 1969, the GSA is one of the oldest graduate student governments in the United States. The primary function of the GSA is to provide the means for responsible and effective graduate student participation in the planning and conduct of University affairs. The GSA serves as a liaison between graduate students, individually and collectively, the faculty and the administration. In addition, the GSA exists as a social and intellectual forum to support and improve the quality of the graduate student environment at the University of Miami.

The Graduate Student Association is made up of seven officers and nearly fifty full- and part-time senators; the role of the GSA is both supervisory and implementary, and its scope encompasses both academic and social interests of the University’s graduate student body. Officers and Senators meet regularly to discuss important issues and are often required to attend University-wide meetings with faculty, staff, administration and fellow students. The Graduate Student Senate is the primary body that represents the interests and concerns of the entire graduate student body at the University of Miami. The Senate is made up of one representative from every graduate department or program (currently there are 46
recognized graduate programs) at the University of Miami. The Senate coordinates most of the graduate activities and programs that the GSA sponsors, and acts as a hub for the exchange of information between different departments and programs. Typically, senators are either elected or appointed by their peers or program directors and serve for a one-year term. Each senator has one vote in the senate. Throughout the semester, the senate can issue directives, bills and resolutions pertaining to any aspect of graduate student life at the University of Miami, and works extremely closely with the Dean of the Graduate School in effecting changes and/or improvements. The Senate, also as part of its charge, decides on and elects the new Executive Board of the Graduate Student Association each spring semester. Alternates are also elected or appointed to assist the senator when they are unable to carry out their duties.

The office of the GSA is located at Suite 21-T, 5606 Merrick Drive, please call 305-284-6750, e-mail: gsa@miami.edu, or visit our website at www.miami.edu/gsa for more information.

GRADUATE ACTIVITY FEE ALLOCATION COMMITTEE (GAFAC)

The unallocated portion of the graduate activity fee produces an annual fund that is available for graduate students to seek for enrichment of their various activities. The monies are allotted by a graduate student committee composed of nine elected representatives from Architecture, Arts and Sciences, Business, Communication, Education, Engineering, International Studies, Music and Nursing; and the Treasurer of the Graduate Student Association.

Petitions for funds are judged on the merits of the individual requests, the anticipated direct or indirect benefit to the University, the effort of the petitioners to generate support from other areas, past experience with the petitioning group, if applicable, and the current amount of funds available.

Forms for petitions are available in the Office of the Vice President for Student Affairs, Room 244, Ashe Building.

THE GRADUATE BUSINESS STUDENT ASSOCIATION

The Graduate Business Student Association (GBSA) is a professional and social student-run organization. All graduate business students become members once enrolled in a business masters program and are encouraged to attend meetings and events. The GBSA organizes presentations by executives from the business community on topics of interest to graduate students, and sponsors numerous social events and activities. The GBSA is governed by a committee that consists of a president, vice president professional, vice president social, secretary, member relations, treasurer, and promotions director. Elections take place at the end of each spring semester.

FINANCIAL ASSISTANCE

GRADUATE ASSISTANTSHIPS AND FELLOWSHIPS

There are a limited number of merit-based graduate assistantships which are awarded at the time of admission to qualified full-time students entering in the Fall semester. Graduate Business Programs begins awarding assistantships in March. Typically, a graduate assistantship covers from 60% to 75% of tuition for graduate business credits required for
the student’s degree and a stipend of $1,500 per semester. The student is assigned to a particular department in the School of Business and is expected to carry 12 credit hours and work 15 hours per week as assigned. Graduate Assistants’ academic progress and work performance are reviewed on a semester basis. Graduate assistantships are not automatically renewed.

In addition to graduate assistantships, there are a limited number of Emery Means Findley, Jr. Fellowships and scholarships which are awarded by Graduate Business Programs to applicants with outstanding academic credentials. Any applicant who wishes to be considered for a graduate assistantship or fellowship, should indicate this in the space provided on the application. Awards are available to domestic and international students.

**DONOR SCHOLARSHIPS**

Several endowed scholarships are made available to incoming graduate business students on a one-time basis through the generosity of alumni and friends of the University of Miami School of Business Administration. These donor scholarships are for the purpose of recruiting students of high academic merit. The total number and amount of scholarship awards vary from year to year.

Scholarships will be awarded based on the recommendations of the Faculty Admissions Committee on a first come, first served basis. Since the number of scholarships is limited, students who meet the minimum criteria are not guaranteed a donor scholarship award.

We regret that a student is ineligible for financial awards if he/she receives tuition benefits from the University of Miami or accepts any assistantship, scholarship, grant or fellowship from the University of Miami, in addition to our offer. This includes employees, their spouses, and dependents.

**BANK OF AMERICA - ENDOWED BUSINESS SCHOLARSHIPS***
Criteria: A graduate business school student based on a combination of scholarship and financial need, who will preferably specialize in Finance, Accounting, or Management.

**THE HAROLD & MURIEL BERKMAN/ACADEMY OF MARKETING SCIENCE - ENDOWED SCHOLARSHIP FOR ACHIEVEMENT IN MARKETING**
Criteria: Student with an undergraduate GPA of 3.4 and an undergraduate major in Marketing.

**JACK R. BORSTING - GRADUATE SCHOLARSHIP ENDOWMENT**
Criteria: Outstanding candidate for a master’s level business degree.

**PATRICK J. CESARANO – ENDOWED SCHOLARSHIP***
Criteria: MBA student with a concentration in finance or management science/operations research. Based on academic excellence and financial need.

**PAT & LON WORTH CROW - SCHOLARSHIP ENDOWMENT**
Criteria: Graduate business student specializing in Finance, who possesses several years of work experience, preferably with an expressed interest in a career in banking or a banking-related field. U.S. citizen, preferably resident in South Florida community.
EMERY MEANS FINDLEY, JR. – ENDOWED GRADUATE FELLOWSHIPS IN BUSINESS
Criteria: Outstanding candidates for Graduate Business Programs.

ALBERT AND ESTHER GREEN ENDOWED SCHOLARSHIP
Criteria: Graduate Business Student with a health challenge, or student studying or working in Health Administration.

ALLAN M. HERBERT & PATRICIA M. HERBERT – ENDOWED GRADUATE BUSINESS SCHOLARSHIP*
Criteria: Outstanding graduate business student, well-rounded, willing to finance his/her own education, and who appreciates the value of work and strives to combine study, work and extra-curricular activities.

JAMES W. MCLAMORE – GRADUATE BUSINESS FELLOWSHIPS
Criteria: To recruit and retain outstanding graduate business students.

BRUCE E. MCLAUGHLIN & CYNTHIA M. SWOL - ENDOWED SCHOLARSHIP IN MARKETING*
Criteria: Graduate business student with concentration in Marketing, who has significant work experience prior to entering the MBA program. U. S. citizen. Academic merit, with preference given to students with unmet financial need.

MERRILL LYNCH & CO. FOUNDATION, INC. – FELLOWSHIPS IN INTERNATIONAL FINANCE
Criteria: Graduate business student preparing for a career in International Finance.

SOUTHEAST BANKING CORPORATION FOUNDATION – ENDOWED SCHOLARSHIPS*
Criteria: Graduate student in the MBA program who is a Florida resident. Based on academic excellence and financial need.

* Essay Required
In 300 words or less, please explain why you need financial assistance to complete your MBA degree. The essay must be included with your application.

Various other donor scholarships are available based upon need, merit, or other specified criteria.

Students enrolled in M.A. or PH.D. programs through the Department of Economics should be aware of the following:

1. All candidates for the degree are required to be involved in teaching and/or research activities. The teaching and/or research is intended to be of primary benefit to the recipient in furtherance of his/her education and training.
2. Limited scholarship assistance is available on a competitive basis to Ph.D. candidates. These scholarships are not intended as compensation for services but are intended to assist outstanding students in furthering their education.
ZIFF GRADUATE CAREER SERVICES CENTER

A. The Ziff Graduate Career Services Center is located in the School of Business complex on the first floor of the Jenkins Building.
   1. The mission of the Ziff Graduate Career Center is to provide top quality resources and career guidance to graduate students for attaining their employment goals, and build strong partner relationship with businesses to satisfy their human resource needs with best-fit candidates.
   2. This mission is fulfilled through an array of resources that provide guidance to corporations through personal career coaching, a Career Marketing Campaign course to prepare students, and facilitate and track recruitment activities and information.

B. REGISTRATION
   1. Graduate business students are required to register with the Ziff Graduate Career Center the first week of term one.
   2. The registration process begins with attendance at the Ziff Graduate Career Center’s Career Orientation held Wednesday morning, the first week of term one.
   3. Students are required to attend.

C. The Ziff Team Philosophy
   1. The Ziff Team is committed to providing each student with the resources needed for a successful job search. Our personalized Career Marketing Campaign course, conducted in term one and two, is designed to generate contacts, networking opportunities, interviews and job offers.
   2. Students who engage with the Ziff Graduate Career Center will develop a strategic career strategy that will prepare them for a successful job search at all levels of their career.

D. ON CAMPUS INTERVIEWS/CORPORATE RECRUITING
   1. The recruiting program begins in the fall semester from mid-September through mid-December and continues from mid-January through May.
   2. The Ziff Graduate Career Center has a national focus, contacting Fortune 1000, and southeast regional companies to interest them in hiring University of Miami School of Business Administration graduates.
   3. Business students can utilize the Ziff Graduate Career Center’s Internet Employment system to sign up for on-campus interviews, monitor corporate presentation schedules, and stay abreast of job opportunities offered by companies that are recruiting off campus.

E. INTERNSHIPS
   1. The School of Business Administration encourages students to augment their classroom experience through a comprehensive internship program.
2. Students who are interested in internships should register with the Ziff Graduate Career Center as soon as they arrive on campus.

F. CAREER EMPLOYMENT LISTINGS
1. The School of Business has established relationships with many companies both locally and nationally.

2. As a result, the Ziff Graduate Career Center regularly receives career opportunities that are made available through Ziffonline.com, to students and alumni alike so they can review career opportunities listed with the Ziff Graduate Career Center.

G. RÉSUMÉ BOOK
1. Each year, the Ziff Graduate Career Center produces for employers targeted Résumé CDs of graduating students and students seeking summer internships.

2. Additionally, with the student’s permission, the Ziff Graduate Career Center will place the student’s résumé on the Ziff Web Résumé Book, providing access to recruiters throughout the world, who peruse Ziff Graduate Career Center résumés.

H. CAREER INFORMATION
1. Company contact information can be downloaded by students on the students’ secure site at www.ziffonline.com.

2. Additional corporate information is available in the Career Resource Room in the form of annual reports, business publications, newspapers, and select online services.

3. Available online are The Wall Street Journal, Hoovers, Vault, ReferenceUSA, and many other sources providing comprehensive business information via the Web.

4. Also accessible is a Bloomberg Financial Services terminal that provides comprehensive financial analysis and information on all publicly traded companies.

5. Students can access numerous popular web sites listing positions both nationally and internationally using state-of-the-art computers in the Ziff Resource Room. Students are encouraged to visit the Ziff Graduate Career Center’s home page at www.ziffonline.com for detailed information about these services.

I. ´CANE CONNECTIONS
1. ´Cane Connections is an online University of Miami database that allows students to talk to alumni throughout the United States about their work experiences and gather other career related information. The database is a valuable network of contacts in a variety of fields. It is accessible through www.miamialumni.net.
2. To participate, students must register with the Ziff Graduate Career Center.

J. STUDENT RESPONSIBILITY

1. Ultimately, success in securing a job is defined by the student. Together with the Ziff Graduate Career Center as a partner, the student can create a successful marketing campaign that will connect him/her to a network of contacts and networking opportunities leading to interviews and job offers.

2. Students are to register online with the Ziff Graduate Career Center the first week of term one.

3. Students are required to meet with their assigned career advisor in term two to discuss their career goals and develop a personalized career action plan/marketing campaign that will lay out the strategy and timing sequence of their goals.

4. Students are expected to visit the Ziff Graduate Career Center regularly and access Ziffonline.com to identify on-campus recruiting activities, corporate presentations, relevant workshops and MBA clubs sponsored events.

The Ziff team is the student’s frontline resource to securing employment upon graduation. Students who engage with the Ziff Graduate Career Center will understand their strengths and weaknesses and will utilize the staff to assist in developing an effective career marketing campaign. The marketing campaign will equip the student with a strategic résumé, hone their interview skills, generate contacts, develop networking opportunities, and prepare them for a successful career transition.

THE MENTOR PROGRAM

1. The School of Business Mentor Program is designed to enhance the classroom experience by matching students one-to-one with local corporate representatives or entrepreneurs working in the students’ area of career interest, or versed in areas of professional development.

2. Through personal interaction with experienced business professionals, students gain an understanding of corporate culture, career directions, and networking.

3. Graduate business students are encouraged to participate.

4. Applications are available at the School of Business Office of Alumni Relations, 215 Jenkins Building.
The Department of Accounting offers two degree programs leading to the Masters degree; a Master of Professional Accounting (MPrA) and a Master of Science in Taxation (MST). While the programs are similar in that they offer an opportunity to concentrate in accounting, they differ in degree of specialization and career path orientation.

For the undergraduate accounting major these programs should satisfy the educational requirements to take the CPA exam in the State of Florida as well as in most other states. The State of Florida requirements include (for students with an undergraduate degree from an accredited university):

1. an additional 30 semester credit hours of work beyond the bachelors degree (not necessarily at the graduate level),
2. 36 semester hours of accounting beyond principles of accounting (ACC 211 and 212)
3. 39 semester hours of other business courses including at least 6 semester hours of Business Law. Additional information on CPA exam requirements may be obtained from the Department of Accounting.

- For admission to both programs, based on an undergraduate degree from an accredited U.S. institution, we consider the applicant’s undergraduate grade point average, GMAT score (required), and grades in accounting courses as well as other factors such as work experience. Generally, the applicant’s undergraduate grade point average multiplied by 200 plus the GMAT scores must be above 1150. However, a score of 1150 or higher will not ensure admission – it is a minimum standard. Admission decisions are made on a competitive basis from the applicant pool.

- Students without an undergraduate degree in accounting will be required to take certain prerequisite courses to secure admission. These prerequisites will depend upon the undergraduate major and previous accounting courses taken.

Foreign students must provide evidence of proficiency in English by supplying a TOEFL score.

Additionally, foreign students must have successfully completed two semesters of intermediate accounting, one semester of cost accounting, one semester of auditing, and one semester of tax at a U.S. university accredited by the AACSB before enrolling in graduate accounting courses.

**SCHOLARSHIPS**

University of Miami School of Business - Alumni Association Endowed Accounting Scholarships are available for students pursuing Graduate Studies in Accounting. Various other scholarships and assistantships may be available. An application may be obtained from the Department.

**MASTER OF PROFESSIONAL ACCOUNTING (MPrA)**

This program offers the highest degree of concentration in financial and managerial accounting, auditing and systems that are needed by accounting professionals in public accountancy and industry.

Emphasis is placed on the development and ongoing evolution of generally accepted accounting principles and auditing standards, product costing trends and issues and familiarization with the computer as an important tool of the accounting professional.
The MPrA is an ideal program for those who will seek employment with public accounting firms as auditors or with industry or government as accounting and information specialists.

The MPrA is designed for the student who has taken the accounting and related courses required for an undergraduate major in accounting. These students should be able to complete the MPrA in a year or less provided they enroll as full-time students. The MPrA requires 30 semester hours consisting of the courses listed below, provided the student has an undergraduate major in accounting, which satisfies AACSB accreditation standards.

Students pursuing the MPrA Degree must take the required courses specified and may select additional accounting courses as electives in consultation with the program director. Students must complete a total of 30 semester hours from the following:

- **Required Courses (12 Hours):**
  - ACC 602 - Analysis of Financial Statements
  - ACC 604 - Seminar in Cost Accounting
  - ACC 610 - Accounting Theory
  - ACC 622 - Advanced Issues in Auditing

- **Elective Courses (18 Hours):**

  In addition to the above required courses, a student must select 18 credit hours in other courses, which may be earned at the 500 or 600 level. Students may take non-accounting courses with the permission of the Department, but at least 6 hours of the 18 hours of electives must be in accounting courses. In preparation for the CPA exam, students may wish to take Business Law 575, Advanced Business Law. Altogether, of the 30 credit hours required to complete the MPrA, no more than 6 credit hours may be earned at the 500 level. In consultation with the program director, students may select from the following courses:

- 501 Advanced Cost Accounting
- 505 Current Issues in Accounting Practice
- 511 Advanced Accounting
- 601 Trends in Present Day Accounting
- 603 Studies in Financial Reporting Issues
- 605 Enterprise Resource Planning (ERP) Financial Systems
- 606 Internal Auditing
- 611 Auditing Seminar
- 615 Personal Financial Planning
- 616 Insurance and Retirement Planning
- 623 International Accounting and Taxation
- 624 Accounting for Governmental and Not-for-Profit Entities
- 640 Corporations I
- 641 Corporations II
- 643 Tax Research
- 645 Partnerships
- 647 Estates and Gift Taxes
- 649 Issues in Tax Policy
- 662 Taxation of Multinational Corporations
Undergraduate Course Requirements

The courses listed below are undergraduate prerequisites that, unless already completed, must be fulfilled in order to be admitted for graduate study. For certain graduate tax classes the undergraduate equivalent of Corporate and Partnership Income Tax (ACC 404) is required. If a candidate does not have an undergraduate business degree, additional business prerequisites (economics, marketing, management, finance and others) will also be required.

Principles of Financial Accounting (ACC 211)
Managerial Accounting (ACC 212)
Intermediate Financial Accounting I and II (ACC 311 and 312)
Cost/Managerial Accounting (ACC 301)
Fundamentals of Individual Income Tax (ACC 303)
Auditing (ACC 402)

MASTER OF SCIENCE IN TAXATION
This program affords the accounting major or equivalent the opportunity to specialize in the area of federal taxation.

Emphasis is placed on a thorough grounding in the principles of tax research, corporate taxation, and taxation of partnerships and partners.

Courses address issues in both tax compliance and tax planning.

Through electives, students are able to expand their areas of expertise, so that they may adequately prepare themselves for careers requiring a high degree of specialized tax knowledge in public accounting, private industry, and government.

The program requires 30 semester hours, taken from the following:

<table>
<thead>
<tr>
<th>Required Courses - 12 hours as follows:</th>
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<tr>
<td>ACC 640 Corporations I</td>
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<tr>
<td>ACC 641 Corporations II</td>
</tr>
<tr>
<td>ACC 643 Tax Research</td>
</tr>
<tr>
<td>ACC 645 Partnerships</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elective Courses - 6 to 12 hours from the following:</th>
</tr>
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<tbody>
<tr>
<td>ACC 647 Estates and Gift Taxes</td>
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<tr>
<td>ACC 649 Issues in Tax Policy</td>
</tr>
<tr>
<td>ACC 662 Taxation of Multinational Corporations</td>
</tr>
<tr>
<td>ACC 623 International Accounting and Taxation</td>
</tr>
</tbody>
</table>

Other electives - 6 to 12 hours.

Accounting Course Listing

BUSINESS LAW - Dept. Code: BSL

The Department of Business Law does not offer a graduate degree program.
Students entering the MBA cohort lock-step program may only enroll in 2-credit courses, with the exception of Accounting electives. Students may not exceed enrollment in 12 credits per semester (6 credits per term) at any time. Elective offerings will be offered based on student demand.

COMPUTER INFORMATION SYSTEMS - Dept. Code: CIS

MASTER OF SCIENCE IN COMPUTER INFORMATION SYSTEMS (CIS)

The Master of Science in CIS degree program will appeal to the individual who desires a career in the rapidly expanding Information Technology (IT) field.

In addition to providing a broad base in management information systems and programming, the department emphasizes the key specialties of telecommunications, systems analysis and design, security, project management, and database management systems.

The program is geared towards both those who are interested in a career in the management of information systems and those who wish to become technical specialists.

The successful student may begin employment as a systems analyst, programmer, database analyst, telecommunications specialist, or consultant.

Those interested in management may aspire to a position as a director of Information Technology.

PROGRAM OF STUDY

Background Prerequisite:
A high-level programming language course with a grade of C or better.

Required Core Courses – 18 credits
(Some of these may be waived through prior course work, but additional elective courses must be taken in their place.):
CIS 523: Database Management Systems
CIS 620: Information Systems Analysis and Design
CIS 630: Fundamentals of Local and Wide Area Networks
CIS 631: Computer and Network Security
CIS 640: Data Communications and Networking
CIS 646: IT Planning and Project Management

Electives – 12 credits
(Choose from the following or others with departmental approval, to complete 30 credits.):
CIS 590-599 Topics in Computer Information Systems
(with departmental approval)
CIS 612 Enterprise Technologies
CIS 613 Business Intelligence Technologies
CIS 650 Advanced Topics in Database
CIS 660 Computer Information Systems Internship
(with departmental approval)
CIS 680-689 Topics in Computer Information Systems
(with departmental approval)
CIS 690-692 Directed Study in Computer Information Systems
(with departmental approval)
Thesis Option
Upon the approval of the faculty advisor a six-credit master’s thesis (CIS 710) may be used to fulfill part of the elective requirements.

APPLICATION PROCEDURE
Admission: Applicants in Computer Information Systems must take either the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE).

Detailed information regarding these tests may be obtained from the Graduate Business Programs office, School of Business Administration or by writing to the Educational Testing Service, Princeton, New Jersey 08541.

Decisions on admission are based on the following criteria: undergraduate academic record, scores on the GMAT or GRE, recommendations of former professors and business associates, resumes, and extracurricular activities. All of these factors are considered in assessing an individual’s capacity and motivation for graduate work.

SECOND MASTER’S DEGREE PROGRAM
• Due to the high demand for personnel trained in Information Technology, MBA students frequently consider a second master’s degree in this area.
• Students wishing to obtain both an MBA degree and a Master of Science (M.S.) in Computer Information Systems can minimize the number of additional credits required for the M.S. in CIS by taking CIS electives as part of their MBA program. Most of the MBA CIS elective credits can be counted toward the 30 credit hours required for the M.S. in CIS.
• In order to minimize the time required to obtain the two degrees, students can take CIS courses toward the M.S. in CIS during the summer between the first and second year of the MBA.
• Interested MBA students should consult the CIS Department Chairman regarding course selection during the first year of their program.

Students entering the MBA cohort lock-step program may only enroll in 2-credit courses, with the exception of Accounting electives. Students may not exceed enrollment in 12 credits per semester (6 credits per term) at any time. Elective offerings will be offered based on student demand.

ECONOMICS - Dept. Code: ECO

The Department of Economics offers the Master of Arts and Doctor of Philosophy degrees. Applicants for admission to graduate study in Economics should have an extensive background in Economic Theory and Quantitative methods.

1. The Master of Arts program may serve as a terminal degree for students preparing for careers in business, government, international agencies, or teaching, or as the first phase of a prospective doctoral program. The program of study, which consists of thirty credits, is structured as follows:
a. All Master of Arts students must take the following core that consists of the following courses:
   i. a 500-level mathematical economics course (ECO 510)
   ii. a 500-level econometrics course (ECO 520)
   iii. a 500-level macroeconomics course (ECO 521)
   iv. a 500-level microeconomics course (ECO 533)
   v. a 600-level macroeconomics course (ECO 621)
   vi. a 600-level microeconomics course (ECO 633)
   vii. a 500 level mathematics course (MTH 512)
   viii. 600 level econometrics (ECO 620)

b. Additional requirements are as follows:
   i. two courses in an area of specialization in a major economic discipline (e.g., international trade) or two related disciplines (e.g., health economics and labor economics)
   ii. comprehensive examinations over the core and area of specialization

c. Furthermore, all applicants must submit their scores on the GRE, hold a baccalaureate degree from an institution of recognized standing, and have demonstrated, by their undergraduate record, capability of completing an M.A. program. In addition, foreign students are required to score 550 on the Test of English as a Foreign Language.

4. The Ph.D. program prepares the recipient for a variety of career opportunities, including university teaching, federal, state, and local government employment, and a host of employment opportunities in the private sector. The Ph.D. program, which consists of a total of sixty credits, is structured as follows:

a. All Doctor of Philosophy students must take the core that consists of the following courses:
   i. 500-level mathematical economics courses (ECO 512)
   ii. a 500-level macroeconomics course (ECO 521)
   iii. a 500-level microeconomics course (ECO 533)
   iv. a 500-level econometrics course (ECO 520).
   v. two 600-level econometrics courses (ECO 620, 625)
   vi. A 500 level mathematics (MTH 533)
   vii. three 600-level microeconomics courses (ECO 633, 634, and 635)
   viii. two 600-level macroeconomics/monetary theory courses (ECO 621, 603)

b. Two fields of specialization are required. A field is comprised of two courses. These two fields are selected from the following areas of concentration:
   i. economic development (ECO 641, 642)
   ii. international trade (ECO 661, 760)
   iii. human resource economics (ECO 511, 586, 611)
iv. cognate areas with departmental approval

c. One elective must be taken. Elective courses may be selected from the graduate offerings of the Mathematics, Computer Information Systems, Management Science, and Finance departments.

d. Additional Requirements:
   
i. comprehensive examinations covering the core and the one field of specialization
   
   ii. a doctoral dissertation for 12 credit hours.


e. To be considered for admission, all applicants must
   
i. score a minimum of 1100 on the Graduate Record Examination general tests (combined verbal and quantitative scores),
   
   ii. hold a baccalaureate degree from an institution of recognized standing,
   
   iii. submit two copies of their official undergraduate transcript,
   
   iv. have demonstrated, by their undergraduate record, capability of completing a Ph.D. program.
   
   v. In addition, foreign students are required to score a minimum of 550 on the Test of English as a Foreign Language.

Students entering the MBA cohort lock-step program may only enroll in 2-credit courses, with the exception of Accounting electives. Students may not exceed enrollment in 12 credits per semester (6 credits per term) at any time. Elective offerings will be offered based on student demand.

Economics Course Listing

EXECUTIVE AND SPECIAL PROGRAMS - Dept. Code:  ESP

FINANCE - Dept. Code:  FIN

- The Department of Finance does not offer a graduate degree program.

Students entering the MBA cohort lock-step program may only enroll in 2-credit courses, with the exception of Accounting electives. Students may not exceed enrollment in 12 credits per semester (6 credits per term) at any time. Elective offerings will be offered based on student demand.

MANAGEMENT - Dept. Code:  MGT

- The Department of Management does not offer a graduate degree program.

Students entering the MBA cohort lock-step program may only enroll in 2-credit courses, with the exception of Accounting electives. Students may not exceed enrollment in 12 credits per semester (6 credits per term) at any time. Elective offerings will be offered based on student demand.

MANAGEMENT SCIENCE - Dept. Code:  MAS
MASTER OF SCIENCE IN MANAGEMENT SCIENCE
(30 Credits) – Faculty Director – Professor Howard Gitlow
Concentration Areas: Quality Management (Six Sigma Management) Applied Statistics, Operations Research

The primary objective of the Master of Science in Management Science program is to prepare students for positions in manufacturing and service organizations, government, and research firms in the areas of Quality Management (Six Sigma Management), Applied Statistics and Operations Research.

The program emphasizes the continuous process improvement area in the statistical sciences.

The core topics covered include: quality management (Six Sigma) theory and administrative systems, basic statistics and probability, statistical quality control and reliability, design of experiments, regression analysis, simulation, management science consulting, and internships (if available).

Note: The Master of Science in Management Science can be used to meet the requirements for Six Sigma certifications. For more information on this option refer to the Executive Education Center link for Six Sigma programs on the School of Business website http://www.bus.miami.edu

The curriculum leading to the Master of Science in Management Science is as follows:

Prerequisites
1. Calculus (equivalent of MTH 110-112 or 131-132)
2. Linear Algebra (equivalent of MTH 210)
3. Introduction to Probability and Statistics (equivalent of MAS 311)

A. Concentration in Quality Management
Required Core (15 credits)
- Requirements for Six Sigma Champion certification
  MAS 633: Introduction to Quality Management (2 credits)
  MAS 634: Administrative Systems for Quality Management (2 credits)
- Requirements for Six Sigma Green Belt Certification
  MAS 635: Design of Experiments (2 credits)
  MAS 636: Statistical Process Control and Reliability (2 credits)
- Requirements for Six Sigma Black Belt certification
  MAS 637: Applied Regression Analysis and Forecasting (2 credits)
  MGT 622: High Performance Teams (2 credits)
  MAS 547: Computer Simulation Systems (3 credits)

B. Concentration in Applied Statistics
Required Core (15 credits)
MAS 547: Computer Simulation Systems (3 credits)
MAS 601: Applied Regression Analysis (3 credits)
MAS 602: Applied Multivariate Statistics (3 credits)
MAS 603: Design of Experiments (3 credits)
MAS/IEN 645: Stochastic Processes (3 credits)
C. Concentration in Operations Research

Required Core (15 credits)
MAS/IEN 642: Linear Programming and Extensions (3 credits)
MAS/IEN 643: Integer Programming and Network Flows (3 credits)
MAS/IEN 644: Nonlinear and Dynamic Programming (3 credits)
MAS/IEN 645: Stochastic Processes (3 credits)
MAS 547: Computer Simulation Systems (3 credits)

Electives (15 credits)
Electives should be chosen in consultation with the faculty advisor. Electives can be chosen from the set of courses specified in three concentration areas in addition to the following courses:

- MTH 524: Introduction to Probability Theory (3 credits)
- MTH 525: Introduction to Mathematical Statistics (3 credits)
- MAS 548: System Dynamics Modeling and Analysis (3 credits)
- MAS 606: Nonparametric Statistics (3 credits)
- MAS 607: Survey Sampling (3 credits)
- MAS 638: Management Science Consulting (2 credits)
- MAS 661: Forecasting Methods (3 credits)
- PSY 631: Advanced Psychological Statistics 1 (3 credits)
- PSY 632: Multiple Regression and Multivariate Statistics (3 credits)
- EPS 673: Advanced Multivariate Statistics (3 credits)
- IEN 646: Queuing Models (3 credits)
- MGT 645: Principles of Supply Chain Management (2 credits)
- MAS 695: Directed Study in Operations Research (3 credits)
- MAS 696: Directed Study in Statistics (Black Belt projects – required for Black Belt Certification) (3 credits)

APPLICATION PROCEDURE
i. Applicants in Management Science should present scores from the Graduate Record Examination (GRE) or the Graduate Management Admissions Test (GMAT).

ii. Detailed information regarding these tests may be obtained from the Graduate Programs Office, School of Business Administration, or by writing to the Educational Testing Service, Princeton, New Jersey 08541.

iii. Decisions on admission are based on the following criteria: undergraduate academic record, scores on the GMAT or GRE, recommendations of former professors or business associates, resumes, and extracurricular activities. All of these factors are considered in assessing an individual’s capacity and motivation for graduate work.

Students entering the MBA cohort lock-step program may only enroll in 2-credit courses, with the exception of Accounting electives. Students may not exceed enrollment in 12 credits per semester (6 credits per term) at any time. Elective offerings will be based on student demand.

Management Science Course Listing
MARKETING - Dept. Code: MKT

The department of Marketing does not offer a graduate degree program.

Students entering the MBA cohort lock-step program may only enroll in 2-credit courses, with the exception of Accounting electives. Students may not exceed enrollment in 12 credits per semester (6 credits per term) at any time. Elective offerings will be offered based on student demand.

POLITICAL SCIENCE - Dept. Code: POL

The Department of Political Science offers a Masters degree in Public Administration. The Faculty in Public Administration works closely with the School of Business in its Graduate Programs, particularly the Master of Business Administration.

The requirements for the Masters in Public Administration degree are:

A. Thirty-six to forty-eight credits at the graduate level, depending on government management experience and academic preparation.

B. Completion of core and specialized track course requirements as specified by the POL Department in consultation with the student’s career goals and interests.

C. An option exists for those students who wish to complete in five years their Bachelors degree and a Master of Public Administration. Contact POL Department for details.

D. All other requirements as stated in sections Requirements for the Master of Arts Degree and General Information.

SECOND MASTERS DEGREE IN PUBLIC HEALTH (MPA/MPH)

The Master of Public Administration/Master of Public Health combines programs from the School of Business Administration and the School of Medicine and is designed for students who seek an in-depth knowledge of management and public policy administration with training in public health.

It is possible for full-time students to complete the requirements for both degree requirements within two and one-half years.

Interested students must apply and be accepted by both Departments. For further information, contact the Department of Political Science at (305) 284-2401 or the Department of Epidemiology and Public Health at (305) 243-6759.

Students entering the MBA cohort lock-step program may only enroll in 2-credit courses, with the exception of Accounting electives. Students may not exceed enrollment in 12 credits per semester (6 credits per term) at any time. Elective offerings will be offered based on student demand.

Political Science Course Listing
I. AREAS OF STUDY

A. The School of Communication offers graduate programs leading to the Doctor of Philosophy, Master of Arts and Master of Fine Arts degrees.

B. Courses are available in the following areas of study

1. COMMUNICATION STUDIES (M.A.) is a flexible program of study in communication theory and research that can be adapted to the interests and needs of the student. All students complete coursework in communication theory and research methods. The program is tailored to the individual and emphasizes the student’s development of research skills under faculty supervision. Thesis is required.

2. JOURNALISM (M.A.) is an intensive program of academic study and supervised, hands-on practice designed to develop competitive, high-level newsgathering, reporting, news writing, and news editing skills. Students have the option to concentrate in either PRINT JOURNALISM or TELEVISION BROADCAST JOURNALISM. Operating in a news bureau setting, the program begins in the fall semester. No prior training or experience in journalism is required.

3. FILM STUDIES (M.A.) examines the creative, historical, critical and theoretical aspects of the moving image arts. The curriculum seeks to develop the student’s research, analytical and writing skills to a high level of professional scholarship and research. Thesis is required.

4. MOTION PICTURES (M.F.A.) offers programs with an emphasis in PRODUCTION, PRODUCING, or SCREENWRITING. Students are required to complete three critical or analytical courses, three professional development courses, and three production or screenwriting courses. With the approval and supervision of the faculty, each student conceives and executes or produces a major creative project – either a motion picture or a feature-length screenplay. All M.F.A. students must demonstrate competence in a required list of readings or films included in required Film Culture classes. Students deficient in production or screenwriting may be required to take one or more undergraduate courses, or to complete the Summer Motion Picture Production Institute.

5. PUBLIC RELATIONS (M.A.) offers two programs. The thesis track program provides and opportunity to supplement a working foundation and knowledge with pertinent theory and research methodologies. A thesis is required. A second non-thesis track program builds from a foundation of public relations and communication courses. A practicum is required in lieu of a thesis for this 36-credit program.

6. SPANISH LANGUAGE JOURNALISM (M.A.) offers a special graduate program which is open to recent graduates of communication and related
programs and to mid-career professionals who want to upgrade their skills and update their knowledge of media theories and issues.

Graduate students are encouraged to pursue independent thinking, research and creative work as appropriate to the fulfillment of the requirements of their degree program. In addition, it is intended that the programs of graduate study serve to support the independent thinking of graduate students and to aid in their continuing pursuit of independent research and creative work.

II. ADMISSION TO GRADUATE STUDIES
Requirements for admission to graduate status for the Master of Arts or Master of Fine Arts degree in the School of Communication are:

- A baccalaureate degree from an accredited institution
- The School's official application
- A $50.00 non-refundable application fee
- Official transcripts of all college work, both undergraduate and graduate
- Three letters of recommendation
- Official TOEFL scores for international students
- A 500-word typed statement of academic and professional goals
- Essays or other writing samples as required by the Journalism, Film Studies, and Motion Pictures programs. Additional requirements may apply for admission to the motion picture production and screenwriting concentrations.

III. DEGREE REQUIREMENTS
A. Programs of Study for the Master of Arts and Master of Fine Arts degrees are available with these options:

1. MASTER OF ARTS - THESIS TRACK

   For the program including a thesis, the candidate must complete a minimum of 30 credit hours on the graduate level with the approval of a faculty advisor. Of the 30 credit hours, 15 credit hours must be at or above the 600 level. 6 credit hours will be earned for thesis work. The thesis may represent an applied research project, original research, or a critical review on a topic approved by a thesis committee. The thesis committee chair must be a member of the Graduate Faculty of the University. A thesis is required of all Communication Studies, Film Studies, and thesis-track Public Relations students.

2. MASTER OF ARTS - NON-THESIS TRACK

   Students must complete a minimum of 36 credit hours on the graduate level with the approval of a faculty advisor. Of the 36 credit hours, 18 must be at or above the 600 level.

3. MASTER OF FINE ARTS

   The candidate must complete a minimum of 42 credit hours with the approval of a faculty advisor. Of the 42 credits hours, at least 24 must be at or above the 600 level.
B. GENERAL DEGREE REQUIREMENTS:
1. All students in the Master of Arts (M.A.) program will complete the following core courses:

   COM 601 Theories of Communication or CMP 667 Film Culture II

   COM 602 Methods of Communication Research or COM 603 Qualitative Research Methodologies

2. All students in the Master of Fine Arts (M.F.A.) program will take 3 courses from Critical and Analytical studies, 3 courses from the Professional Development offerings, 6 to 9 credits from the Production courses, and the M.F.A. project.

3. With the approval of a faculty advisor, a student may take from 6 to 15 credits hours in courses outside the School of Communication.

4. Candidates who complete a thesis must have their proposals formally approved by their thesis committee following a personal meeting with committee members. Candidates will be given final oral examinations in defense of their theses.

5. Comprehensive Examinations are required for all M.A. programs. At least one member of the examining committee must be a member of the Graduate Faculty of the University.

IV. Ph.D. IN COMMUNICATION
The Ph.D. program is a highly individualized and innovative program. Students are paired, after their first year of study, with a faculty member who assists the student in developing research techniques and teaching and writing skills necessary for an outstanding media, business, industry, or educational career.

Research interests of the School of Communication faculty are diverse. Possible areas of specialization for doctoral work include intercultural communication, health communication, organizational communication, international communication, political communication, interpersonal communication, film studies, public relations and mass communication.

A. DOCTOR OF PHILOSOPHY

1. Students will not be admitted to the doctoral program until they have earned a masters degree in communication or in another appropriate field.

2. Courses

   Students must complete 57 credits of course work beyond the master’s degree. 24 credits must be in courses at the 600-level. No transfer credits may count toward these 24 credits. At a minimum, 12 of the 57 credits must be dissertation credits.

   Communication students will complete the following:
   Core courses (15 credits):
   COM 601 - Theories of Communication
   COM 602 - Methods of Communication Research
   COM 603 - Qualitative Research Methodologies
   COM 604 - Advanced Communication Research Methods
   COM 610 - Doctoral Colloquium
   COM 613 - History of Communication
3. Examinations

All School of Communication Ph.D. students will be given written and oral comprehensive examinations following the conclusion of all course work prior to being admitted to candidacy for the Ph.D. degree. A majority of the examination committee must be members of the Graduate Faculty of the University. A failure to pass the comprehensive examination will require the student to retake and pass the examination within one calendar year. Any student who fails to be admitted to candidacy for the degree within this one-year period will be dismissed from the program.

4. Dissertation

Students must complete a minimum of 12 dissertation credits. Students must proceed with the dissertation after the dissertation committee has been appointed and the dissertation proposal has been approved by the committee and accepted by the Director of Graduate Studies and the Graduate School. The dissertation must be an investigation of a substantial scholarly topic. A final oral defense of the dissertation is required.

V. Admission Requirements for Doctoral Status

- A Master’s degree in communication, or in another appropriate field, is required of all applicants. The degree must be in addition to a bachelor’s degree. All degrees must be from accredited institutions.
- The School’s official application
- A $50.00 non-refundable application fee
- Official transcripts of all college work, both undergraduate and graduate
- Three letters of recommendation
- Official Graduate Record Examination (GRE) scores
- Official TOEFL scores for international students
- Letter of intent – a minimum 500 word typed statement of academic and professional goals
- A copy of the completed master’s thesis or comparable scholarly work if no master’s thesis has been completed. If the master’s thesis is in progress, completed chapters should be submitted.

All students should consult the School of Communication Graduate Studies Handbook for additional requirements.
VI. AWARDS AND SCHOLARSHIPS

   JAMES BATTEN SCHOLARSHIP
   Awarded to a qualified student enrolled in the graduate program in professional print journalism.

   Information regarding other scholarships is available on the School’s web page.

   • COMMUNICATION COURSES: Dept. Code: COM
   • COMMUNICATION STUDIES COURSES: Dept. Code: COS
   • PUBLIC RELATIONS COURSES: Dept. Code: CAP
   • TV BROADCAST JOURNALISM COURSES: Dept. Code: CBR
   • PRINT JOURNALISM COURSES: Dept. Code: CNJ
   • MOTION PICTURES COURSES: Dept. Code: CMP

Communication Course Listing

Communication Studies Course Listing

Public Relations Course Listing

TV Broadcast Journalism Course Listing

Print Journalism Course Listing

Motion Pictures Course Listing
MASTER OF SCIENCE IN EDUCATION
The requirements for the degree of Master of Science in Education are described in a separate section.

SPECIALIST IN EDUCATION
The requirements for the degree of Specialist in Education are described in a separate section.

DOCTOR OF PHILOSOPHY IN EDUCATION
The Doctor of Philosophy degree with a major in education is designed to develop personnel competent to conduct research in a particular field of education or behavioral sciences.

Concentrations are offered in
- exercise physiology,
- counseling psychology,
- reading,
- mathematics and science education
- teaching English to speakers of other languages,
- exceptional student education, and
- research, measurement, and evaluation.

Admission to Doctor of Philosophy in Education

1. Consideration for admission to the doctoral program will be based on the following factors:
   a) acceptable Graduate Record Exam (GRE) scores taken within the past five years; international applicants whose native language is not English must pass the Test of English for Foreign Languages (TOEFL);
   b) professional experience relevant to degree program;
   c) undergraduate grade point average of 3.0 or better (on a four point scale);
   d) three letters of recommendation;
   e) available student space in program;
   f) admissions interview;
   g) personal characteristics relevant to the profession.

2. Upon admission to graduate study, a supervisory committee, consisting of three members, will be appointed by the School of Education.
   a) The student will meet with the chairperson of this committee to design a Program of Study/Residency Plan.
   b) The Program of Study/Residency Plan must be approved by the supervisory committee, the department chairperson, and the Associate Dean of Academic Studies in the School of Education.
c) The Program of Study/Residency Plan must be filed with both the Graduate School and the School of Education by the end of the second semester of enrollment or future registration will not be permitted.

3. All students are required to submit a signed Student Responsibility Checklist and the Graduate Student Honor Code by the end of their first semester of enrollment.

4. The residence requirement is two full-time consecutive semesters at the University of Miami.

5. The minimum total credits required beyond the bachelors is 85, including 12 credits for the dissertation;

6. The major, in one of the areas of concentration listed above, requires a minimum of 30 credits;

7. A supporting area consisting of at least 12 credits is required; the student must be qualified for admission to graduate status in this area, and receive approval for enrollment from the department concerned and from the School of Education.

   Note: In TAL the supporting area is teacher education (12 credit hours).

8. Fifteen credit hours of statistics and research methods are required as prescribed by the supervisory committee.

9. Students are required to maintain enrollment of at least one credit hour on a continuous basis during all fall and spring semesters until such time as they fulfill their doctoral degree requirements.

   Note: Failure to do so may result in additional fees and/or inability to continue the program.

In addition to the formal academic requirements, the School of Education requires its student to demonstrate personal qualities that, in the judgment of the faculty, would permit them to function effectively in their professional roles. The School of Education reserves the right to dismiss any student who is academically or personally unable to carry out the professional responsibilities of the respective professions for which they are being trained. Conduct which may be considered unprofessional may include dishonesty, cheating, plagiarism, sexual harassment, discrimination on the basis of race, ethnicity, religion, or sexual orientation, and inappropriate interpersonal behavior. It is up to each student to fulfill their responsibilities in a timely and professional manner, to represent themselves and the University with honesty, and to treat others with dignity and respect.

MASTER OF SCIENCE IN EDUCATION

REQUIREMENTS FOR ADMISSION

1. Admission to the Master of Science in Education is based on the following:

   a. acceptable scores on the Graduate Record Exam (GRE) taken within the past five years. International applicants whose native language is not English must pass the Test of English as a Foreign Language [TOEFL] and the GRE. Teachers with at least three years full-time teaching experience may apply for a GRE waiver;
b. completion of a bachelor’s degree from an accredited institution;

c. acceptable undergraduate grade point average;

d. three letters of recommendation;

e. an interview (required by some programs);

f. personal characteristics relevant to the profession.

2. Students must select a major from the areas offered. A School of Education faculty advisor in the student’s major will be appointed to meet with the student to design a Program of Study. The Program of Study must be on file in the Associate Dean’s Office by the end of the first semester of study or future registration will not be permitted.

3. All students are required to submit a signed Student Responsibility Checklist and the Graduate Student Honor Code by the end of their first semester of enrollment.

REQUIREMENTS FOR MASTER’S CANDIDACY

After completion of 12 credits, student must apply for Master’s Candidacy. Admission to Master’s Candidacy is based on:

a. admission to degree seeking status (ED/M/2);

b. a Program of Study on file in the Associate Dean’s Office;

c. GPA of at least 3.0;

d. writing competency requirement met based on a score of at least 4.0 on the GRE Analytical Writing Assessment or attendance at the SOE Writing Seminars. Only if the writing seminars are not available, visits to the UM Writing Center will be required. (See your advisor);

e. approval from area committee if in a counseling program;

f. Students pursuing a Master’s degree that leads to eligibility to apply to the FLDOE for certification must provide proof that they have passed the General Knowledge Test or achieved a score of 1000 or more on the GRE to receive Master’s Candidacy.

REQUIREMENTS FOR GRADUATION

1. Students must pass a comprehensive written examination, portfolio (with an oral examination as a possible additional requirement), capstone course, project, thesis, or requirement specified by the program. When a thesis is chosen (in the ESS Dept. or EPS Dept.), a maximum of six credits may be counted toward the total of 30, and an oral examination in defense of the thesis will be required.
2. Students must complete a minimum of thirty credits at the graduate level with an average of B and no grade lower than C-. Course substitutions will not apply toward graduation without the written approval of the chairperson of the Department and the Associate Dean. Students are required to have Department and Associate Dean’s approval prior to taking a course at another university.

3. Students pursuing initial certification must pass the General Knowledge Test (GKT), Professional Education Test and appropriate Subject Area Exam(s) of the Florida Teacher Certification Examination (FTCE).

4. Students are required to pass all SAE for eligible certification of the degree program.

5. Students in teacher education programs must meet Florida Department of Education (DOE) ESOL requirements.

6. Students are required to complete master’s degree courses within 6 years.

7. Students in counseling must complete the required “Personal Growth Experience” form and document this with completion of the form.

DEGREE PROGRAM REQUIREMENT

In addition to the formal academic requirements, the School of Education requires its student to demonstrate personal qualities that, in the judgment of the faculty, would permit them to function effectively in their professional roles. The School of Education reserves the right to dismiss any student who is academically or personally unable to carry out the professional responsibilities of the respective professions for which they are being trained. Conduct which may be considered unprofessional may include dishonesty, cheating, plagiarism, sexual harassment, discrimination on the basis of race, ethnicity, religion, or sexual orientation, and inappropriate interpersonal behavior. It is up to each student to fulfill their responsibilities in a timely and professional manner, to represent themselves and the University with honesty, and to treat others with dignity and respect.

SPECIALIST IN EDUCATION

The Specialist in Education is a graduate degree requiring a minimum of 30 hours beyond a master’s degree. It is administered by the School of Education through the Graduate School.

RELATION TO DOCTORAL WORK

The Specialist in Education is a degree independent of the Doctor of Philosophy in Education. Although there is normally some overlap in coursework, admission to a specialist program does not imply admission to a doctoral program, and vice versa.

ADMISSION TO THE SPECIALIST PROGRAM

Admission to this program is based upon the recommendation of the faculty of the School of Education. Among the factors to be considered are the following:

1. Completion of a master’s degree with an outstanding record from an accredited institution;
2. Adequacy of previous study in the field of education;

3. An appropriate period of successful teaching experience;

4. Acceptable scores on the Graduate Record Examination (GRE) or approval of a GRE waiver.

5. Programs may require an interview.

6. Submission of signed Student Responsibility Checklist and the Graduate Student Honor Code. These documents must be submitted to the Office of the Associate Dean by the end of the student’s first semester of enrollment.

Applications for admission to the program are filed directly with the Graduate Admissions Office in the School of Education. Application papers and further information may be secured by addressing the Coordinator of Graduate Studies, School of Education.

ADMISSION TO SPECIALIST CANDIDACY

After completion of 12 credits, student must apply to Specialist Candidacy. Admission to Specialist Candidacy is based on:
  a. admission to degree seeking status
  b. program of study on file in Associate Dean’s Office
  c. GPA of at least 3.0
  d. writing competency requirement met based on a score of at least 4.0 on the GRE Analytical Writing Assessment or attendance at the SOE Writing Seminars. Only if the writing seminars are not available, visits to the UM Writing Center will be required. (See your advisor).

SUPERVISORY COMMITTEE

A supervisory committee consisting of three faculty members in the student’s area of study will be appointed by the School of Education.

CREDIT

A minimum of 60 graduate credits, (or 30 credits after completion of the masters program) is required. The program must include at least 30 graduate credits earned at the University of Miami and at least 18 graduate credits earned following admission to the specialist program. The specialist program of study is developed in consultation with the Supervisory Committee of 3 faculty members (a chairperson and 2 other members).

MAJOR

Currently, the following majors are available leading to the Specialist in Education degree: Exceptional Student Education/Pre-K Disabilities, Reading, MST, Exceptional Student Education/Reading, Elementary Education, Teaching English to Speakers of Other Languages, and Prekindergarten/Primary Education. Upon admission to the specialist program, a formal program of studies is approved by a committee of 3 faculty members.
COMPREHENSIVE EXAMINATION/PROJECT

A written examination, (portfolio and oral examination may be required) or a project will be required. The written comprehensive examination will cover the student’s program of studies. The examination must be taken during or after the final semester in which the student is enrolled for coursework in the program. The project will be directed by the Chairperson of the Specialist Committee.

RECENCY OF CREDIT

All work for the degree of Specialist in Education must be completed within six years of admission to the program.

DEGREE PROGRAM REQUIREMENT

All specialist students must engage in teaching and/or research appropriate to their degree program. In addition to the general academic requirements, the School of Education requires that specialist students demonstrate personal qualities which, in the judgment of the faculty, would permit them to function effectively in their professional capacities.
EDUCATIONAL AND PSYCHOLOGICAL STUDIES DEPARTMENT - Dept. Code: EPS

DEGREE PROGRAMS OFFERED

MASTER OF SCIENCE IN EDUCATION (M.S.Ed.)

<table>
<thead>
<tr>
<th>Degree Concentration</th>
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<tbody>
<tr>
<td>Higher Education/Administration (Enrollment Management or Student Life and Development)</td>
</tr>
<tr>
<td>Counseling (Mental Health Counseling or Marriage and Family Therapy)</td>
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<tr>
<td>Research and Evaluation</td>
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DOCTOR OF PHILOSOPHY (Ph.D.)

<table>
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<tr>
<th>Degree Concentration</th>
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<tbody>
<tr>
<td>Counseling Psychology</td>
</tr>
<tr>
<td>Educational Research/Exercise Physiology</td>
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<tr>
<td>Research, Measurement, and Evaluation</td>
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CERTIFICATES

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<tr>
<th>Certificate Name</th>
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<tbody>
<tr>
<td>Bilingual and Bicultural Counseling</td>
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<tr>
<td>Enrollment Management</td>
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</table>

HIGHER EDUCATION ADMINISTRATION (Enrollment Management/Student Life and Development)

- The Higher Education Administration Program, which offers a Master of Science in Education with concentrations in Enrollment Management or student life and development, is designed to produce skilled and versatile higher education administrators who understand all aspects of their professional environment. Also offered is a Certificate Program for working professionals who already have master’s degrees and seek career-furthering credentials and skills.

The Enrollment Management concentration, the product of a unique collaboration between the School of Education and the Division of Enrollments, integrates theory, research, teamwork, and effective communication.

It is an interdisciplinary program, with courses also required in the School of Business Administration. Opportunities abound for integrating research and discussion in daily practice.

The student life and development concentration provides knowledge and skills necessary to facilitate undergraduate students’ transition, adjustment and involvement in college, in ways that enhance their academic achievement and lead to persistence and graduation.

Our graduates enter a variety of roles in college and university administration with the ability to consider today’s challenges from a broad-based, highly informed perspective.
The following programs are offered in Higher Education:

**MASTER’S DEGREE:**
M.S.Ed. in Higher Education

**CERTIFICATE:**
Four course certificate in Enrollment Management, post Masters Degree.
Courses include:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EPS 531</td>
<td>Organization Development</td>
</tr>
<tr>
<td>EPS 533</td>
<td>Organization and Administration of Higher Education I</td>
</tr>
<tr>
<td>EPS 545</td>
<td>Administration of Student Affairs</td>
</tr>
<tr>
<td>EPS 553</td>
<td>Introductory Statistics</td>
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<tr>
<td>EPS 603</td>
<td>Higher Education in the United States</td>
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<tr>
<td>EPS 631</td>
<td>Student Diversity in American Higher Education</td>
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<tr>
<td>EPS 633</td>
<td>Organization and Administration of Higher Education II</td>
</tr>
<tr>
<td>EPS 640</td>
<td>Enrollment Management: Theory and Practice</td>
</tr>
<tr>
<td>EPS 641</td>
<td>Advanced Seminar in Enrollment Management</td>
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<tr>
<td>EPS 647</td>
<td>Seminar: Higher Education Administration: Contemporary Issues</td>
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<tr>
<td>EPS 651</td>
<td>Survey Research Methods</td>
</tr>
<tr>
<td>EPS 654</td>
<td>Program Evaluation</td>
</tr>
<tr>
<td>EPS 688</td>
<td>Practicum: Administration of Student Affairs</td>
</tr>
<tr>
<td>EPS 710</td>
<td>Masters Thesis</td>
</tr>
</tbody>
</table>

**COUNSELING PSYCHOLOGY/COUNSELING**

Programs offered in counseling and counseling psychology are characterized by intensive clinical supervision by faculty members in an on-campus clinic, by strengths in the areas of family systems and health psychology, and by the rich multi-ethnic composition of the community, students and clients.

In addition to the formal academic requirements, the School of Education requires its student to demonstrate personal qualities that, in the judgment of the faculty, would permit them to function effectively in their professional roles. The School of Education reserves the right to dismiss any student who is academically or personally unable to carry out the professional responsibilities of the respective professions for which they are being trained. Conduct which may be considered unprofessional may include dishonesty, cheating, plagiarism, sexual harassment, discrimination on the basis of race, ethnicity, religion, or sexual orientation, and inappropriate interpersonal behavior. It is up to each student to fulfill their responsibilities in a timely and professional manner, to represent themselves and the University with honesty, and to treat others with dignity and respect.

**MASTER’S DEGREE**
The M.S.Ed. in counseling is a two year program which includes approximately 60-credits of coursework and a comprehensive examination in one of two areas of specialization:

- **Mental Health Counseling** – This program provides the academic and pre-degree supervision requirements for licensing as a Mental Health Counselor in the State of Florida.
• *Marriage and Family Therapy* – This program provides the academic and pre-degree supervision requirements for licensing as a Marriage and Family Therapist in the State of Florida and also may lead to qualification for certification by the American Association of Marriage and Family Therapy.

**DOCTORAL DEGREE:**
The Ph.D. degree is offered in Counseling Psychology.
The program is accredited by the American Psychological Association. It follows a scientist-practitioner model.
The program is characterized by close scholarly relationships between students and faculty.
Applications for doctoral study are due by January 2. Doctoral applications are reviewed once each year.

**THE CERTIFICATE IN BILINGUAL AND BICULTURAL COUNSELING**
- This Certificate can be integrated into the Masters Program in Counseling or the Doctoral Program in Counseling Psychology.
- It can be completed in addition to or after completion of a degree program in counseling, psychology or a related field.
- See the Department of Educational and Psychological Studies for a program sheet or [www.education.miami.edu](http://www.education.miami.edu). 312 Merrick Building; (305) 284-3001.

Master’s and Doctoral Courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EPS 505</td>
<td>Lifespan Human Development</td>
</tr>
<tr>
<td>EPS 510</td>
<td>Professional, Legal and Ethical Issues in Counseling</td>
</tr>
<tr>
<td>EPS 511</td>
<td>Lifestyle and Career Counseling</td>
</tr>
<tr>
<td>EPS 512</td>
<td>Assessment Strategies for Counselors I</td>
</tr>
<tr>
<td>EPS 514</td>
<td>Psychosocial Bases of Social and Cultural Diversity</td>
</tr>
<tr>
<td>EPS 515</td>
<td>Dynamics of Marriage and Family Systems</td>
</tr>
<tr>
<td>EPS 526</td>
<td>Counseling in Community Settings</td>
</tr>
<tr>
<td>EPS 610</td>
<td>Therapeutic Group Procedures</td>
</tr>
<tr>
<td>EPS 611</td>
<td>Assessment Strategies for Counselors II</td>
</tr>
<tr>
<td>EPS 612</td>
<td>Counseling Theories and Practice</td>
</tr>
<tr>
<td>EPS 613</td>
<td>Psychopathology for Counselors</td>
</tr>
<tr>
<td>EPS 614</td>
<td>Counseling and Sexuality</td>
</tr>
<tr>
<td>EPS 615</td>
<td>Family Therapy</td>
</tr>
<tr>
<td>EPS 616</td>
<td>Therapy for Couples</td>
</tr>
<tr>
<td>EPS 617</td>
<td>Seminar in Counseling Psychology</td>
</tr>
<tr>
<td>EPS 618</td>
<td>Practicum in Counseling I</td>
</tr>
<tr>
<td>EPS 619</td>
<td>Practicum Laboratory I</td>
</tr>
<tr>
<td>EPS 620</td>
<td>Counseling Psychology: Theory, Research and Practice</td>
</tr>
<tr>
<td>EPS 621</td>
<td>Psychological Appraisal I</td>
</tr>
<tr>
<td>EPS 622</td>
<td>Psychological Appraisal II</td>
</tr>
<tr>
<td>EPS 623</td>
<td>Substance Abuse: Theories and Counseling</td>
</tr>
<tr>
<td>EPS 624</td>
<td>Assessment and Therapy with Children and Adolescents</td>
</tr>
<tr>
<td>EPS 625</td>
<td>Research and Program Evaluation in Counseling</td>
</tr>
<tr>
<td>EPS 627</td>
<td>Advanced Professional Practicum</td>
</tr>
<tr>
<td>EPS 628</td>
<td>Doctoral Practicum I</td>
</tr>
<tr>
<td>EPS 629</td>
<td>Doctoral Practicum II</td>
</tr>
<tr>
<td>EPS 634</td>
<td>Clinical Supervision and Consultation</td>
</tr>
<tr>
<td>EPS 663</td>
<td>Professional Psychological Spanish</td>
</tr>
</tbody>
</table>
**RESEARCH, MEASUREMENT AND EVALUATION**

The graduate programs and courses listed below are designed to prepare students in the broad fields of behavioral research, measurement statistics and evaluation. While primarily oriented to education, they are equally suitable to such allied professions as mental health, exercise physiology, and community agency programs. Both quantitative and qualitative aspects of research are offered. Exercise Physiology, a specialization within the research doctoral program, prepares students to conduct research in this area, and places an emphasis on the application of scientific research for the practitioner.

**DEGREE PROGRAMS**

Two degree programs are offered:
- **MASTERS DEGREE**: M.S.Ed. in Research and Evaluation.
- **DOCTORAL DEGREE**: Ph.D. in Research, Measurement and Evaluation or Educational Research/Exercise Physiology.

Courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS 550</td>
<td>Educational Measurement and Evaluation</td>
</tr>
<tr>
<td>EPS 553</td>
<td>Introductory Statistics</td>
</tr>
<tr>
<td>EPS 554</td>
<td>Essentials of Research in Social and Behavioral Sciences</td>
</tr>
<tr>
<td>EPS 558</td>
<td>Computer Applications in Educational and Behavioral Science Research</td>
</tr>
<tr>
<td>EPS 607, 608</td>
<td>Advanced Individual Study</td>
</tr>
<tr>
<td>EPS 651</td>
<td>Survey Research Methods</td>
</tr>
<tr>
<td>EPS 652</td>
<td>Nonparametric Methods for Quantitative Analysis</td>
</tr>
<tr>
<td>EPS 654</td>
<td>Program Evaluation</td>
</tr>
<tr>
<td>EPS 659</td>
<td>Field Experience in Educational Research</td>
</tr>
<tr>
<td>EPS 661</td>
<td>Measurement and Psychometric Theory</td>
</tr>
<tr>
<td>EPS 667</td>
<td>Seminar in Educational Research</td>
</tr>
<tr>
<td>EPS 670</td>
<td>Introduction to Research Methods</td>
</tr>
<tr>
<td>EPS 671</td>
<td>Group Comparative Research Designs and ANOVA Methods</td>
</tr>
<tr>
<td>EPS 672</td>
<td>Regression Methods</td>
</tr>
<tr>
<td>EPS 673</td>
<td>An Introduction to Structural Equation Modeling for Multivariate Models</td>
</tr>
<tr>
<td>EPS 674</td>
<td>An Introduction to Multilevel Modeling</td>
</tr>
<tr>
<td>EPS 675</td>
<td>Qualitative Methods I</td>
</tr>
<tr>
<td>EPS 676</td>
<td>Qualitative Methods II: Case Studies and Grounded Theory</td>
</tr>
<tr>
<td>EPS 677</td>
<td>Qualitative Methods III: Interviews and Content Analysis</td>
</tr>
<tr>
<td>EPS 685</td>
<td>Dissertation Seminar</td>
</tr>
<tr>
<td>EPS 710</td>
<td>Masters Thesis</td>
</tr>
<tr>
<td>EPS 730</td>
<td>Doctor of Philosophy Dissertation</td>
</tr>
</tbody>
</table>

Applications for doctoral study are due by January 2. Doctoral applications are reviewed once each year.

[Educational and Psychological Studies Course Listing](#)
EXERCISE AND SPORT SCIENCES - Dept. Code: ESS

Two Master’s Degree Programs in Exercise Physiology are offered:
- **Exercise Physiology** – M.S. Ed. Graduate program in Exercise Physiology
- **5 year Master’s Degree program**: BS & MS Ed. combined program in Exercise Physiology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS520</td>
<td>Cellular Exercise Physiology</td>
</tr>
<tr>
<td>ESS521</td>
<td>Systemic Exercise Physiology</td>
</tr>
<tr>
<td>ESS530</td>
<td>Laboratory: Techniques in Functional Evaluation of Skeletal Muscle</td>
</tr>
<tr>
<td>ESS541</td>
<td>Neurophysiology in Exercise Science</td>
</tr>
<tr>
<td>ESS577</td>
<td>Advanced Nutrition for Sports and Fitness</td>
</tr>
<tr>
<td>ESS579</td>
<td>Principles of Exercise Prescription: Cardiovascular</td>
</tr>
<tr>
<td>ESS586</td>
<td>Exercise Prescription Assessment Laboratory</td>
</tr>
<tr>
<td>ESS646</td>
<td>Research Methods in Exercise and Sport Sciences</td>
</tr>
<tr>
<td>ESS671</td>
<td>Group Comparative Research Designs and ANOVA Methods</td>
</tr>
<tr>
<td>ESS699</td>
<td>Special Project in Exercise and Sport Sciences or</td>
</tr>
<tr>
<td>ESS710</td>
<td>Master’s Thesis</td>
</tr>
</tbody>
</table>

- **5 – Year Program in Exercise Physiology** – A Program for undergraduate students interested in pursuing a graduate degree in Exercise Physiology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS155</td>
<td>Biological and Health Related Bases of Exercise</td>
</tr>
<tr>
<td>ESS246</td>
<td>Gross Anatomy</td>
</tr>
<tr>
<td>ESS221</td>
<td>Introduction to Exercise: Bioenergetics and Skeletal Muscle Physiology</td>
</tr>
<tr>
<td>ESS222</td>
<td>Exercise Physiology Laboratory: Neuromuscular</td>
</tr>
<tr>
<td>ESS245</td>
<td>Kinesiology</td>
</tr>
<tr>
<td>ESS310</td>
<td>Elements of Sport Psychology</td>
</tr>
<tr>
<td>ESS321</td>
<td>Introduction to Systemic Exercise Physiology</td>
</tr>
<tr>
<td>ESS322</td>
<td>Exercise Physiology Laboratory: Cardiorespiratory</td>
</tr>
<tr>
<td>ESS363</td>
<td>Principles of Exercise Prescription: Neuromuscular</td>
</tr>
<tr>
<td>ESS365</td>
<td>Principles of Exercise Prescription</td>
</tr>
<tr>
<td>ESS366</td>
<td>Exercise Physiology Laboratory: Assessment</td>
</tr>
<tr>
<td>ESS384</td>
<td>Athletic and Sport Injuries</td>
</tr>
<tr>
<td>ESS421</td>
<td>Systemic Exercise Physiology</td>
</tr>
<tr>
<td>ESS458</td>
<td>Project in Exercise and Sport Sciences</td>
</tr>
<tr>
<td>ESS477</td>
<td>Advanced Nutrition for Sport and Fitness</td>
</tr>
<tr>
<td>ESS520</td>
<td>Cellular Exercise Physiology</td>
</tr>
<tr>
<td>ESS530</td>
<td>Laboratory: Techniques in Functional Evaluation of Skeletal Muscle</td>
</tr>
<tr>
<td>ESS541</td>
<td>Neurophysiology</td>
</tr>
<tr>
<td>ESS555</td>
<td>Exercise Biochemistry</td>
</tr>
<tr>
<td>ESS577</td>
<td>Advanced Nutrition for Sport and Fitness</td>
</tr>
<tr>
<td>ESS579</td>
<td>Prescription/Assessment Cardiovascular</td>
</tr>
<tr>
<td>ESS586</td>
<td>Exercise Prescription Assessment Lab</td>
</tr>
<tr>
<td>ESS646</td>
<td>Research Methods in Exercise Physiology</td>
</tr>
<tr>
<td>ESS671</td>
<td>Research Design ANOVA Method</td>
</tr>
<tr>
<td>ESS699</td>
<td>Special Project ESS</td>
</tr>
<tr>
<td>ESSXXX</td>
<td>Elective</td>
</tr>
<tr>
<td>ESSXXX</td>
<td>Elective</td>
</tr>
</tbody>
</table>
• **Sport Administration** - A program for persons interested in athletic sport administration or recreation and leisure sports administration. Courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS562</td>
<td>Fiscal Management in Sport Administration</td>
</tr>
<tr>
<td>ESS564</td>
<td>Sport Marketing</td>
</tr>
<tr>
<td>ESS565</td>
<td>Legal Aspects of Sports and Exercise Science</td>
</tr>
<tr>
<td>ESS566</td>
<td>Organization &amp; Administration of Sport Programs</td>
</tr>
<tr>
<td>ESS574</td>
<td>Ethical Decision Making in Sport and the Professions</td>
</tr>
<tr>
<td>ESS575</td>
<td>Essential Leadership Skills in Sport and the Professions</td>
</tr>
<tr>
<td>ESS603</td>
<td>Contemporary Issues in Exercise and Sport Sciences</td>
</tr>
<tr>
<td>ESS646</td>
<td>Research Methods in Exercise and Sport Sciences</td>
</tr>
<tr>
<td>ESS647</td>
<td>Analytic Methods in Exercise and Sport Sciences</td>
</tr>
<tr>
<td>ESS696/697</td>
<td>Graduate/Clinical Field Experiences in Exercise and Sport Sciences</td>
</tr>
<tr>
<td>ESS699</td>
<td>Special Project in Exercise and Sport Sciences</td>
</tr>
<tr>
<td>ESS710</td>
<td>Master’s Thesis</td>
</tr>
</tbody>
</table>

• **Sports Medicine with a concentration in Exercise Physiology** - A program for persons interested in the medical aspects of sports injuries including prevention, treatment, and rehabilitation.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS521</td>
<td>Systemic Exercise Physiology</td>
</tr>
<tr>
<td>ESS525</td>
<td>Advanced Kinesiology</td>
</tr>
<tr>
<td>ESS588</td>
<td>Gross Anatomy for Exercise &amp; Sport Sciences</td>
</tr>
<tr>
<td>Option I</td>
<td></td>
</tr>
<tr>
<td>ESS577</td>
<td>Advanced Nutrition for Sports and Fitness</td>
</tr>
<tr>
<td>ESS579</td>
<td>Principles of Exercise Prescription/Assessment: Cardiovascular</td>
</tr>
<tr>
<td>ESS580</td>
<td>Scientific Bases for Training Prescription: Neuromuscular</td>
</tr>
<tr>
<td>ESS586</td>
<td>Exercise Prescription Assessment Laboratory</td>
</tr>
<tr>
<td>Option II</td>
<td></td>
</tr>
<tr>
<td>ESS583</td>
<td>Sports Medicine for the Female Athlete</td>
</tr>
<tr>
<td>ESS584</td>
<td>Energetics of Obesity</td>
</tr>
<tr>
<td>ESS641</td>
<td>Aging: Physiological Changes and Their Implications of Training</td>
</tr>
<tr>
<td>ESS645</td>
<td>Special Sport Populations</td>
</tr>
<tr>
<td>Professional Preparation</td>
<td></td>
</tr>
<tr>
<td>ESS523</td>
<td>Advanced Techniques in Athletic Training I</td>
</tr>
<tr>
<td>ESS524</td>
<td>Advanced Techniques in Athletic Training II</td>
</tr>
<tr>
<td>ESS532</td>
<td>Sports Injuries Prevention &amp; Treatment</td>
</tr>
<tr>
<td>ESS575</td>
<td>Essential Leadership Skills in Sport and the Professions</td>
</tr>
</tbody>
</table>
DOCTORAL PROGRAMS
The Department of Exercise and Sport Sciences also offers a doctoral program in Exercise Physiology. Coursework specialization is available in this program for persons interested in clinical and research orientation in the area of exercise physiology. Courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS520</td>
<td>Cellular Exercise Physiology</td>
</tr>
<tr>
<td>ESS521</td>
<td>Systemic Exercise Physiology</td>
</tr>
<tr>
<td>ESS530</td>
<td>Laboratory: Techniques in Functional Evaluation of Skeletal Muscle</td>
</tr>
<tr>
<td>ESS541</td>
<td>Neurophysiology in Exercise Science</td>
</tr>
<tr>
<td>ESS555</td>
<td>Exercise Biochemistry</td>
</tr>
<tr>
<td>ESS577</td>
<td>Advanced Nutrition for Sports and Fitness</td>
</tr>
<tr>
<td>ESS578</td>
<td>Pharmacology for Allied Health Professionals</td>
</tr>
<tr>
<td>ESS579</td>
<td>Principles of Exercise Prescription/Assessment: Cardiovascular</td>
</tr>
<tr>
<td>ESS580</td>
<td>Scientific Bases for Training Prescription: Neuromuscular</td>
</tr>
<tr>
<td>ESS581</td>
<td>Issues Specific to Women's Health</td>
</tr>
<tr>
<td>ESS582</td>
<td>Psychosocial Issues in Women's Health</td>
</tr>
<tr>
<td>ESS583</td>
<td>Sports Medicine for the Female Athlete</td>
</tr>
<tr>
<td>ESS584</td>
<td>Energetics of Obesity</td>
</tr>
<tr>
<td>ESS586</td>
<td>Laboratory: Exercise Prescription/Assessment</td>
</tr>
<tr>
<td>ESS587</td>
<td>Laboratory: Experiences in Sports Nutrition</td>
</tr>
<tr>
<td>ESS589</td>
<td>Readings in Exercise &amp; Sport Sciences</td>
</tr>
<tr>
<td>ESS641</td>
<td>Aging: Physiological Changes and Their Implications of Training</td>
</tr>
<tr>
<td>ESS642</td>
<td>Cardiac Rehabilitation: Phases I - IV</td>
</tr>
<tr>
<td>ESS643</td>
<td>Laboratory: Experiences in Cardiac Rehabilitation and ECG Rehabilitation</td>
</tr>
<tr>
<td>ESS644</td>
<td>Interpretation of the ECG</td>
</tr>
<tr>
<td>ESS646</td>
<td>Research Methods in Exercise and Sport Sciences</td>
</tr>
<tr>
<td>EPS730</td>
<td>Doctor of Philosophy Dissertation</td>
</tr>
</tbody>
</table>

Courses in Research Competencies (15 credits) and outside supporting field (12 credits) are also required.
A Certificate in Women’s Health - A certificate in women’s health is available for those wishing to specialize in research issues, trends, and physiological concerns of women across the female lifespan. These courses may be considered as part of their outside supporting field in the doctoral program and include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS581</td>
<td>Issues Specific to Women's Health</td>
</tr>
<tr>
<td>ESS582</td>
<td>Psychosocial Issues in Women's Health</td>
</tr>
<tr>
<td>ESS583</td>
<td>Sports Medicine for the Female Athlete</td>
</tr>
<tr>
<td>ESS584</td>
<td>Energetics of Obesity</td>
</tr>
</tbody>
</table>

Note

The Women’s Health Certificate consists of 12 credits with a grade of "B" or higher in this specialty. Students will receive a certificate of completion upon completing all coursework in this specialty area.

Exercise and Sport Sciences Course Listing
MASTER OF SCIENCE IN EDUCATION
The Department of Teaching and Learning offers programs leading to a Master of Science in Education degree for individuals seeking initial Florida certification in Elementary Education/ESOL (grades K-6), Exceptional Student Education/Reading/ESOL, (grades K-12), Exceptional Student Education/PreK Disabilities/ESOL (grades K-12), Reading/ESOL (grades K-12),
Note: All programs leading to initial certification include ESOL endorsement.
For teachers who are currently certified, the Department also offers the Master of Science in Education in
• Elementary Education/ESOL,
• Exceptional Student Education/Reading/ESOL,
• Exceptional Student Education/PreK Disabilities/ESOL,
• Reading/ESOL,
Note: Students in these programs must meet ESOL requirements.
Periodically, the School of Education offers various Resource Teacher Education and Advanced Professional Studies programs to specific groups of teachers (cohorts). The purpose of these programs is to prepare teachers to assume leadership roles in various disciplines and to enhance the teachers’ current knowledge of “best practices” in education. Each cohort’s curriculum is designed to meet that cohort’s primary mission. Successful completion of these programs leads to conferral of the Master’s of Education (M.S.Ed.) of Specialist in Education (Ed.S.) degree. However, these graduate programs do not meet requirements for Professional Educator certification. Please visit the School of Education’s website at www.education.miami.edu to view the current offering of Resource Teacher Education and Advanced Professional Studies programs, their admission criteria, and curriculums.

Applicants for admission to the Master of Science in Education must meet the admission requirements of the School of Education. (See requirements for admission under Admission Requirements or www.education.miami.edu)
The 2005 Title II State Report Summary reported an overall pass rate of 100% on the Florida Teacher Certification Examination for graduates of the School of Education undergraduate and graduate State of Florida teacher education approved programs.

SPECIALIST IN EDUCATION
The Ed.S. degree is available for teachers who wish to increase their proficiency in their chosen field.
Specializations for the degree are
• Elementary Education,
• Exceptional Student Education/Reading,
• Exceptional Student Education/PreK Disabilities,
• Reading.
The program requires 30 additional credits beyond the Masters Degree (minimum) and is individually designed after admission. Some programs for
cohorts of teachers feature lock-step curricula. These programs typically combine students pursuing M.S.Ed. degrees with those pursuing Ed.S. degrees. While all students in these programs follow the same curriculum, students pursuing Ed.S. degrees may receive additional or different assignments. Applicants for the Ed.S. must meet the requirements of the School of Education. Additional information about the Specialist in Education is provided in a separate section. Students awarded Specialist in Education (Ed.S.) degrees will not receive an NCATE stamp on their final transcripts showing their program of study has met the requirements for Florida Professional Educator certification. Students wishing to enroll in a State of Florida certification program may consider a second master’s degree instead of the specialist degree.

DOCTOR OF PHILOSOPHY
The University of Miami Department of Teaching and Learning offers a Doctor of Philosophy Degree (Ph.D.) in the following areas of study:
- Reading,
- Exceptional Student Education,
- Teaching English to Speakers of Other Languages,
- Mathematics and Science

Students in each area may elect to also specialize in Elementary Education. An individual program of study is planned for each doctoral candidate based upon the student’s past academic and experiential background. This program of study is required to be completed by the end of the second semester of enrollment and submitted to the Office of the Associate Dean. The overall goal of the doctoral program is to provide professional development for individuals interested in careers in teacher education and research in institutions of higher education. Applicants for admission to the doctoral program must meet the requirements of the School of Education. Additional information about the Doctor of Philosophy is provided in a separate section.

MASTER OF SCIENCE IN EDUCATION
ELEMENTARY EDUCATION
Two programs leading to the Master of Science in Elementary Education are offered by the Department. One program is for individuals who are presently certified in Elementary Education and wish to extend their professional education. The second program is for individuals who have an undergraduate degree in an area other than education. This program leads to eligibility to apply to the FLDOE for initial certification in Elementary Education with ESOL endorsement. Each student should select the appropriate courses in consultation with an advisor. Courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAL 503</td>
<td>Micro-Computer Applications in Education</td>
</tr>
<tr>
<td>TAL 527</td>
<td>Language and Assessment in ESOL</td>
</tr>
<tr>
<td>TAL 528</td>
<td>ESOL Curriculum, Materials, and Methods</td>
</tr>
<tr>
<td>TAL 531</td>
<td>Educating Exceptional Students</td>
</tr>
<tr>
<td>TAL 603</td>
<td>Teacher in American Society</td>
</tr>
<tr>
<td>TAL 620</td>
<td>Reading in the Elementary School</td>
</tr>
<tr>
<td>TAL 621</td>
<td>Language Arts and Culture in the Classroom</td>
</tr>
<tr>
<td>TAL 622</td>
<td>Mathematics in the Elementary School</td>
</tr>
</tbody>
</table>
TAL 623 Science in the Elementary School
TAL 624 Social Studies in the Elementary School
TAL 625 Literature for Children
TAL 626 Instructing Students Who Have Literacy Challenges
TAL 632 Classroom and Behavior Management
TAL 770 Associate Teaching in the Elementary School (Semester-Long)

**EXCEPTIONAL STUDENT EDUCATION/PreK DISABILITIES/ESOL**

This program leads to eligibility to apply to the FLDOE for certification in Exceptional Student Education (K-12) and endorsements in Prekindergarten Disabilities and ESOL.

Courses include:

TAL 527 Language and Assessment in ESOL
TAL 528 ESOL Curriculum and Methods
TAL 550 Language and Early Reading Instruction
TAL 552 Reading Comprehension
TAL 610 Early Childhood Curriculum Development
TAL 614 Typical and Atypical Child Development
TAL 615 Evaluation and Assessment in Infant and Early Childhood Special Education
TAL 616 Intervention Strategies in Infant and Early Childhood Special Education
TAL 621 Language Arts and Culture in the Elementary School
TAL 625 Literature for Children and Adolescents
TAL 631 Theory and Instructional Practices for Exceptional Student Education
TAL 632 Classroom and Behavior Management
TAL 634 Prescriptive Teaching of Exceptional Students
TAL 637 Assessment in Exceptional Student Education
TAL 678 Internship with Special Needs Children with Disabilities (3-5 yrs.)
TAL 679 Specialized Placements in Exceptional Student Education
TAL 680 Working with Families of Young Children with Disabilities: Strategies and Medical Issues
TAL 681 Methods for Communications and Language in Young Children with Disabilities
TAL 682 Adaptive Technology and Computers in Early Childhood
TAL 696 Internship: Elementary Exceptional Student Education Classroom

A Prekindergarten Disabilities Endorsement is available for individuals who are certified in Special Education or Prekindergarten/Primary Education. The following courses are required for the endorsement:

TAL 614 Typical and Atypical Child Development
TAL 615 Evaluation and Assessment in Infant and Early Childhood Special Education
TAL 616 Intervention Strategies in Infant and Early Childhood Special Education
TAL 680 Working with Families of Young Children with Disabilities: Strategies and Medical Issues
### EXCEPTIONAL STUDENT EDUCATION/READING/ESOL
This program leads to eligibility to apply to the FL DOE for certification in Reading and Exceptional Student Education and endorsement in English to speakers of other languages (ESOL) (K-12). Each student should select the appropriate courses in consultation with an advisor.

Courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAL 527</td>
<td>Language and Assessment in ESOL</td>
</tr>
<tr>
<td>TAL 528</td>
<td>ESOL Curriculum and Methods</td>
</tr>
<tr>
<td>TAL 550</td>
<td>Language and Early Reading Instruction</td>
</tr>
<tr>
<td>TAL 552</td>
<td>Reading Comprehension</td>
</tr>
<tr>
<td>TAL 609</td>
<td>Practicum in Reading</td>
</tr>
<tr>
<td>TAL 630</td>
<td>Learning Disabilities</td>
</tr>
<tr>
<td>TAL 632</td>
<td>Classroom and Behavior Management</td>
</tr>
<tr>
<td>TAL 634</td>
<td>Prescriptive Teaching of Exceptional Students</td>
</tr>
<tr>
<td>TAL 637</td>
<td>Assessment in Exceptional Student Education</td>
</tr>
<tr>
<td>TAL 638</td>
<td>Communication and Consultation Skills in Exceptional Student Education</td>
</tr>
<tr>
<td>TAL 651</td>
<td>Diagnosis of Reading and Related Learning Disabilities</td>
</tr>
<tr>
<td>TAL 652</td>
<td>Remediation of Reading and Related Learning Disabilities</td>
</tr>
</tbody>
</table>

### READING/ESOL
This program leads to eligibility to apply to the FLDOE for certification in Reading and endorsement in English to speakers of other languages (ESOL) (K-12). Each student should select the appropriate courses in consultation with an advisor.

Courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>TAL 527</td>
<td>Language and Assessment in ESOL</td>
</tr>
<tr>
<td>TAL 528</td>
<td>ESOL Curriculum and Methods</td>
</tr>
<tr>
<td>TAL 550</td>
<td>Language and Early Reading Instruction</td>
</tr>
<tr>
<td>TAL 552</td>
<td>Reading Comprehension</td>
</tr>
<tr>
<td>TAL 609</td>
<td>Practicum in Reading</td>
</tr>
<tr>
<td>TAL 621</td>
<td>Language Arts and Culture in the Elementary School</td>
</tr>
<tr>
<td>TAL 625</td>
<td>Literature for Children and Adolescents</td>
</tr>
<tr>
<td>TAL 626</td>
<td>Instructing Students Who Have Literacy Challenges</td>
</tr>
<tr>
<td>TAL 637</td>
<td>Assessment in Exceptional Student Education</td>
</tr>
<tr>
<td>TAL 651</td>
<td>Diagnosis of Reading and Related Learning Disabilities</td>
</tr>
<tr>
<td>TAL 652</td>
<td>Remediation of Reading and Related Learning Disabilities</td>
</tr>
<tr>
<td>TAL 656</td>
<td>Seminar in Reading: History, Policy, and Administration of Reading Programs</td>
</tr>
</tbody>
</table>

[Teaching and Learning Course Listing](#)
COLLEGE OF ENGINEERING – GRADUATE
www.miami.edu/engineering

The College of Engineering offers courses of graduate study leading to the degrees of
Master of Science,
Master of Science in Architectural Engineering,
Master of Science in Biomedical Engineering,
Master of Science in Civil Engineering,
Master of Science in Electrical and Computer Engineering,
Master of Science in Industrial Engineering, and
Master of Science in Mechanical Engineering.

Ph.D. degrees are offered in the areas of
1. Biomedical Engineering,
2. Civil Engineering,
3. Electrical and Computer Engineering,
4. Ergonomics and Human Factors
5. Industrial Engineering, and

The Doctor of Arts degree (designed primarily to prepare students for college teaching) is available in Mechanical Engineering.

The College offers graduate programs leading to degrees in both traditional and interdisciplinary areas of study.

The programs provide the ready ability to cross departmental lines, and flexibility in course selection allows each student to pursue a program especially tailored to the goals of the individual.

The primary focus of the College lies in those areas and problems that cross traditional lines.

The location of the University and the strengths of its schools enable the offering of unique opportunities in interdisciplinary and multidisciplinary programs.

Graduate programs offered in conjunction with other schools or units include:
- Biomedical Engineering in conjunction with the School of Medicine
- Engineering Management
- Dual M.S. in Industrial Engineering and M.B.A. in conjunction with the School of Business Administration
- M.S. program in Management of Technology in conjunction with the School of Business Administration
- M.S. in Environmental Health and Safety in conjunction with the School of Medicine.

The M.S. and Ph.D. programs in Interdepartmental Graduate Studies permit, with approval of the Graduate Council, highly qualified students to pursue a privileged individualized program which cuts across disciplinary lines.

Further details on the various College of Engineering areas of specialization are given under the Departmental and Program headings that follow this section.

Students (other than University of Miami graduates) applying for graduate admission to the College should submit three letters of recommendation from individuals familiar with the applicant’s abilities and background.
Students who hold a bachelor's degree in a field other than their proposed major may be admitted to the graduate program and to candidacy upon completion of appropriate undergraduate deficiency courses, in addition to the regular requirements for the graduate degree.

- A student's overall program is planned by the student and the student's advisory committee. Requirements for the M.S. thesis and non-thesis options (not available in all areas of specialization) are shown below.

Requirements for the Master of Science Degree (thesis option):

- An approved integrated program with a minimum of 30 semester credits with an average grade of B or better and no grade below C.
- At least six (6) course credits must be at the 600-level.
- Six credits of the required 30 must be earned in thesis work.
- An oral examination in defense of the thesis.

Requirements for the Master of Science Degree (non-thesis option):

- An approved integrated program with a minimum of 36 semester credits with an average grade of B or better and no grade below C.
- At least twelve (12) of the course credits must be at the 600 level.
- 3-credit graduating project is required.

The programs leading to the degree of Doctor of Philosophy comply in full with the regulations of the Graduate School concerning admission, residence requirements, qualifying and final examinations and dissertation.

- At least 18 credits in courses must be taken beyond the requirements for the M.S. degree of which 6 credits must be at the 600 level.
- All candidates for the doctorate are expected to complete an appropriate integrated program of studies in preparation for the comprehensive Qualifying Examination.
- Minimum of one year beyond the Qualifying Examination is usually necessary for the completion of an acceptable dissertation (12 credits or more), whereupon the student is then admitted to the Final Oral Examination.
- Applicants for admission to the Ph.D. program will be expected to have superior records in their M.S. and B.S. degree programs, well above average scores on the Graduate Record Examination, and strong letters of recommendation.
- Departments may have requirements in addition to the above general requirements for their own graduate programs.

The Doctor of Arts degree program is intended for the same caliber student as the Ph.D. program; it is aimed, however, at those students more interested in college teaching than in advanced research.

78 credits beyond the baccalaureate are required.
- Of these, at least 48 credits must be in the major or cognate fields,
- 12 credits in higher education and nine credits in internship and project.
- All graduate students are required to demonstrate the ability to prepare and teach scientific material.
Financial assistance is available in the form of fellowships, partial tuition scholarships, teaching and research assistantships, and graduate cooperative assistantships combining study and work assignments with private engineering and architectural firms and government agencies.
For further information, write to the Dean of the College of Engineering.

**POSTGRADUATE CERTIFICATE PROGRAM**

- A Postgraduate Certificate Program is available requiring the completion of a minimum of 15 semester hours of individually planned advanced course work in an area of engineering specialization, or interdisciplinary study.
- Course sequences culminate at an advanced level, but may begin at a basic level if a new area of specialization is to be undertaken.
- The Program must be completed with a grade average of at least C, within a period of five calendar years from the date of enrollment.
- No transfer credits will be accepted. International students requiring a student visa must be in a degree program, and cannot obtain a student visa for the Certificate Program; but international students with certain other types of visas may enroll in the Program.
- Basic admission requirement for the Program is a bachelor’s degree in a recognized field of engineering or registration as a Professional Engineer by examination.
- Students demonstrating marked ability in the Program may be encouraged to apply for admission to study for the Masters Degree, and may apply up to six credits toward the M.S. degree.
BIOMEDICAL ENGINEERING - Dept. Code: BME

I. The Department of Biomedical Engineering offers graduate programs leading to the degrees of Master of Science (thesis or non-thesis option) and Doctor of Philosophy in Biomedical Engineering.

A. The specialty areas of study in Biomedical Engineering include the following:
   1. Biomedical instrumentation and devices
   2. Applications of computers to diagnostic and therapeutic systems
   3. Biomechanics, biofluid dynamics, hemodynamics
   4. Tissue and cellular engineering
   5. Biomedical signal and image processing
   6. Rehabilitation and neural engineering
   7. Biomedical optics and lasers

II. ADMISSION REQUIREMENTS

A. All students applying to the graduate program are required to submit GRE scores and three letters of recommendation.

A. Students who hold a Bachelors degree in a field other than their proposed major may be admitted to the graduate program and to candidacy upon completion of appropriate undergraduate courses, in addition to the regular requirements for the graduate degree.

III. MASTER OF SCIENCE

A. The Master of Science degree offers the graduate student an opportunity to obtain advanced training in selected areas of biomedical engineering and to begin independent research.

B. General requirements for the M.S. degree are listed in this Bulletin under Engineering and under Masters Degree-General.

B. Both a 30-credit thesis option and a 36 credit non-thesis option are available.

C. There is also a 5-year BS/MS option available for qualified undergraduate students enrolled within the Department.

D. The department admits four types of students to its MS program:
   1. Students with BS degrees in Biomedical Engineering or similar engineering fields
   2. Students with BS degrees in Electrical, Computer, Mechanical, Chemical, or similar engineering fields
   3. Students with BS degrees in Physics, Mathematics, Computer Science, Chemistry, Biology or similar fields
   4. Students with MD or similar degrees

E. Students in the last two groups are generally given conditional admission and required to take additional undergraduate courses in engineering, mathematics and science depending on their previous course work as decided by the graduate program director and the designated advisor.

F. There are three paths to earn a Master of Science degree in Biomedical Engineering:
1. The Thesis Option requires a minimum of 30 credits beyond the BS degree. These must include a minimum of 6 thesis credits, the completion of at least two appropriate courses at the 600.

2. The Non-Thesis Option requires a minimum of 36 credits beyond the BS degree. These must include at least 3 credits for an independent design or research project for which the student enrolls in BME 625. In addition, at least three appropriate courses at the 600 level must be completed.

3. The BS/MS Dual degree Program (see separate section below).

4. The student’s overall graduate program is planned by the student, advisor, graduate program director and the thesis committee (for the thesis option).
   a) The thesis committee consists of a minimum of 3 members.
   b) Two members, including the chair of the committee, shall be faculty members from the BME Department (primary or secondary), and one member must be from outside the Department.
   c) Outside members of the advisory committee can include part-time faculty that teach within the Department.
   d) One of the committee members must be a member of the Graduate Faculty.

5. The three courses of the Unified Medical Sciences sequence (BME 501, 502 and 503) were designed to apprise the engineer of the basic knowledge necessary to work in the broad field of biomedical engineering.
   a) Students coming from traditional engineering field with no biology/medicine backgrounds are required to complete all of the three Unified Medical Sciences courses.
   b) Other students are required to take at least two of the three courses unless the student holds a degree in medicine (MD, DO or equivalent) or an advanced degree (or its equivalent) in the life sciences.
   c) Each such exception requires the approval of the department’s faculty/the instructor for the course of concern.
   d) A specific requirement for all M.S. students is the completion of a zero-credit course in Biomedical Engineering Seminar (BME 680).

IV. BS/MS 5-YEAR PROGRAM
A. This program is available only to qualified undergraduate students enrolled within the Department and described in the Undergraduate Bulletin.
   1. This unique program permits students to receive a baccalaureate degree (BSBE) and a Master of Science (MS) degree in five years.
   2. The two degrees are awarded simultaneously when the combined requirements have been met for both degrees.
   3. Qualified students who want to be enrolled in this program must apply before the end of their junior year and meet all pertinent graduate school requirements, including a minimum of 3.0 GPA and a satisfactory GRE score.
   4. In lieu of the 6-credit thesis requirement, the participants complete either one significant design project or two shorter duration projects while registering for BME 605 and 606.
   5. The design project(s) is (are) monitored by at least two mentors, one of the mentors must be a member of the primary faculty in the department.
6. The project(s) is (are) completed by the acceptance of a verbal presentation and a written report by the student’s mentors.

V. DOCTOR OF PHILOSOPHY

A. The Doctor of Philosophy degree offers the graduate student an opportunity to do advanced research.

B. The requirements include
   1. completion of a minimum of 60 credits beyond the Bachelor of Science degree,
   2. a qualifying examination,
   3. the oral defense, and
   4. submission of an approved dissertation.
   5. There are no foreign language competency requirements for the PhD in biomedical engineering.
   6. Admission to the PhD program usually requires the completion of the MS degree, but highly qualified applicants with other degrees are accepted as well.
   7. In general, the department admits four types of students to its PhD program:
      a) Students with MS degrees in Biomedical Engineering or similar bioengineering fields
      b) Students with MS degrees in Electrical, Computer, Mechanical, Chemical, or similar engineering fields
      c) Students with MD degrees with undergraduate degrees in sciences or engineering
      d) Highly qualified students with BS degrees in engineering or sciences
   8. Regulations concerning admission, course requirements, residence requirements, qualifying and final examinations, and dissertation are listed in this Bulletin under Engineering and Doctor of Philosophy.

C. A supervisory committee is usually appointed to the student seeking the PhD.
   1. The doctoral program in biomedical engineering requires each student to pass a departmental qualifying screening examination that consists of three written examinations on each of the following broad subjects:
      a) basic engineering;
      b) applied mathematics and computer science; and
      c) applied physiology and medical science.
   2. These examinations are usually offered once each year.
   3. A student may automatically repeat once any or all parts of the examination where the results were found unsatisfactory.

D. Following the successful completion of the departmental qualifying screening examination, the student, with concurrence from the faculty and the Graduate School, establishes a Dissertation Committee (see Doctor of Philosophy section in this Bulletin) and selects a dissertation topic.
   1. The dissertation committee is composed of a minimum of 5 members.
   2. Three members, including the chair, shall be members of the Graduate Faculty, and one member shall be from outside the Department.
3. A minimum of two members, including the chair of the committee, must be full-time members from the BME Department.

4. A written dissertation proposal is submitted along with an oral presentation to that committee.

5. Acceptance of a dissertation proposal in combination with other examinations as determined by the committee to assure the qualifications of the student for the doctorate leads to candidacy for the Ph.D.

6. Successful defense of the dissertation leads to the award of the PhD degree.

E. All students in the BME Doctor or Philosophy program are required to complete the BME 501, 502 and 503 courses.

1. Students, who have completed these courses or similar coursework in their previous MS programs, substitute technical electives for this requirement.

2. This requirement can only be waived for students holding MD degrees.

3. All students are required to complete a zero-credit course in Biomedical Engineering Seminar (BME 680).

4. This requirement is not waived, even if the student has taken this course in his/her MS program.

5. The BME Doctor of Philosophy program requires the completion of 12 dissertation credits (BME 730), and a minimum of 6 course credits at the 600 level.

500 level courses are open to advanced undergraduates and to graduate students; 600 level courses are open only to graduate students and seniors with graduate standing.

Biomedical Engineering Course Listing
CIVIL, ARCHITECTURAL, AND ENVIRONMENTAL ENGINEERING -  
Dept. Code: CAE

The Department of Civil, Architectural, and Environmental Engineering offers graduate programs leading to the degrees of
- Master of Science in Architectural Engineering
- Master of Science in Civil Engineering
- Doctor of Philosophy in Civil Engineering

The specialty areas of study in Civil Engineering include
- structural engineering and structural materials
- environmental engineering
- water-resources engineering

The specialty areas of study in Architectural Engineering include:
- integrated building systems
- environmental systems

In all fields of specialization, up to one-half of the required course work for the selected degree may be taken outside of the Department.

ADMISSION REQUIREMENTS
All students applying to the graduate program are required to submit GRE scores and three letters of recommendation (recommendations not required from University of Miami graduates).
1. International students should consult the section on ADMISSIONS.
2. Students who hold a bachelors degree in a field other than their proposed major may be admitted to the graduate program and to candidacy upon completion of appropriate undergraduate deficiency courses, in addition to the regular requirements for the graduate degree.

MASTER OF SCIENCE
A. General requirements for the M.S. degree are listed in this Bulletin under Engineering and under Master’s Degree General.
B. Both a 30-credit thesis option and a 36-credit non-thesis option are available.
C. There is also a 5-year B.S./M.S. option available for qualified undergraduate students enrolled within the Department.
D. The student and an advisory committee plan the students overall program.
   1. The advisory committee consists of a minimum of 3 members.
   2. The chair of the committee shall be a full-time faculty member from the CAE Department, one member must be from outside the Department, and one member must be either a full-time or part-time member of the Department.
   3. One of the committee members must be a member of the Graduate Faculty.
E. A specific requirement of all Master of Science programs in the Department is the completion of a zero-credit course in engineering scholarship (CAE 601).
   1. If a thesis option is chosen, the student must enroll in 6 thesis credits (CAE 710) and at least 6 credits of coursework at the 600-level.
2. If the non-thesis option is chosen, the student must complete at least 3 credits of a Masters Project (CAE 605) and at least 12 credits of coursework at the 600-level.

DOCTOR OF PHILOSOPHY
A. Regulations concerning admission, course requirements, residence requirements, qualifying and final examinations, and dissertation are listed in this Bulletin under Engineering and Doctor of Philosophy.
B. The student and a supervisory committee plan the students overall program.
C. A separate dissertation committee may be formed to oversee the progress of the dissertation but, in most instances, the student’s supervisory committee also serves as the dissertation committee.
D. The supervisory/dissertation committee shall be composed of a minimum of 4 members.
   1. Three members, including the chair, shall be members of the Graduate Faculty, and one member shall be from outside the Department.
   2. A minimum of two members, including the chair of the committee, must be full-time members from the CAE Department.
E. Specific program requirements of all Doctor of Philosophy programs in the Department are
   1. the completion of a zero-credit course in engineering scholarship (CAE 601),
   2. 12 credits of dissertation (CAE 730), and
   3. a minimum of 6 credits of coursework at the 600 level.

RESEARCH OPPORTUNITIES - CIVIL/ARCHITECTURAL ENGINEERING
• Current research activities in the Department include properties of concrete materials, such as cellular concrete, composite structural systems, fiber-reinforced concrete, fracture mechanics, modeling and simulation of engineering materials, multi-scale modeling of nanomaterials, energy, indoor air quality, heating, ventilating and air conditioning (HVAC), building material emissions and sorption, air cleaning using photocatalytic or other advanced oxidizing technologies, ground vibrations, planning and design of health care facilities, route guidance and control, and transportation system analysis and optimization.

RESEARCH OPPORTUNITIES - ENVIRONMENTAL ENGINEERING
• Current research activities in the Department include water quality studies, groundwater, surface-water, and contaminant-transport processes, hydrologic processes, water resources planning and management, water policy, climate variability and change, innovative water and wastewater treatment processes, solid and hazardous waste disposal, environmental risk analysis, environmental/economic planning for sustainable development, and hazardous waste treatment.

Civil, Architectural and Environmental Engineering Course Listing
ELECTRICAL AND COMPUTER ENGINEERING - Dept. Code: EEN

I. MASTER OF SCIENCE IN ELECTRICAL AND COMPUTER ENGINEERING
A. The Electrical and Computer Engineering Department offers the Degree of Master of Science in Electrical and Computer Engineering with options in the areas of
1. Communications,
2. Computers and
3. Electronics.
B. Options are also available in the interdisciplinary fields of Engineering Management, Ocean Engineering and Biomedical Engineering.

II. THE FIVE-YEAR B.S.E.E.-M.S.E.C.E DUAL DEGREE PROGRAM
A. This is a structured and integrated program with a minimum of 156 approved credits including two required courses EEN 615 & 616 as well as 12 Elective courses defined as follows:
1. At least one Analysis elective courses;
2. At least two Computer Engineering elective courses;
3. At least six EEN Elective Courses;
4. An additional three EEN or Technical Elective courses;
   Elective courses are to be selected in consultation with the advisor.

III. THE FIVE-YEAR B.S.CP.E.-M.S.E.C.E DUAL DEGREE PROGRAM:
A. This Dual Degree Program requires ten additional courses and replaces three technical elective courses as well as one senior design course currently required under the B.S.Cp.E. Degree.
   These fourteen courses are specified as follows:
1. Three required courses EEN 368, 615, 616
2. select two hardware courses from: EEN 532, 542, 614
3. select two software courses from: EEN 511, 512, 513, 537, 572
4. select four courses from one of the following two course sequences
   a) EEN 436, 536, 538, 540, 571, 638, 671, CSC 529
   b) EEN 534, 548, 553, 568, 570, (573-578), 634, 653
   1. select three additional technical electives in consultation with the academic advisor.

IV. THE FIVE-YEAR B.S.I.T.-M.S.E.C.E DUAL DEGREE PROGRAM:
A. This is a structured and integrated program with a minimum of 158 approved credits. These include:
1. Thirty credits of required courses as follows:
   EEN 307, 315, 316, 336, 404, 454/455, 521, 562, 563, 568, 615, 616;
2. Fifteen credits selected from the following elective courses:
   a) Six credits of EEN elective courses selected from the following list: EEN 512, 513, 514, 532, 536, 538, 540, 542, 553, 562, 563, 564, 565, 614, 638, 671
b) Nine credits of Technical Electives selected in consultation with the academic advisor

V. DOCTOR OF PHILOSOPHY
A. The program leading to the degree of Doctor of Philosophy complies in full with the requirements of the Graduate School concerning admission, residence requirements, qualifying examinations and the dissertation.

B. Course requirements for the Ph.D. are described under the College of Engineering section.

C. There is no foreign language requirement.

D. The Ph.D. program in the Department will concentrate in communications and computer engineering.
   1. A variety of emphasis areas for study and research are available.
   2. Some of the areas include:

   | Computer Software                         | (EEN 512, 513, 519, 521, 567, 572). |
   | Electronics                               | (EEN 503, 504, 506, 516, 542, 555, 635). |
   | Signal Processing                         | (EEN 507, 533, 536, 540, 607, 636). |
   | Machine Intelligence                      | (EEN 537, 538, 548, 553, 577, 638, 653). |
   | Communications                            | (EEN 533, 534, 536, 539, 634, 656). |
   | Information Technology                    | (EEN 566, 568, 570, 571, 573, 574, 575, 576, 577, 578). |

E. Current research interests of the faculty include

- Advanced Microprocessors
- Artificial Intelligence
- Computer Architecture
- Computer Vision
- Image Processing
- VLSI Architecture
- Logic Design
- Communications
- Microwave Electronics
- Multimedia
- Robotics and Control
- Operating Systems
- Expert Systems
- Fault-Tolerant
- Architecture
- Object-Oriented Systems
- Signal Processing and Filtering
- Solid-State Electronics
- Speech Processing
- Programming Languages

500-level courses are open to advanced undergraduates and to graduate students; 600 level courses are open only to graduate students.

Electrical and Computer Engineering Course Listing
INDUSTRIAL ENGINEERING - Dept. Code: IEN

I. Department Mission Statement
The Department of Industrial Engineering mission is to provide education; impart knowledge and skills necessary to practice in a variety of manufacturing and service organizations, promote life long learning and contribute to the economy and the welfare of human kind.

II. MASTER OF SCIENCE
A. The Master of Science degree in Industrial Engineering includes the following areas of concentration:
   1. Ergonomics and Human Factors,
   2. Health Care Systems,
   3. Engineering Management,
   4. Manufacturing Engineering,
   5. Occupational Health and Safety,
   6. Productivity Engineering,
   7. Management of Technology,
   8. Operations Research,

B. An interdisciplinary M.S. degree program in Environmental Health and Safety and an M.S. degree program in Occupational Ergonomics and Safety are offered through the Department of Industrial Engineering in collaboration with the School of Medicine. These programs of study are individually structured to fit the student’s interests and career objectives.

C. The Department of Industrial Engineering offers a Five-Year Bachelor of Science in Industrial Engineering and Master of Science in Industrial Engineering Program (BSIE/MSIE Program).
   1. This program is specifically designed for those students who want to pursue their graduate study as soon as they complete their undergraduate study in Industrial Engineering.
   2. The special conditions for this Five-Year BSIE/MSIE Program are as follows:
      a) The student must declare his/her intent to participate before the end of the Junior year by submitting an official application to the department graduate committee for admission into the MSIE portion of the program. Exceptions to this rule must be approved by the department faculty.
      b) A student wishing to withdraw from the Five-Year Program without the MSIE degree must complete all the requirements for the BSIE program, including the IEN 494 Senior Project in order to get his/her BSIE degree.
      c) To qualify for the MSIE degree, the student must meet all the pertinent Graduate School requirements, including an acceptable score on the GRE (Graduate Record Examination) and a minimum of 3.0 GPA in the 30 credits applied toward the MSIE degree.
      d) All students must take the GRE and show satisfactory scores before the beginning of the fifth year.
      e) The student is awarded both the BSIE and MSIE degrees at the end of the fifth year when all requirements are satisfied.
D. The Industrial Engineering Department, in cooperation with the School of Business Administration, offers three programs:
   1. a dual MSIE/MBA weekend executive program,
   2. an M.S. in Management of Technology,
   3. an M.S. in Quality Management.
For more details on these programs, contact the Department of Industrial Engineering.

General requirements for the M.S. degree are listed under the ENGINEERING heading of this section and in the general information of this Bulletin.
Both a 30 credit hour thesis option and a 36-credit non-thesis option are available. For the non-thesis option a 3 credit graduation project is required.
500-level courses are open to advanced undergraduates and to graduate students; 600-level courses are open only to graduate students.
500-level and 600-level courses are also open to qualified graduate students majoring in other disciplines.

III. DOCTOR OF PHILOSOHY
A. The Department offers a Ph.D. in Industrial Engineering for students with a background in engineering and a Ph.D. in Ergonomics and Human Factors for students with a background in engineering and/or related sciences.
   1. Regulations concerning admission, residence requirements, qualifying and final examinations, and dissertation are defined by the Graduate School and given elsewhere in the Bulletin.
   2. Course work requirements depend on the student’s background, and are established by the Department and the student’s advisory committee.
   3. It is expected that the student will have received a master’s degree prior to enrollment in the doctoral program.
   4. Course requirements for the Ph.D. are described under the College of Engineering section.
   5. There are no foreign language requirements for the Ph.D. degree.

Industrial Engineering Course Listing
MECHANICAL AND AEROSPACE ENGINEERING - Dept. Code: MAE

I. The Department of Mechanical and Aerospace Engineering offers courses and provides facilities for three programs of graduate study and research, leading to the degrees of

- Master of Science
- Doctor of Philosophy
- Doctor of Arts

A. Within these programs much flexibility is permitted the individual student in organizing a program of study and research.

B. Specific programs must, however, reflect the importance of underlying principles of the physical sciences and mathematical analysis to all phases of modern mechanical engineering.

C. Within the department, specializations are available in

<table>
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<th>Fluid Mechanics</th>
<th>Heat Transfer</th>
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<tr>
<td>Energy Conversion</td>
<td>Hydrogen Energy</td>
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<tr>
<td>Environmental Engineering</td>
<td>Materials Science,</td>
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<tr>
<td>Solid Mechanics</td>
<td>Internal Combustion Engines</td>
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<tr>
<td>Robotics</td>
<td>Controls and Design</td>
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</table>

D. In addition, a specialization is available in the interdisciplinary field of Engineering Management. The interdisciplinary program is administered with the cooperation of the School of Business Administration. It is expected that each graduate student will indicate early in his/her graduate work, the particular area in which he/she intends to concentrate his/her efforts.

II. MASTER OF SCIENCE

A. One academic year, or equivalent, spent in full time graduate study will be the minimum time necessary for a student to fulfill the requirements for the degree of Master of Science in the Mechanical and Aerospace Engineering Department.

B. General requirements for the M.S. degree are listed under the Engineering heading of this section and in the general information of this Bulletin.

C. Students applying for acceptance to degree status must comply with the general requirements of the Graduate School.

D. Both a 30-credit hour thesis option and a 36-credit non-thesis option are available.

1. The student taking the Thesis Option must take an oral examination in defense of the thesis.

2. The student taking the Non-Thesis Option must complete a 3-credit Graduation Project at the end of the course program.

3. The Master of Science Degree in Mechanical Engineering (Management Option) can only be taken under the Non-Thesis Option.
   
a) This degree specialization combines 18 credits selected from graduate business courses with 18 credits in a graduate engineering area of concentration.

b) An undergraduate degree in engineering is required.
III. DOCTOR OF PHILOSOPHY
A. The program in the Department of Mechanical and Aerospace Engineering leading to the degree of Doctor of Philosophy complies in full with the regulations of the Graduate School concerning admission, residence requirements, qualifying and final examinations and the dissertation.
B. There is no foreign language requirement.
C. All candidates for the Ph.D. degree are expected to complete an integrated program of studies in mechanical engineering, mathematics, physics and/or chemistry in preparation for the Comprehensive Qualifying Examination.
D. Such preparation normally requires two academic years after the Bachelors degree.
E. The candidate is also expected to demonstrate his/her competence in certain basic courses appropriate to modern mechanical engineering to the satisfaction of the department.
F. One or two years beyond the Qualifying Examination will usually be found necessary for the completion of an acceptable dissertation, whereupon the student will be required to pass the Final Oral Defense of the Dissertation.
G. The candidate may, if he/she so desires, pursue for his/her dissertation an investigation in connection with any of the research projects in progress in the Mechanical and Aerospace Engineering Department or, in the case of interdisciplinary programs, in the School of Marine and Atmospheric Science or the Medical School.

IV. DOCTOR OF ARTS
A. The program leading to the Doctor of Arts degree is designed to prepare students for careers as engineering teachers of undergraduates in two and four-year college institutions.
B. The D.A. program parallels the Ph.D. program with a difference in structure and with an emphasis oriented toward developing teaching competence in a broad subject matter field.
C. The program of study for the Doctor of Arts consists of:
   1. work in the area of concentration at the same level as the Ph.D.;
   2. work in relevant areas of professional education;
   3. scholarly investigation;
   4. undergraduate teaching internship;
   5. examinations.
D. Prospective students should consult the DOCTOR OF ARTS section of this Bulletin concerning admission, course distribution, examinations, residence requirements, internship and the project requirement.

500 level courses are open to advanced undergraduates and to graduate students; 600 level courses are open only to graduate students.

V. CLEAN ENERGY RESEARCH INSTITUTE
A. The Clean Energy Research Institute in the Department of Mechanical and Aerospace Engineering acts as the focal point of energy and environment related activities in the College of Engineering.
B. Its goals are: to conduct research and to generate research proposals to investigate energy and environmental problems; to organize seminars, workshops and conferences using researchers within and without the University; to assemble, compile, publish and disseminate information on every aspect of energy and environmental problems; and to cooperate with other organs of the University, other academic institutions, government and private organizations in connection with the above listed activities.

C. The current activities of the Institute include research into hydrogen as a clean, inexhaustible synthetic fuel, environmental damage caused by fossil fuels, global warming and its remediation, instabilities in boiling systems, solar cooling and heating, hybrid solar collectors, remote sensing applied to energy related problems and solar energy, and organization of national and international conferences and symposia on energy and environmental problems.

VI. FLUIDS AND THERMAL SCIENCES LABORATORY
   A. The Fluids and Thermal Science Laboratory provides such equipment as a wind tunnel producing wind velocities of 150mph allowing opportunity to study the principles of aerodynamics, the effects of a hurricane, and air pollution modeling. Pressure and velocity measurements, renewable energy by wind power are simulated in this laboratory.
   B. Research includes an open water channel that allows basic work on oil booms and boom arrangements to be done.
   C. Additionally, air pollution research is conducted through sampling trains and equipment for stack sampling.
   D. This laboratory provides research opportunities for both undergraduate and graduate students.

VII. INTERNAL COMBUSTION ENGINES LABORATORY
   A. Funded continuously since the 1970s, the Internal Combustion Engines Laboratory is a well-established research laboratory internationally known for its work in designing and testing engines for use with conventional and alternative fuels.
   B. Graduate and undergraduate students alike have worked with faculty on numerous projects.
   C. The laboratory focuses on issues of performance, energy conservation (fuel economy) and environmental impact (exhaust emissions).
   D. Faculty research has received international recognition, and students’ research have been presented in numerous publications and at conferences sponsored by industry, government and academic venues.

VIII. HVAC&R AND TWO-PHASE FLOW LABORATORY
   A. Due to the significance of HVAC&R in the South Florida region, the HVAC&R and Two-Phase Flow Laboratories have extensive facilities for both undergraduate and graduate education as well as graduate research.
   B. This research includes frost formation, boiling and condensation heat transfer, two-phase flow instabilities and alternative HVAC&R technologies using hydrogen hydrides.
C. Due to the significance of HVAC&R in the South Florida region, the HVAC&R and Two-Phase Flow Laboratories have facilities for both undergraduate and graduate education as well as graduate research.

D. This research includes frost formation, boiling and condensation heat transfer and two-phase flow instabilities.

IX. DORGAN SOLAR ENERGY LABORATORY

A. The Dorgan Solar Energy Laboratory is equipped with a photovoltaic system, a solar air-conditioning system, a solar domestic hot water system, a solar-assisted heat pump system, and a meteorological data gathering station.

B. Both graduate and undergraduate students have worked with faculty on various research projects.

C. In addition to solar energy related projects, current research activities also include research on Hydrogen-Oxygen fuel cells and other energy and environment-related topics.

X. COMPUTATIONAL FLUID DYNAMICS LABORATORY

A. The CFD lab is equipped with a Beowulf PC cluster parallel computing system with 16 Pentium 4 Xeon 1.7G processors.

B. Current interests are mainly in the area of aerospace propulsion systems including turbomachinery unsteady aerodynamics, fluid-structure interaction, turbulence simulation, design optimization, rocket engine turbopump flow, CFD algorithm/code development, etc.

OCEAN ENGINEERING/APPLIED MARINE PHYSICS

I. Ocean Engineering concentrates on problems associated with the interaction of the ocean and the works of man.

A. The ocean engineer combines competence as an engineer with both a practical experience in and theoretical understanding of the ocean.

B. The Ocean Engineering program, offered jointly with the Rosenstiel School of Marine and Atmospheric Science, is intended to lay the foundation of this competence, experience and understanding.

C. The areas of faculty specialization in this program include coastal engineering, off-shore engineering, underwater acoustics, ocean measurements, marine geotechnics, and naval hydrodynamics.

II. The Master of Science degree in ocean engineering is offered jointly with the Rosenstiel School of Marine and Atmospheric Science.

A. In addition, Master of Science and Doctor of Philosophy degrees in applied marine physics are offered by the Rosenstiel School of Marine and Atmospheric Science.

B. See APPLIED MARINE PHYSICS/OCEAN ENGINEERING under RSMAS elsewhere in this Bulletin for information on the applied marine physics.
III. An approved interdisciplinary program is required for the M.S. degree in ocean engineering which consists of a minimum of 30 credits at the graduate level with an average grade of B or better and no grade below C.
   A. The 30 credits are divided among 24 credits in courses and six credits for thesis research.
   B. At least nine of the required credits must be 600 level courses.

500 level courses are open to advanced undergraduates and to graduate students; 600 level courses are open only to graduate students.
DOROTHY H. AND LEWIS ROSENSTIEL
SCHOOL OF MARINE AND ATMOSPHERIC SCIENCE- GRADUATE
www.rsmas.miami.edu/grad-studies

The Rosenstiel School of Marine and Atmospheric Science was established in 1943 as the Marine Laboratory of the University of Miami. It has grown from its modest beginnings in a boathouse to be one of the nation’s leading institutions for oceanographic research and education.

Originally a tropical marine biological facility, the Marine Laboratory initiated a program of studies leading to the Master of Science degree in 1949. In 1953, laboratory and classroom buildings were constructed on the School's present campus on Virginia Key, and in the late fifties, the Marine Laboratory expanded its staff and developed its oceanographic capabilities in response to the increased interest in scientific research in the United States. It became the Institute of Marine Science in 1961. Ocean-going research vessels were acquired, and additional buildings were constructed to accommodate new wide-ranging projects. In 1969 the Institute, now a School, was named for Dorothy H. and Lewis Rosenstiel in recognition of a major contribution made through the Rosenstiel Foundation to encourage progress in the marine and atmospheric sciences at the University of Miami.

Today the Rosenstiel School has a faculty of 111 scientists who conduct sponsored research while offering studies leading to the Master of Arts, Master of Science and Doctor of Philosophy degrees. The School offers curricula in applied marine physics, marine and atmospheric chemistry, marine affairs, marine biology and fisheries, marine geology and geophysics, and meteorology and physical oceanography. With the College of Arts and Sciences, the School offers undergraduate programs leading to the Bachelor of Science degree in marine science or the Bachelor of Arts degree in marine affairs.

Government agencies and private organizations support basic and applied research at the Rosenstiel School. Graduate students are an integral part of the research effort, and research programs, many multidisciplinary in nature, provide the environment within which professors and students interact.

The Rosenstiel School has a state-of-the-art catamaran, unrivaled worldwide for both shallow and deep water research. The vessel, named the F. G. WALTON SMITH, in honor of the founder of the Rosenstiel School, signals a new era in scientific research. The Smith was built in 1999 and placed in service in February, 2000.

The 96-foot-long catamaran is capable of reaching speeds of over 12 knots and has a draft of only 5 feet, which enables it to explore heretofore inaccessible areas such as reefs, mangroves, grassbeds, and other shallow environments. The vessel accommodates 20 people in its ten two-person staterooms and encompasses 800 square feet of laboratory space, as well as an additional 800 square feet of multi-use space astern. Constructed by Eastern Shipbuilding Group in Panama City, Florida, the catamaran boasts twin Cummins engines at 760 hp each, Servogear variable pitch propellers, a 3,000-gallon tank of fresh water plus a reverse osmosis water maker, and 10,000 gallons of fuel storage.

The Rosenstiel School of Marine and Atmospheric Science admits graduate students in the following categories. Regular admission is for students who wish to pursue a graduate degree. Non-degree admission provides an opportunity for graduate study to qualified applicants who do not wish to work toward an advanced degree but who have special objectives for professional study, or who already hold an advanced degree and desire...
additional coursework in the field. No more than twelve (12) credit hours may be taken 
while in non-degree status. A Certificate Program is available in all areas of study. This 
program provides professional training for any student who requires training in a specific 
research area but does not require an advanced degree. This program consists of one year 
full-time study with a minimum of eighteen (18) credit hours. Transient status is a type of 
non-degree admission available to students enrolled in a graduate program elsewhere but 
desiring to earn credit at the University of Miami for the purpose of transferring it to the 
home institution. All graduate students are required to demonstrate the ability to prepare 
and teach scientific material.

**UNDERGRADUATE COURSES REQUIRED FOR GRADUATE STUDY**

The undergraduate course requirements for students applying for graduate study at the 
Rosenstiel School are detailed below. The courses that are required are printed in roman 
type. The courses which should be taken if the student’s program can include them are 
printed in italic type.

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<td><strong>Chemistry</strong></td>
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<td>General physics</td>
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<tr>
<th><strong>Marine and Atmospheric Chemistry</strong></th>
<th><strong>Mathematics</strong></th>
<th><strong>Physical Science (all courses recommended only)</strong></th>
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<tr>
<td><strong>Chemistry</strong></td>
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<td>Genetics/Molecular biology</td>
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<tr>
<td>Inorganic chemistry</td>
<td>Calculus</td>
<td>General physiology/cell biology</td>
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<tr>
<td>Physical chemistry</td>
<td>Differential equations</td>
<td>Ecology/Population Biology/Evolutionary</td>
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<td>Organic chemistry</td>
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<td>Biology</td>
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Calculus (one year)
Language (none)

Organismic biology
Vertebrate or invertebrate

Marine Affairs and Policy
There are no specific requirements for the Division of Marine Affairs and Policy. Please contact the Department for information on academic requirements.

Marine Geology and Geophysics
Geology
Physical geology
Mineralogy
Petrology
Paleontology
Structural geology
Field geology
Stratigraphy
Sedimentation

Mathematics
Calculus
Differential equations
Linear algebra

Chemistry
Inorganic chemistry
Physical chemistry
Qualitative analysis
Quantitative analysis

Physics
General physics
Thermodynamics
Modern physics

Biology
General biology

Meteorology and Physical Oceanography

Mathematics
Calculus (3 or more semesters)
Ordinary differential equations
Partial differential equations
Linear algebra
Complex variables
Numerical methods
Probability and statistics

Chemistry
Inorganic chemistry

Meteorology
Dynamic meteorology

Engineering
heat transfer
fluid mechanics

An application for admission to the Rosenstiel School of Marine and Atmospheric Science consists of the application form, application fee, transcripts, results of the Graduate Record Examination, results of the TOEFL exam (for international students) and three letters of recommendation from persons knowing the applicant's academic abilities. The application must be filed by January 1st in order to be considered for admission the following Fall semester. Students are normally admitted only in the Fall semester; however, applicants who have received a Master's degree may be considered for Spring admission to the Ph.D. program.

Because of space limitation, only a small percentage of those applying for graduate study in marine science can be accepted. Undergraduate scholastic performance, the reputation of the school involved, Graduate Record Examination scores, and the letters of recommendation are all considered in evaluating an application.
A complete description of the Rosenstiel School, its faculty, educational and research facilities, curriculum and degree requirements is contained in the Bulletin of the Rosenstiel School of Marine and Atmospheric Science. Information can be found on the Rosenstiel School web site located at www.rsmas.miami.edu/grad-studies/.

**APPLIED MARINE PHYSICS/OCEAN ENGINEERING**

**Dept. Code: AMP**

Master of Science and Doctor of Philosophy degrees in applied marine physics are offered by the Applied Marine Physics Division of the Rosenstiel School of Marine and Atmospheric Science.

An approved interdisciplinary program is required for the M.S. degree in applied marine physics which consists of a minimum of 30 semester credits at the graduate level with an average grade of “B” or better and no grade below “C.” The 30 credits are divided among 24 credits in courses and six credits for thesis research. At least six of the required course credits must be at the 600 level. For the Ph.D. degree 60 graduate semester credits are required. These are divided among 36 credits in courses (18 of which must be at the 600 level) and 12 credits in dissertation research.

[Applied Marine Physics Course Listing](#)

**MARINE AFFAIRS AND POLICY - Dept. Code: MAF**

The Division of Marine Affairs accepts highly-qualified students who wish to pursue an academic degree program that combines a basic curriculum in marine science with a complementary program in a non-marine science discipline. Student programs are individually designed and lead to an M.A. degree or an M.S. degree. The M.A. curriculum requires participation in the intern program in lieu of a thesis. The M.S. curriculum requires a thesis. The program is intended to provide the student with a broadened perspective of marine issues and problem-solving abilities. MAF offers a specialization in aquaculture management. This track focuses on technological, environmental, and economic feasibility of sustainable aquaculture operations.

Current Division research and teaching focus on integrated coastal zone management, marine resource economics, political and environmental ecology, coastal and ocean law and policy, fisheries and aquaculture management, environmental planning and environmental impact assessment, underwater marine cultural resource management and marine geographic information systems.

MAF, in cooperation with the Undergraduate Marine Science Program, also offers a five-year BA/MA Program in Marine Affairs. This program enables qualified students to earn a B.A. in MAF in four years with the opportunity to earn an M.A. in MAF at Rosenstiel School of Marine and Atmospheric Science with only one additional year. Conditional acceptance to M.A. in MAF is based on the students’ GPA at the end of their sophomore year. Students must then take GRE exams and apply for acceptance to the Graduate School at Rosenstiel during their junior year.
The Division of Marine Affairs and Policy at the Rosenstiel School of Marine and Atmospheric Science and the University of Miami School of Law offer a Joint degree program in Law and MAF. Upon completion of this program, a student earns a Juris Doctor degree from the School of Law and the M.A. in MAF from Rosenstiel. A student may complete requirements for both degrees within three and one-half years in an intensive program of six semesters and two full summers. This program is geared toward students who want a career in the field of law with a specialization in marine and environmental issues.

Marine Affairs and Policy Course Listing

MARINE AND ATMOSPHERIC CHEMISTRY - Dept. Code: MAC

The program covers the chemistry of the atmosphere and oceans, including geochemical, photochemical and biochemical processes. Undergraduate training should be in chemistry, physics, biology and mathematics; also useful may be courses in geology and biochemistry.

Students are usually admitted directly into the doctoral program. New students are evaluated for their knowledge of chemistry; deficiencies are corrected by directed study and/or course work and must be remedied within one year.

Students are assigned a faculty advisor when they are accepted into MAC, and during their first year they form a supervisory committee. The advisor and committee plan a course of study and research for the student. In the second year M.S. and Ph.D. students prepare a thesis or dissertation proposal. A written comprehensive examination is taken towards the end of the first year. The comprehensive exam tests the basic knowledge of marine and atmospheric science, and is based on core course material. The research proposal usually includes an abstract, background material, hypothesis and/or list of objectives, methods, preliminary data, and bibliography. Ph.D. students also take a written qualifying exam. The qualifying examination is set by the advisor and supervisory committee and is taken after their approval of the dissertation proposal. An oral examination may be required after the written examination. Students who twice fail the qualifying examination will receive an MS if they present and successfully defend a written thesis.

Times allowed for degrees are:
MS - 2 years;
Ph.D. - 4 years (for students entering with an MS) or 5 years (students entering without an MS).
One year extensions may be granted. The seminar (MAC 670) is taken twice for credit but must be attended by all students.

The MA is a non-research degree that occupies 1 year: two semesters of 12 course credits each, and a summer session of experimental work and/or a written project (6 credits).

Marine and Atmospheric Chemistry Course Listing

MARINE BIOLOGY AND FISHERIES - Dept. Code: MBF

Students admitted to the program in the Division of Marine Biology and Fisheries are required to have a strong undergraduate preparation in the life sciences, with additional coursework in mathematics (calculus), physics, and chemistry (through organic). The
program offers a series of study-options leading to the M.A., M.S. or Ph.D. degrees. These are intended to guide the student in a comprehensive study of marine organisms and the marine environment, and to develop areas of specialization within the marine biological sciences. Students are strongly encouraged to contact the faculty member whose area of research is of interest to them.

Areas of faculty interest include biological oceanography, biochemistry and molecular biology, ecology, fisheries, microbiology, physiology, systematics, behavior and ecosystem and fisheries management. Students are not restricted to studies in any one study-option, and may (in consultation with their faculty advisor and/or committee) tailor their academic programs to suit individual interests in more than one area of faculty expertise. Within the Division of Marine Biology and Fisheries there are four major academic tracks, each of which has one or more subspecializations. These are (1) Biological Oceanography which has an emphasis of nearshore and pelagic marine life; (2) Fisheries Sciences which focuses on fisheries stock assessment, population modeling, and fisheries management; (3) Marine Biomedical Sciences which has subspecialities in Marine Molecular Biology and Genetics, Marine Diseases, and Marine Physiology and Biochemistry/Toxicology; and (4) Ecological Sciences and Coastal Marine Biology. This latter academic track offers specialization in Marine Biology, Coral Reef and Coastal-Marine Ecology, and Ecological Systems and Environmental Management. Individual curricula may blend coursework from one or more tracks depending on the specific interests of the student.

Marine Biology and Fisheries Course Listing

MARINE GEOLOGY AND GEOPHYSICS - Dept. Code: MGG

The undergraduate student wishing to prepare for graduate work in marine geology and geophysics must be well trained in the basic sciences. According to the special interests of the individual, the undergraduate major and minor should be in geology, physics, chemistry, and/or mathematics.

The Division of Marine Geology and Geophysics offers M.S. and Ph.D. programs in the following broad areas:

- Environmental Geology and Geochemistry
- Sedimentary Systems and Marine Geology
- Paleoclimatology and Global Change
- Igneous Petrology and Geochemistry
- Applied Geophysics
- Geodesy

Within each discipline, students have considerable flexibility in choice of courses, and "cross-track" courses are possible for students with special interests. Interactions with other divisions are particularly encouraged.

Marine Geology and Geophysics Course Listing
METEOROLOGY AND PHYSICAL OCEANOGRAPHY - Dept. Code: MPO

The Division of Meteorology and Physical Oceanography (MPO) of the Rosenstiel School of Marine and Atmospheric Science (RSMAS) is engaged in research and graduate instruction in the physical processes governing the motion and composition of the ocean and atmosphere. The program ranges from direct observation to theoretical and numerical modeling of the earth-atmosphere system.

Three types of degrees are awarded by the Division: Master of Science, which requires 30 credits, including 24 credits in courses and 6 research credits; Doctor of Philosophy, which requires 60 credits, including a minimum of 36 course credits and a minimum of 12 research credits; the Division also awards Master of Arts degrees, requiring 30 course credits.

Students applying for admission to graduate study in the Division of Meteorology and Physical Oceanography should have a solid background in mathematics and physics or engineering. Once admitted, students in this Division will take courses in both Meteorology and Physical Oceanography in order to develop an understanding of the ocean and the atmosphere as closely related dynamical systems.

In the first year, students will take 6 courses, followed by a comprehensive exam at the end of the spring semester. Based on the results of this exam, students may be given the option to enter the Ph.D. program directly, to enter the M.S. program (leading to subsequent entrance into the Ph.D. program), or they may be required to re-take the comprehensive exam. Typical times for completion are 2-3 years for M.S. degrees and 4-6 years for Ph.D. degrees.
The MD/PHD Program

The MD/PhD program provides a unique training environment for exceptionally qualified individuals who want to pursue careers in academic medicine and research and is built around the basic science doctoral programs at the UM School of Medicine.

The central tenet of the MD/PhD Program at the University of Miami is that the future intellectual leadership of medicine can best be provided by individuals trained in both basic science research and clinical medicine.

Curriculum

The curriculum comprises the School’s outstanding clinical training, a rigorous basic science graduate program, and MD/PhD activities and informal seminars. Graduate basic science training at the University of Miami School of Medicine provides a rigorous foundation in modern biomedical science and aims to develop critical thinking abilities. A variety of seminars, meetings, and clinical case reviews organized specifically for the MD/PhD students throughout the year provides opportunities to integrate the sometimes divergent perspectives of clinic and laboratory.

The Basic Science Graduate Programs

The following doctoral programs, described elsewhere in this bulletin, participate in the MD/PhD Program. Note that some of these are departmental and some are interdisciplinary. The MD/PhD Program office can provide you with further information about these programs and the research interests of their faculty.

- Biochemistry and Molecular Biology
- Epidemiology
- Microbiology and Immunology
- Molecular Cell and Developmental Biology
- Molecular and Cellular Pharmacology
- Neuroscience
- Physiology and Biophysics

Program Sequence

Students are advised to begin the program in July to enable an early start on their research laboratory rotations as the basic science courses begin in mid-August. Some students choose to continue their laboratory work during the first two years of medical school. It is recommended that students select and apply to a graduate program by February of their second year in the program and identify a research mentor no later than the beginning of the third year. The summers before the second and third year will be spent in laboratory, although some students opt to enroll in summer courses at the Marine Biological Laboratory in Woods Hole, or at the Cold Spring Harbor Laboratory. The third year is spent both in class to fulfill the final graduate course requirements and in the mentor's laboratory. Students should plan to take their qualifying exam by the end of the third year. The following two or more years are spent carrying out original research for their dissertation. All Ph.D. requirements must be completed before entry into the third year of medical school. The ongoing program activities include clinical case reviews to provide opportunities for integration.
of clinical problems with basic science advances, chalk talks to foster discussion of the students' own research results in an interdisciplinary, rigorous, but informal setting, and grand rounds where successful physician scientist come to share their experience with the students.

Admissions

Admission to the M.D./Ph.D. Program is highly competitive, and interested applicants are advised to apply early in the fall. AMCAS applications must be received by the Medical Admissions Office no later than December 15. There is no additional application fee for the M.D./Ph.D. Program Application To apply go to: http://www.aamc.org/students/amcas/. Florida residency is not required for admission to the M.D./Ph.D. Program. All applicants must hold a bachelor's degree from a US accredited institution; have a cumulative undergraduate science G.P.A. of at least 3.4 and a composite score of at least 30 on the MCAT exam. Preference will be given to candidates who can provide tangible evidence of a commitment to biomedical research, substantial laboratory experience and scientific talent. Applications from under-represented minorities and women are encouraged. Application should contain a research narrative and two letters of recommendation from scientists with whom the student has worked and must specifically address his/her research activities and potential. Composite evaluations from a premedical advisory committee cannot be substituted for either of these letters. The Graduate Record Examination (GRE) is not required for matriculation into the M.D./Ph.D. Program. However, should you apply for any external fellowships during the Ph.D. years, keep in mind that many fellowship-granting institutions require GRE scores on their applications.

Contact Information

M.D./Ph.D. Program (M-833)
University of Miami School of Medicine
PO Box 016189
Miami, FL 33101-6189
Phone: 305-243-6278
Fax: 305-243-3593
E-mail: mdphd@miami.edu
Director, Richard J. Bookman, PhD
Coordinator, Claudia Ochatt, PhD, (305) 243-6278
http://chroma.med.miami.edu/mdphd/

INTERDISCIPLINARY BIOMEDICAL STUDIES - Dept. Code: IBS
http://chroma.med.miami.edu/grad/

The Interdisciplinary Biomedical Studies (IBS) program provides an entry point for first year doctoral students interested in obtaining a Ph.D. in the basic biomedical sciences. The program starts with a broad-based core curriculum emphasizing the fundamentals of modern molecular and cellular biology. In addition, IBS students select from among the graduate faculty at the School of Medicine to identify prospective dissertation mentors and gain experience in the laboratory. IBS students spend their first year in an interdisciplinary environment before selecting a specific degree-granting program in which to complete their Ph.D program. Research opportunities are available in more than 120 graduate faculty laboratories representing programs in Biochemistry and Molecular Biology, Microbiology and Immunology, Molecular Cell and Developmental Biology, Molecular and Cellular Pharmacology, Neuroscience, and Physiology and Biophysics. This new graduate admissions point is ideal for students wishing to explore their training options before selecting a
doctoral program, and provides opportunities to interact with graduate students, post-docs and faculty in all departments. Strong applicants should have a science GPA greater than 3.0, a GRE score of greater than 1200 (Q + V), and a degree from an accredited undergraduate institution. For students whose native language is not English, a minimum TOEFL score of 600 is required.

For more information, contact the Office of Graduate Studies at (305) 243-6406, (305) 243-3593 (fax), e-mail to biomedgrad@miami.edu, or visit http://chroma.med.miami.edu/grad/.

Interdisciplinary Biomedical Studies Course Listing

BIOCHEMISTRY AND MOLECULAR BIOLOGY - Dept. Code:  BMB
http://molbio.med.miami.edu/

The aim of graduate education in this department is to prepare students for careers in biochemistry and molecular biology.

This training provides the student with a broad knowledge in the various aspects of modern biochemistry.

Independent laboratory research is emphasized at all stages of the student’s career.

Some of the Biochemistry faculty are affiliated with other departments in the University, with the VA hospital, the Sylvester Comprehensive Cancer Research Center.

Thus, research facilities for a large variety of specialties are available. Some of the graduate students participate in the combined M.D.-Ph.D. Program.

Students applying for graduate study leading to a Ph.D. degree in biochemistry and molecular biology should have a bachelor’s degree in natural science, or should have a strong background in science, particularly chemistry. They are expected to have completed two semesters of general chemistry and two semesters of organic chemistry with laboratory work. Two semesters of physical chemistry are recommended. Two semesters of physics, mathematics through calculus, and at least two semesters of biology or microbiology are also required. Students should have achieved at least a "B" average in undergraduate courses and must have taken the general sections of the Graduate Record Examination (GRE). A combined score of 1100 on the verbal and quantitative sections of the GRE is normally acceptable for entry into the Ph.D. program.

Applicants with a bachelor’s degree in biochemistry or foreign students with equivalent training may be admitted with advanced graduate standing. Transfer of credits must be approved by the Graduate Dean.

Students seeking a Master’s Degree are not encouraged to apply to this department; however, in some circumstances a Master’s Degree may be awarded to a student who has completed 24 credits of course work at the graduate level, 6 credits of thesis research, passed a written comprehensive examination in biochemistry and molecular biology, and successfully defended a thesis showing results obtained on a research problem.

Students seeking the Degree of Doctor of Philosophy in Biochemistry and Molecular Biology will have their applications reviewed by the admissions and recruitment committee.

All incoming students will be advised by the operating committee. This committee will assist and mentor students prior to their selection of a thesis advisor. In addition students will be provided guidance concerning choices of courses and research programs.

The student should choose a thesis mentor from the program faculty by the beginning of the second year of graduate study.
The program operating Committee, in consultation with the mentor, will appoint a thesis committee and set up a tentative schedule for the remainder of the student's graduate studies.

Completion of the Ph.D. degree requires the completion of 36 credits of coursework at the graduate level (including specific required courses), 24 credits of thesis research, passing a comprehensive examination in biochemistry and molecular biology, defending an oral proposition, and submitting and successfully defending a dissertation showing results obtained on a research problem.

The degree earned will be Doctor of Philosophy in Biochemistry and Molecular Biology. During the first year of study students take a variety of courses that provide a broad exposure to molecular biology, biochemistry and cell biology, as well as to modern techniques currently in use in the laboratory.

In addition, three semesters of laboratory rotation (BMB 645) are required which are designed to introduce the student to laboratory research and to help with the eventual choice of a thesis mentor and project.

Other requirements include participation in the departmental Journal Club (BMB 601) and three semesters of advanced topics in biochemistry and molecular biology (BMB 610).

A written comprehensive examination is given at the end of the second fall semester (beginning of the 2nd semester of the 2nd academic year).

Students are also required to take a qualifying examination (within six months after the comprehensive exam) in the form of a research proposition.

The proposition examination committee continues as the dissertation committee, and meets with the student twice a year.

Inquiries should be directed to

Dr. R. Werner, Director
Graduate Program in Biochemistry and Molecular Biology
University of Miami School of Medicine
Department of Biochemistry and Molecular Biology
(R-629)
P. O. Box 016129
Miami, FL 33101
e-mail: rwerner@molbio.med.miami.edu;
305/243-6213
e-mail to aravinet@med.miami.edu, or visit http://amiga1.med.miami.edu/

COMBINED M.D.-PH.D. DEGREE.

- The Department participates in the School of Medicine’s M.D.-Ph.D. Program in which students may obtain both degrees.
- The curriculum will be tailored to the needs of the individual student.
- Students interested in this program should contact Dr. R. Werner at the address given above.

Biochemistry and Molecular Biology Course Listing

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The Department of Epidemiology and Public Health offers graduate programs leading to the degrees of

- Master of Public Health (MPH),
- Master of Science in Public Health (MSPH), and
- Doctor of Philosophy (PhD) in Epidemiology.

The mission of the Teaching Programs in Epidemiology and Public Health is to provide up-to-date educational programs to practicing health professionals and students newly entering the field; to conduct, stimulate, and guide research activities relevant to local, state-wide, and national health needs; and to provide assistance to health agencies for the continued improvement of disease prevention and health promotion, environmental safety and monitoring, and the planning, analysis, and management of health delivery services.

The MPH degree is a 45 semester-hour program that is accredited by the Council on Education for Public Health and provides fundamental skills in core areas of public health to persons involved in the implementation of community health programs and to those seeking a broader base of knowledge to improve environmental and personal health services for the community.

- The core courses for the MPH include biostatistics, epidemiology, environmental health, public health administration, health education and behavior, and a capstone practicum.

The MSPH degree is a 45 semester-hour academic research degree designed for students who wish to prepare for further study at the doctoral level, or to prepare for research or technical positions in government, industry, academia, or private institutions.

- Studies for the MSPH degree include many of the core disciplines included in the MPH degree with an additional emphasis on advanced research methods and quantitative analysis skills.
- All MSPH students will complete an original public health research thesis as their culminating experience.

Full-time students can expect to complete the MPH or MSPH degree requirements within 2 years.

A nine-credit waiver is available for students who enter the MPH or MSPH degree programs with an earned advanced degree (e.g., MD, DDS, DVM).

Joint degree programs are also offered in conjunction with the School of Medicine (MD/MPH, MD/PhD), School of Law (JD/MPH), School of Business (MPA/MPH), and the MAIA/MPH.

The PhD program in Epidemiology is an intensive research training program for students with prior training in epidemiology or related disciplines.

All PhD students in the program have extensive contact with faculty members, in part because the program is explicitly designed to be small and interactive. The program takes advantage of South Florida’s unique opportunities for epidemiologic research, including our ever-changing mix of races, ethnicities, and cultures. In fact, many of our research programs could not be conducted elsewhere. Furthermore, since the program is located within the School of Medicine, interactions with basic scientists and clinicians provide opportunities for epidemiologists to develop translational and interdisciplinary research. The program is designed primarily for students who have completed an MPH or MSPH degree. However, students possessing a master’s or professional degree in a related discipline, as well as selected post-baccalaureate students may be eligible for admission.
ADMISSION REQUIREMENTS
MASTER’S DEGREES
All prospective Master’s students must make an application for admission, whether or not they wish to become candidates for the degree. Applications for the MPH and MSPH degrees are accepted for the fall and spring semesters. The applicant’s completed file must contain the following information:

1. Completed and signed application form
2. Official transcripts of all college work
3. A minimum cumulative Grade Point Average (GPA) of 3.0
4. Official report of the Graduate Record Examination (GRE) taken within the last 5 years with a recommended minimum combined verbal and quantitative score of 1100. The MCAT can serve as a substitute for the GRE for medical school graduates only.
5. Three letters of recommendation
6. A 400 word letter of intent
7. Current resume
8. Supporting evidence of computer literacy, including the ability to use a spreadsheet program
9. International students are required to submit a score of at least 550 (213 computer) on the Test of English as a Foreign Language (TOEFL) examination
10. A non-refundable application fee

CURRICULUM REQUIREMENTS FOR THE MPH DEGREE
A. Completion of 27 credits of core courses
B. Completion of 12 credits of approved elective courses
C. A 6 credit capstone practicum
D. An oral presentation of the practicum experience
E. Other requirements as stated in the Graduate Bulletin under "The Master’s Degree-General".

CURRICULUM REQUIREMENTS FOR THE MSPH DEGREE
A. Completion of 24 credits of core courses
B. Completion of 15 credits of approved elective courses
C. An original public health research project and thesis (6 credits)
D. An oral presentation of the public health project
E. Other requirements as stated in the Graduate Bulletin under "The Master’s Degree-General".

ADMISSION REQUIREMENTS FOR THE PHD DEGREE
Applications for the PhD program should be submitted as early as possible, but no later than January 31st, to receive maximum consideration for admission. Applications are only accepted for the fall semesters. A completed application file consists of the following information:

1. Completed and signed application form
2. Non-refundable application fee
3. Official transcripts of all college work
4. A minimum Grade Point Average (GPA) of 3.0
5. Official score report of the Graduate Record Examination (GRE) taken within the last 5 years with a recommended minimum combined verbal and quantitative score of 1100 on the GRE General Test (at least 550 on each section).
6. Three written letters of recommendation
7. A 1000 word written personal statement
8. Current Curriculum Vitae
9. Supporting evidence of computer literacy and competency
10. Prerequisite coursework in the following areas: one course in epidemiology and two courses in biostatistics
11. Highly qualified candidates for admission will be contacted to schedule an interview with the PhD Program Director and additional faculty members from the Department of Epidemiology and Public Health
12. International applicants whose native language is not English must submit results of the Test for English as a Foreign Language (TOEFL) with a minimum score of 550 (213 computer)

CURRICULUM REQUIREMENTS FOR THE PHD DEGREE
A. Completion of 27 credits of core courses
B. Completion of 9 credits of approved elective courses
C. Presentation and oral defense of an acceptable dissertation (>24 credits)
D. Other requirements as stated in the Graduate Bulletin under “Doctor of Philosophy”.

For further information, contact:
Teaching Programs Office
Department of Epidemiology and Public Health
University of Miami School of Medicine
(R-669)
P. O. Box 016069
Miami, Florida 33101
Tel: (305) 243-6759
Fax: (305) 243-3384
E-mail: gpph@med.miami.edu
Website: http://www.biomed.miami.edu/epi

Epidemiology and Public Health Course Listing

MICROBIOLOGY AND IMMUNOLOGY - Dept. Code: MIC
http://chroma.med.miami.edu/micro/graduate.html

The objective of the Graduate Program of the Department is to prepare students for careers in microbiology and immunology. The Program is designed to expose students to the central issues and cutting-edge research in the interdisciplinary biomedical sciences, with emphasis on bacteriology, parasitology, virology, genetics, immunology, and molecular and cellular biology, together with intensive laboratory research training experience in their chosen area of specialization.
The goal of the Graduate Program is to provide trainees with the theoretical background and conceptual framework in interdisciplinary biological sciences together with the technical research skills to attain the Ph.D. An acceptable Ph.D. dissertation embodying original investigative findings suitable for publication must be presented and defended. The doctoral degree normally requires four to five years beyond the baccalaureate.

Since the department aims to prepare its graduates for careers in research and teaching, all students gain valuable experience by participating during their second year through interactions with students in undergraduate Microbiology 301.

Inquiries are invited from those wishing to pursue either a Ph.D. or dual M.D./Ph.D. degree program.

Applicants for admission should have a bachelor’s degree in a natural science with a strong background in biology and chemistry.

Courses completed should include:

- 1 year of general chemistry,
- 1 year of organic chemistry, and
- 1 year of biology.

Courses in genetics and biochemistry are also recommended.

Strong applicants should have an average of “B” or better in their major subjects and a combined (verbal plus quantitative) GRE score of 1,200.

All students accepted are awarded a stipend of $22,000 per annum (as of June 1, 2006) and receive a full tuition scholarship.

I. REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE

A. Each entering student will confer with the First Year Advisor throughout the first year of study.

B. This faculty member functions as the student’s general adviser, providing information and advice regarding laboratory rotations and research programs until the selection of a mentor for their dissertation research.

C. Each student selects a mentor by the end of the first year of study.

D. During the second year, students select a Dissertation Committee that must include:

   1. 4 individuals with at least 3 members from the Graduate Faculty, one of whom is the mentor.
   2. The fourth individual must be from outside the Department.
   3. A fifth individual from outside the University is invited to participate in the final defense of the dissertation research (i.e., external examiner).

E. After the student has been formally admitted to Ph.D. candidacy, the Dissertation Committee in conjunction with the Progress Committee advises the student concerning the requirements for completion of their degree and ensures the orderly evaluation of the student’s performance and progress.

F. Other requirements include:

   1. 36 credits at the graduate level (exclusive of dissertation research).
   2. Successfully passing a qualifying examination consisting of a written and oral examination of the proposed research project and thematically related areas.
   3. An overall “B” average (no grades below “C” will be accepted as part of the 36 credit requirement).
   4. A dissertation embodying original research encompassing at least 24 credits.

Inquiries should be directed to
Karen Del Rio, Administrator
Graduate Program in Microbiology and Immunology
University of Miami
Miller School of Medicine
Department of Microbiology and Immunology
P.O. Box 016960 (R138)
Miami, Florida 33101
Telephone 305-243-5682
Fax: 305-243-6903
e-mail to bugsandimmunity@miami.edu
or visit http://chroma.med.miami.edu/micro/graduate.html

II. COMBINED M.D.-PH.D. DEGREE

A. The Department participates in the School of Medicine’s MD/PhD Program. Medical students interested in advanced research in Microbiology and Immunology should consult the Director of the Graduate Program.

Microbiology and Immunology Course Listing

MOLECULAR AND CELLULAR PHARMACOLOGY - Dept. Code: MCP
http://chroma.med.miami.edu/pharm/

Molecular and Cellular Pharmacology makes use of the knowledge and techniques of physics, chemistry, and biology to study the action of drugs on living systems and, more generally, the mechanisms through which signals are recognized and transduced by cells. The goal of pharmacology is: 1) to develop, and study agents that may be beneficial in the treatment of disease, and 2) to use drugs as tools in the study of basic biological signaling processes.

Scientists in the Department are pursuing both of these goals.

A variety of technical approaches is used, including molecular genetics, protein biochemistry, immunology, patch clamp electrophysiology, cell culture, digital video imaging, gene expression profiling and whole animal studies.

The faculty is a mixture of senior scientists who are recognized leaders in their respective fields and more junior faculty who have been recently trained in state-of-the-art research techniques applied to important biomedical problems.

The Department’s more than 40 graduate students and postdoctoral fellows contribute to the creative and stimulating scientific atmosphere. Research interests of the faculty include:

Cardiovascular Pharmacology/Muscle Contraction:
Investigators in this area study ion channels, gene expression, membrane events, and intracellular signals associated with the growth and function of the heart, blood vessels, and skeletal muscle.

Current research interests include structure/function relationships in the proteins of the troponin complex, the role of specific ion channels in ventricular hypertrophy and its alleviation, excitation-contraction coupling in skeletal and cardiac muscle, proto-oncogene regulation of cardiac-specific genes, signaling in cardiac myocytes, and intracellular signaling in platelet activation.
Research in this area is supported by a National Heart Lung and Blood Institute Cardiovascular Pharmacology Training Grant.

**Neuropharmacology/Neuroscience:**
Investigators in this area study the development, function, pharmacology, and diseases of the nervous system.

Current research interests include neuronal signaling through G-proteins, Ca^{2+}, and cyclic nucleotides, axon growth and synapse formation, involvement of muscarinic acetylcholine receptors in Alzheimer's, Parkinson's, and other diseases, excitation-secretion coupling and structure-function relationships in nicotinic acetylcholine receptors.

**Cell Biology/Cancer:**
Investigators in this area study mechanisms of hormone action, signal transduction novel therapeutics and nuclear transport.

Current research interests include steroid hormone regulation of gene expression, nuclear-cytoplasmic protein trafficking and cell proliferation; targeting BNIP3 in cancer chemotherapy.

Model Systems:
Investigators in this area are using yeast models because of the powerful molecular genetic approaches available. They are being used to study fundamental processes such as apoptosis, cell cycle, signal transduction, membrane dynamics, cytoskeleton, and cell polarity. These processes are important for normal growth and development and are affected in many human diseases. Investigators are also using yeast for structure and function analysis of G-coupled receptors. Finally yeast are being used to screen for therapeutic agents and to identify targets of toxins and other natural, synthetic or pharmacologically relevant compounds.

Training Program:
Students begin research as soon as they enter the graduate program.

They undertake three short laboratory projects during the first year in laboratories of their choosing. This serves as an introduction to the approaches to and facilities for research, and assists in choice of the thesis project.

- Students take the interdisciplinary biological sciences series as well as core courses including: neuropharmacology, cardiovascular pharmacology and intracellular signal transduction.
- A variety of elective courses are offered by this department and others.

In the first half of the second year, students begin their thesis research and complete their course requirements.

In subsequent years, students devote their efforts to original thesis research.

The department sponsors the visits of internationally-known scientists, who discuss their research in formal seminars and meet with students and faculty.

Weekly intradepartmental seminars keep students abreast of new developments within the School of Medicine.

Applicants for the Ph.D. program should have an extensive background in biology and chemistry including organic and biochemistry.

Physics and mathematics through calculus are also desirable.

Good GRE scores and an undergraduate GPA of 3.0 or better are expected.
The Program has as a major goal the recruitment and training of applicants from underrepresented minority groups.

Students supported by the National Institutes of Health training program must be United States citizens or permanent residents.

Other sources of support may be available on a limited basis for foreign applicants.

For admissions information, contact

Kerry L. Burnstein, Ph.D.
Director of Graduate Studies
Department of Molecular and Cellular Pharmacology
University of Miami School of Medicine
P.O. Box 016189 R-189
Miami, Florida 33101
Phone: (305) 243-3419
Fax: (305) 243-4555
E-mail: mcp@med.miami.edu
http://chroma.med.miami.edu/pharm/

THE REQUIREMENTS FOR THE PH.D. DEGREE IN MOLECULAR AND CELLULAR PHARMACOLOGY.
These consist of 36 credit hours of graduate courses and seminars, including at least 18 credit hours in Molecular and Cellular Pharmacology, and 24 credits of Thesis Research.

Students are required to pass a qualifying examination at the completion of their second year before undertaking Thesis Research at an intensive level.

Molecular and Cellular Pharmacology Course Listing

MOLECULAR CELL AND DEVELOPMENTAL BIOLOGY -
Dept. Code:  MDB
http://chroma.med.miami.edu/cellbio/index.html

The graduate program in Molecular Cell and Developmental Biology is an interdepartmental program that offers graduate training towards the Ph.D. degree in the fields of molecular cell biology, cell biology, developmental biology and cancer biology.

In order to provide a wide range of current research opportunities, this program is interdepartmental, comprised primarily of the faculty of the Department of Cell Biology and Anatomy and includes additional faculty from several other Departments and Centers at The Medical School.

These include the Departments of Biochemistry and Molecular Biology, Ophthalmology, Urology, and Neurology, The Sylvester Comprehensive Cancer Center, and The Miami Project to Cure Paralysis.

Students have the opportunity to do research in the many areas of modern cell and molecular biology and developmental biology. Research topics including the cytoskeleton, cell surface molecular biology, extracellular matrix, stem cells, metalloproteinases, lens and corneal biology, protein processing and sorting, signal transduction, regulation of gene expression in development and cancer, neuromuscular development, malignant transformation, growth factors, epithelial cell biology, organogenesis and tissue repair, pattern formation in early development, RNA localization, mitochondrial molecular biology
and cancer therapeutics.

The primary objective of this interdisciplinary graduate program is to prepare students for careers as independent, Ph.D. level researchers and teachers in both academic institutions and in the biotechnology industry and other venues.

Applicants are accepted only for the Ph.D. or combined M.D./Ph.D. degrees.

Students applying for graduate work in Molecular Cell and Developmental Biology must have a B.A. or B.S. degree with major emphasis in biology or related fields.

Applicants should have a superior undergraduate record.

The Graduate Record Examination should be taken prior to application.

Students seeking the Doctor of Philosophy Degree will have their applications reviewed by the admissions committee.

Students are expected to take at least 2 rotations in laboratories of graduate faculty in the program during the first year.

Typical coursework includes: Interdisciplinary Biomedical Studies (Parts I and II), Methods/Techniques, Seminar, Journal Club, Biological Macromolecules, Professional Skills and Ethics, Tumor Biology, Molecular Genetics, Developmental Biology, Advanced Molecular Cell Biology.

Students are expected to choose a dissertation mentor by the end of the first year of graduate study from among the faculty who are members of the program.

The program Steering Committee, in consultation with the mentor, will appoint a dissertation committee and set up a tentative schedule for the remainder of the student’s graduate studies.

Completion of the Ph.D. degree requires 36 credits of coursework at the graduate level (including specific required courses) and 24 credits of dissertation research.

Students must pass a comprehensive examination, orally defend a research proposal and submit and successfully defend a dissertation showing results obtained on a research problem.

General requirements for the degree of Doctor of Philosophy are stated in this catalog under the heading “Doctor of Philosophy”.

Departmental requirements and policies are outlined in a separate statement available on request.

The degree earned will be Doctor of Philosophy in Molecular Cell and Developmental Biology.

The first year curriculum includes a required, two-semester, interdisciplinary biomedical studies course that covers fundamental topics of cellular and molecular biology, biochemistry, cellular physiology, neurobiology, and immunology.

In addition, two semesters of required laboratory rotation are designed to introduce the student to laboratory research and to help with the eventual choice of a dissertation mentor and project.

Other requirements include participation in a departmental seminar series, a journal club, and three semesters of advanced topics courses.

A written comprehensive examination that includes the preparation of a research proposal is given at the end of the first year.

The examination committee continues as the dissertation committee and meets with the student twice a year.

Inquiries should be directed to

Maria Penton
COMBINED M.D.-PH.D. DEGREE.
The Department participates in the School of Medicine’s combined M.D.-Ph.D. Program. The curriculum will be tailored to the needs of the individual student.

Students interested in this program should contact

Maria Penton,
Graduate Studies Committee,
Department of Cell Biology and Anatomy.

Registration in all courses must be with permission of the Chairman of the Graduate Studies Committee.

Molecular Cell and Developmental Biology Course Listing

NEUROSCIENCE PROGRAM - Dept. Code: NEU
http://chroma.med.miami.edu/neuro/

The Neuroscience Program is an interdisciplinary program established in 1988 leading to the Ph.D. in Neuroscience.

The program aims to train highly-qualified individuals for independent research and teaching careers in the Neurosciences.

More than 60 participating faculty are located in all the basic science departments at the Medical School, the Biology and Psychology Departments, and Rosenstiel School of Marine and Atmospheric Sciences, as well as several clinical departments including Neurological Surgery, Neurology, Ophthalmology, Otolaryngology, and Psychiatry.

Faculty research interests focus primarily on the cellular and molecular mechanisms involved in signal transduction, gene expression in electrically excitable cells, synapse formation, neuronal growth and survival, and integrative neuroscience. Other areas of faculty research include neuroimmunology, neuronal regeneration, autonomic control, brain metabolism and cerebral blood flow, degenerative changes within specific neural pathways in Parkinson’s and Alzheimer’s diseases, and stroke.

THE PROGRAM

- Graduate and post-graduate training is the major goal of the program with emphasis on cellular and molecular approaches to Neurobiology on neurological disease and injury, and on neural systems.
During their first one to two years, students devote their time to course work and become acquainted with current research in their areas of interest.

A single core curriculum consisting of Molecular Biology, Cell Biology, Membrane Biophysics, Introductory Neuroscience, and Neuroanatomy supplemented with elective courses including Neuropharmacology and Developmental Neurobiology provides the didactic scaffold of the program.

Students are required to attend research seminars, a scientific journal club, and complete three laboratory rotations during this time.

The Neuroscience Steering Committee guides the students through their first 1 ½ years, overseeing their course work and laboratory rotations, until they have passed their qualifying exams and chosen a thesis advisor.

From then on their progress is followed by individually-tailored dissertation committees.

The Neuroscience Program also participates in the School of Medicine’s MD/PhD combined degree program.

Inquiries should be directed to:

University of Miami Miller School of Medicine
Locator R-50
PO BOX 011351
Miami, Florida 33101
Tel: 305-243-3368
FAX (305) 243-2970
email: neurosci@med.miami.edu
http://chroma.med.miami.edu/neuro

RESEARCH AREAS: (Total of 8 areas)

BEHAVIORAL NEUROBIOLOGY; DEVELOPMENTAL NEUROBIOLOGY;
CELL/MOLECULAR NEUROBIOLOGY; CNS INJURY AND REPAIR; NEUROLOGICAL DISORDERS;
SENSORY NEUROBIOLOGY
SYNAPSES; TRANSMITTERS AND RECEPTORS

APPLYING TO THE PROGRAM

To be considered for admission, applicants must have a bachelor’s degree in one of the biological, behavioral, or physical sciences with a strong background in quantitative sciences.

Applicants are considered for the doctoral degree only and should place in the 80th percentile or higher on the General Test of the GRE and have a GPA of 3.0 or above (4-point scale).

Students should apply online at: http://chroma.med.miami.edu/neuro/

Additional information can be obtained by calling the Neuroscience Program at 305-243-3368 or 1-800-952-5386.
The Department of Physical Therapy is committed to providing quality educational experiences that enable its graduates to effectively carry out the expanding responsibilities of physical therapists as autonomous health care providers practicing in preventive, evaluative, maintenance, acute care and rehabilitation settings, and in educational and research environments.

The individual and collective efforts of the members of the Physical Therapy faculty are directed toward attaining specific goals and objectives as expressed in the philosophic statement of the American Physical Therapy Association.

The mission of the Department of Physical Therapy is to serve the profession, the University, and the community through the accomplishments and activities of the faculty and students.

The Department offers the clinical Doctor of Physical Therapy (D.P.T.), as well as the Doctor Of Philosophy (Ph.D.) for physical therapists desirous of an academic career in education and research. The D.P.T. program recognizes the importance of in-depth basic and applied science knowledge and the humanities. As such, the curriculum is carefully sequenced to allow students to develop skills in both classroom and clinical settings.

Faculty also understand the importance of presenting problem-solving skills in conjunction with fundamental physical therapy concepts so that students will develop the professional attitudes and insights required for sustained and continued growth throughout their careers.

The entry-level doctoral program (D.P.T.) is offered under the auspices of the Department of Physical Therapy, University of Miami Miller School of Medicine.

Completion of the degree requirement for the D.P.T. degree in Physical Therapy entails didactic studies, a completed research project, and clinical internships.

The University of Miami, Department of Physical Therapy has affiliations with 350 clinical sites locally and throughout the country.

Distant internships may incur additional expenses for the student.

Applicants should have a baccalaureate degree in a related field and 3.0, or “B” average or better in the following courses:

- English Composition/ Writing intensive course (3 semester or 5 quarter hours);
- Introduction to Statistics (3 semester or 5 quarter hours);
- Psychology (3 semester or 5 quarter hours);
- General Biology (3 semester or 5 quarter hours);
- General Chemistry (8 semester or 12 quarter hours);
- General Physics (8 semester or 12 quarter hours);
- Human Anatomy (3 semester or 5 quarter hours);
- Human Physiology (3 semester or 5 quarter hours) or Combined Anatomy and Physiology (6 semester or 9 quarter hours). Applicants must score a minimum of 500 on verbal and quantitative sections of the GRE, and a 4.5 on the analytical section.

I. APPLICATION PROCEDURE
   A. Application deadline is January 5; classes begin in May. Application requirements consist of the following:
1. Submission of all application materials to the Department of Physical Therapy by January 5. Online application forms are available at www.pt.med.miami.edu
2. Completion of prerequisites, with a minimum GPA of 3.0 on a 4.0 scale.
3. Demonstration of knowledge concerning the physical therapy profession by submitting:
   a) an essay detailing the reasons why the applicant desires to become a physical therapist, and
   b) documentation of a minimum of 100 hours of first-hand observation and/or work experience related to the practice of physical therapy.
   c) This experience must be substantiated in writing by a registered/licensed physical therapist.
4. Submission of three (3) letters of recommendation addressing both the applicant's moral character and potential as a physical therapist.
   a) At least one letter must be written by a registered/licensed physical therapist, and one or more from faculty.
5. An interview with at least one member of the Physical Therapy Review Committee.
6. Graduate Record Exam must be taken no later than December 31st.

For more information contact:
Dr. Sherrill H. Hayes, Chair
Department of Physical Therapy
5915 Ponce de Leon Blvd., 5th Floor
Coral Gables, FL 33146
phone 305-284-4535
e-mail: physicaltherapy@miami.edu

PHYSICAL THERAPY/MASTER OF SCIENCE (POST-PROFESSIONAL)
For those individuals who do not or cannot complete the Ph.D. program, the post-professional M.S. degree may be awarded as a “stop-out” degree.
Successful completion of a minimum of 36 credits in the Ph.D. program, with a cumulative GPA of 3.0 or better, as well as the completion of a thesis, is required to be awarded the Master of Science degree from the Graduate School.

DOCTOR OF PHILOSOPHY IN PHYSICAL THERAPY (Ph.D.)
The Doctor of Philosophy degree with a major in physical therapy is designed to prepare physical therapists for leadership positions in academic and clinical settings.
The priorities of this program are to inculcate scientific thinking and analysis, enhance the ability to integrate basic, applied and clinical research in physical therapy, foster a commitment to self-directed life-long learning and provide professional socialization to the role of academic faculty member.
The core area of study is in pathobiology and measurement of human function.
Interdisciplinary coursework occurs with the Departments of Industrial and Biomedical Engineering, Department of Epidemiology, and with the School of Education.
The curriculum consists of:
- 15 to 18 credits in core physical therapy courses,
- 12 credits in core education courses,
- 12 credits in core research courses,
- 15-21 credits in electives in area of concentration and
- 12 credits of Doctoral dissertation for a total of 68-75 credits.
Credits may vary depending on educational background of applicants. Admission to the Ph.D. program will be based on the following:

1. Completion of an entry-level Master’s degree in Physical Therapy, an advanced Master’s degree in physical therapy, or a Bachelor’s degree in physical therapy plus an M.S. or its equivalent in another field of study. Applicants with a Bachelor’s degree in physical therapy or Certificate in physical therapy from an accredited program in physical therapy.
2. A minimum of three letters of recommendation.
3. A minimum GRE verbal and quantitative score of 500 in each.
4. Eligibility for licensure as a physical therapist in the State of Florida. (Licensure in the State of Florida must occur by the end of the first academic year after matriculation).
5. A letter indicating career goals and objectives.

Students must take at least 9 credit hours per year, and maintain at least a 3.0 GPA in order to remain in the Ph.D. program. They must also complete the program within seven years. Following completion of all coursework and comprehensive examinations, a student may take 2 credit hours of dissertation per year to remain in the program, but all work must be completed within the seven-year time frame.

It should be noted that courses in the Ph.D. program are offered every other year, and most courses are offered in the evening. Information as to the exact offerings in any semester should be requested from the Department.

Physical Therapy Course Listing

PHYSIOLOGY AND BIOPHYSICS - Dept. Code: PHS
http://chroma.med.miami.edu/physiol/

The Department offers training leading to the Ph.D. degree in Physiology and Biophysics. Inquiries are also invited from those wishing to pursue a dual, M.D./Ph.D., degree program. The M.S. degree is normally bypassed in the Department.

Physiology and Biophysics studies the molecular basis for fundamental processes related to life such as:

- How does the brain work?
- How do we remember?
- How does the heart beat?
- How do we breathe?
- How do we see?
- How do we move?

Research facilities and guidance for graduate and postdoctoral work are available in developmental neurobiology, sensory receptor mechanisms, axonal electrophysiology, ionic mechanism of the nerve impulse, electrophysiological and molecular aspects of synaptic and neuromuscular transmission, ion channels in nerve and muscle cell membranes, metabolic aspects of nervous function, molecular neuroscience, neuroimmunology, protein structure-function studies, molecular recognition, ligand-receptor interactions, neuropeptides, axonal growth, neurotrophic factors, cytokines, gene targeting, transgenic mice, neuronal apoptosis, nerve regeneration, molecular adhesion, and regulation of muscle contraction.
The applicant for admission should have a bachelor’s degree in a biological discipline, chemistry, engineering or physics, with a strong record, and scores preferably in the eightieth percentile or higher on the Graduate Record Examinations, optionally including the test in either Biology, Chemistry, Engineering or Physics. The general parts of the GRE should be taken as early as possible.

Students preparing themselves for graduate study in physiology and biophysics are well advised to take at least one year’s work each in calculus, general physics, physical chemistry, and general biology, and a half year’s work in organic chemistry. A student admitted to the Department despite some deficiency in these subjects may be expected to make up the deficiency not later than the first year of residence.

The entering graduate student is guided in his/her choice of a course program by the Graduate Studies Committee of the Department. The program is fashioned according to the background and interests of the student; all students, however, take courses PHS 510, 512, 641, 642, NEU 661 or PHS 620, and IBS 601 and 602 unless they have mastered the equivalent of these. In planning their programs, students should take advantage not only of courses given by this Department but also of pertinent course offerings of other departments. Before selecting a dissertation research sponsor, the student will have the opportunity to perform research in the laboratories of three faculty in the Department, to get acquainted with their research activities and the techniques they employ. (Credit for this work will be given in course PHS 609.) Every student selects a research sponsor within 12 months of enrolling in the Department. Once the student has a sponsor, guidance is provided by the sponsor, in consultation with a supervisory committee appointed when the dissertation project is chosen.

Since the Department aims to prepare its graduates for careers in research and teaching, all students in the Department are expected to participate in some teaching. Fellowships are general awarded to accepted students. Traineeships are also available under an NIH supported Training Grant.

**REQUIREMENTS FOR THE PH.D. DEGREE INCLUDE:**

36 graduate credits in courses and seminars and an additional 24 credits in dissertation research.

satisfactory performance on both written and oral parts of a qualifying examination that will require demonstrating mastery of relevant physiological principles and methods. The examination must be passed not later than 24 months after enrollment in the Department. Up to 12 transfer credits earned elsewhere may be acceptable toward Ph.D. requirements.

The Ph.D. dissertation research must be original work of a quality acceptable for publication in a first-rate scientific journal.

For further details on requirements, the general information sections of this Bulletin should be consulted.

Prospective applicants are urged to write early to the Department for further information on the Department’s activities, training resources, requirements, and financial aids. Address inquiries to:

Dr. D. Landowne, Chair  
Graduate Studies Committee  
Department of Physiology and Biophysics  
P. O. Box 016430  
Miami, FL 33101  
305/243-6821  
305/243-5931 (fax)
email to dl@miami.edu or visit http://chroma.med.miami.edu/physiol

M.D./PH.D. PROGRAMS
Students interested in pursuing careers in academic medicine or, more generally, in medically-related research may wish to enter a dual (M.D./Ph.D.) degree program. Details about this program and application procedures are obtainable from the Graduate Studies Committee Chairman at the address given above.

Physiology and Biophysics Course Listing
I. DEPARTMENT OF INSTRUMENTAL PERFORMANCE - Dept. Code: MIP
   A. Master of Music – Deg. Code: MM
      1. Instrumental Performance – Conc. Code: MIP
      2. Instrumental Conducting – Conc. Code: MCDI
      3. Multiple Woodwinds – Conc. Code: MIPW
   B. Artist Diploma in Performance – Deg. Code: AD
      1. Instrumental Performance – Conc. Code: MIP
   C. Doctor of Musical Arts – Deg. Code: DMA
      1. Instrumental Performance – Conc. Code: MIP
      2. Instrumental Conducting – Conc. Code: MCDI
      3. Multiple Woodwinds – Conc. Code: MIPW

II. DEPARTMENT OF VOCAL PERFORMANCE - Dept. Code: MVP
    A. Master of Music – Deg. Code: MM
       1. Vocal Performance – Conc. Code: MVP
       2. Choral Conducting – Conc. Code: MCDC
    B. Artist Diploma in Performance – Deg. Code: AD
       1. Vocal Performance – Conc. Code: MVP
    C. Doctor of Musical Arts – Deg. Code: DMA
       1. Vocal Performance – Conc. Code: MVP
       2. Choral Conducting – Conc. Code: MCDC

III. DEPARTMENT OF KEYBOARD PERFORMANCE - Dept. Code: MKP
    A. Master of Music – Deg. Code: MM
       1. Piano Performance – Conc. Code: MKP
    B. Artist Diploma in Performance – Deg. Code: AD
       1. Piano Performance – Conc. Code: MKP
    C. Doctor of Musical Arts – Deg. Code: DMA
       1. Piano Performance – Conc. Code: MKP

IV. DEPARTMENT OF MUSIC EDUCATION AND MUSIC THERAPY - Dept. Code: MED
    A. Master of Music – Deg. Code: MM
       1. Music Education – Conc. Code: MED
    B. Specialist degree in Music Education – Deg. Code: SPED
1. Music Education – Conc. Code: MED
C. Doctor of Philosophy – Deg. Code: PHD
   1. Music Education – Conc. Code: MED
V. DEPARTMENT OF MUSICOLEGY - Dept. Code: MCY
   A. Master of Music – Deg. Code: MM
      1. Musicology – Conc. Code: MCY
VI. DEPARTMENT OF MUSIC THEORY-COMPOSITION - Dept. Code: MTC
   A. Master of Music – Deg. Code: MM
      1. Composition – Conc. Code: MTC
      2. Electronic Music – Conc. Code: MTCE
      4. Media Writing and Production – Conc. Code: MWP
   B. Doctor of Musical Arts – Deg. Code: DMA
      1. Composition – Conc. Code: MTC
VII. DEPARTMENT OF MUSIC MEDIA AND INDUSTRY - Dept. Code: MMI
   A. Master of Music – Deg. Code: MM
   B. Master of Science – Deg. Code: MSMET
VIII. DEPARTMENT OF STUDIO MUSIC AND JAZZ - Dept. Code: MSJ
   A. Master of Music – Deg. Code: MM
      2. Jazz Pedagogy – Conc. Code: JPED
      3. Studio Jazz Writing – Conc. Code: SJW
   B. Artist Diploma in Performance – Deg. Code: AD
   C. Doctor of Musical Arts – Deg. Code: DMA
      1. Jazz Composition – Conc. Code: MSJC

ENTRANCE REQUIREMENTS
I. Students wishing to enroll for graduate credit in the Frost School of Music, whether or not they plan to become candidates for a degree, must fulfill the requirements for admission to the Graduate School listed elsewhere in the Bulletin.

II. In addition to these general requirements, the student must meet the following requirements of the Frost School of Music:
   A. The Graduate Record Examination. (G.R.E. not required for Master of Music in Performance and Jazz Performance).
B. An on-campus audition is required of all D.M.A. applicants in Performance; M.M. applicants in Performance may audition in person or by recording. Prospective students for any major are encouraged to seek an interview with members of the University of Miami staff when they are serving as guest conductors and clinicians in various parts of the country.

C. An interview either on or off campus is required of all prospective Ph.D. students and D.M.A. students in composition and jazz composition.

D. Prospective Composition majors, Media Writing and Production majors, and Studio Jazz Writing majors are required to submit a portfolio of original compositions.

E. A writing sample of a major paper or thesis is required of applicants in Choral Conducting, Music Theory, Music Therapy, Musicology, Vocal Pedagogy, and Vocal Performance.

F. Prospective Ph.D. students in Music Education are required to show evidence of successful teaching experience and provide a writing sample of a major paper or thesis.

G. Placement Examination: During the orientation prior to registration, new masters and doctoral students are required to take placement tests for entrance to graduate courses. Placement auditions are also required in performance before assignment to ensembles. Courses to remedy deficiencies indicated by these examinations must be taken at the earliest opportunity. (A student is presumed deficient in any area in which he/she does not take the entrance examinations.)

CURRICULAR REQUIREMENTS
MASTER’S DEGREES

I. Programs. The Master of Music Degree is offered with majors in the areas shown above.

II. Ensemble Requirements. The curricula for Master of Music degrees in performance and conducting include participation in one ensemble during each semester that a student is registered for seven credits or more.

III. General Admission Requirements. Those seeking admission in Performance should have an undergraduate major or its equivalent in the performance field chosen. Those applying for admission in Music Education should have an undergraduate background substantially equivalent to certification requirements and teaching experience. Students entering all graduate degree programs must take placement tests at the beginning of the first Fall or Spring Semester in residence. Those seeking admission in Composition, Studio Jazz Writing, or Media Writing and Production must submit with the application a portfolio of compositions as evidence of creative ability.

IV. Credits. A minimum of thirty credits of graduate level courses with an average of B and no grade below C. All students must complete the required courses of their major.

V. Oral Examinations. An oral examination in defense of the thesis, project, or recital is required. Final oral exams are administered during Fall and Spring semesters only.

VI. SPECIFIC REQUIREMENTS FOR PERFORMANCE MAJORS

A. Prior to admission to candidacy for a degree in performance, the student must demonstrate, by examination, skills and capacities in the following areas:

1. Harmony - written, aural, and keyboard
2. Proficiency in sight-singing and in melodic, harmonic, and rhythmic dictation
3. Elementary counterpoint
4. The history and literature of music and the study of musical form, analytic or applied

Department of Instrumental Performance (MIP) Masters Degrees

Conducting Recital Guidelines

Master’s Recital (1 Credit)
A compilation on DVD of conducting single or multiple works of live performances of major ensembles spread across the Masters’ experience. These performances are arranged in consultation with the major professor who assists in the preparation of the performances.

Master’s Advanced Recital (2 Credits)
A full-length conducting recital is prepared and presented. The ensemble(s) and repertoire will be selected in close consultation with the major professor who will assist in the preparation process. All aspects of performance preparation including scheduling, venue arrangements, program notes, and the like will be carried out by the student under the guidance of the major professor.

Performance Recital Guidelines

Master’s Recital (1 Credit)
A full-length recital performed publicly by the student that may include chamber music in which the student’s instrument plays a prominent role. Selection of repertoire is determined in consultation with the major professor who assists in the preparation of the performances.

Master’s Advanced Recital (2 Credits)
A full-length recital in which all music performed features the recitalist as a soloist. The recitalist will prepare extended program notes on the repertoire performed. Portions of the extended program notes are to be included with the recital program distributed to the audience. The performance is to be recorded in both audio and video so that the recitalist presents a DVD as evidence of the recital to the Dean of Graduate Studies prior to the end of the semester in which the recital was given. Repertoire will be selected in consultation with the major professor, who will assist in the preparation process. The student under the guidance of the major professor will carry out all aspects of performance preparation including scheduling, venue arrangements, program notes, and the like.

Master of Music Degree Lecture Recital
The Master of Music lecture recital is a presentation of approximately 60 minutes that should include a question and answer period. The content of the lecture recital must relate to the music of the recital, its history, analysis and pedagogy. Approximately 50% of the lecture recital will consist of performances by the student of excerpts from the works or of whole works being discussed. The format may vary, but the lecture script and performance excerpts must be integrated into a comprehensive whole. The lecture should not be a verbatim presentation of the script, but should clearly communicate the substance, form and logic of the script in a manner appropriate to the audience.
The lecture recital will be evaluated for the quality of its presentation, organization, scholarly content, and musical performance. Articulate presentation of concepts, the appropriateness of the relationship of the lecture to the musical performance, the suitability of audio/visual aides, and the effectiveness of communication will contribute positively to the evaluation.

A written lecture recital proposal must be approved by the student’s committee chair one semester prior to the lecture-recital. At least three weeks prior to the lecture recital date, the final script and materials to be used in the lecture recital must be presented to the full committee in a manner analogous to a recital hearing. The committee, prior to the actual presentation of the lecture recital, will approve the script and materials to be used in the presentation.

The student must submit a video or DVD of the completed lecture recital and final written documentation to the Graduate Office of the Frost School of Music within a week after the lecture recital is successfully passed.

**MM–Instrumental Conducting (MCDI)**

Candidates must possess and demonstrate an unquestioned gift of musical leadership based upon broad experience with instrumental ensembles. Advanced orchestration must be included in the program. Admission requirements include a baccalaureate degree in conducting or performance, accumulated practical experience with instrumental ensembles, and experience equivalent to an undergraduate requirement in orchestration. Enrollment in this major is only by special permission.

**Major Area**

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<thead>
<tr>
<th>Credits</th>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>8</td>
<td>MIPCDI-L</td>
<td>Private Lessons</td>
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<tr>
<td>4</td>
<td>MIP6XX</td>
<td>Instrumental Ensembles</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Any one of the three options listed here to match the culminating project</td>
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<tr>
<td></td>
<td>MIP601</td>
<td>Program Notes Preparation</td>
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<tr>
<td></td>
<td>MIP602</td>
<td>Lecture Recital Preparation</td>
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<tr>
<td></td>
<td>MED601</td>
<td>Recital Paper Preparation</td>
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<tr>
<td>1</td>
<td>MIP712</td>
<td>Master’s Recital</td>
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<tr>
<td>2</td>
<td></td>
<td>Any one of the three options listed here as a culminating project</td>
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<tr>
<td></td>
<td>MIP711</td>
<td>Master’s Recital Paper</td>
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<td></td>
<td>MIP714</td>
<td>Master’s Lecture Recital</td>
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<td></td>
<td>MIP713</td>
<td>Master’s Advanced Recital</td>
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**Other Studies in Music**

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<td>MCY528</td>
<td>Music Bibliography</td>
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<tr>
<td>3</td>
<td>MTC617</td>
<td>Analytical Techniques</td>
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**Electives**

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<th>Credits</th>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
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<td>MXXXXX</td>
<td>Musicology or Approved Elective</td>
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<td>3</td>
<td>MXXXXX</td>
<td>Music Education /Pedagogy or Approved Elective</td>
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<tr>
<td>3</td>
<td>MXXXXX</td>
<td>Approved Electives</td>
</tr>
</tbody>
</table>

**MM–Instrumental Performance (MIP)**

**Violin:** The candidate must show an adequate technical grounding in scales, arpeggios, bowing and phrasing, demonstrate adequate ability in sight reading on the instrument, and be able to read at sight simple piano accompaniments.
**Harp:** The candidate must have a mastery of scales and arpeggios in all octaves in both slow and rapid tempo, and in various rhythms, should have had orchestral and other ensemble experience, should be able to read orchestral parts at sight, and should have developed the ability to transcribe music written for keyboard (or other) instruments for use in orchestra or ensemble or accompanying.

**Multiple Woodwinds:** The applicant must demonstrate, by audition, proficiency in at least three of the following families of instruments: clarinet, saxophone, flute, and double reed. Applied instruction will include a minimum of six credits from the above groups as determined by the supervisory committee. The curriculum further includes two credits in MIP 547 and one credit in MED 541. The recital (whose content and evaluation are the responsibility of the student’s committee) will consist of performance on the candidate’s major instrument, and on instruments from at least two other woodwinds. The student is expected to supply his/her own professional quality instruments.

**Other Orchestral Instruments:** The candidate must demonstrate a well-grounded technique and an able control of his/her instrument, be able to perform as a soloist with orchestra in a concerto or concert piece for the instrument, and should have acquired a sufficiently thorough orchestral routine to play in a professional orchestra. The candidate should also be able to read at sight simple piano music, and must have completed sufficient experience in band, orchestra and chamber music playing.

**Major Area**

- 8 credits MIPXXI-L Private Lessons
- 4 credits MIP6XX Instrumental Ensembles
- 1 credit Any one of the two options listed here to match the concluding project
  - MIP601 Program Notes Preparation
  - MED601 Recital Paper Preparation
- 1 credit MIP712 Master’s Recital
- 2 credits Any one of the two options listed here as a concluding project
  - MIP711 Master’s Recital Paper
  - MIP713 Master’s Advanced Recital

**Other Studies in Music**

- 3 credits MCY528 Music Bibliography
- 3 credits MTC617 Analytical Techniques

**Electives**

- 6 credits MXXXXX Musicology or Approved Elective
- 3 credits MXXXXX Music Education /Pedagogy or Approved Elective

**MM–Multiple Woodwinds (MIPW)**

**Major Area**

- 8 credits MIPXXI-L Private Lesson
- 4 credits MIP6XX Instrumental Ensembles
- 1 credit Any one of the two options listed here to match the concluding project
  - MIP601 Program Notes Preparation
  - MED601 Recital Paper Preparation
- 1 credit MIP712 Master’s Recital
- 2 credits Any one of the two options listed here as a concluding project
  - MIP711 Master’s Recital Paper
MIP713  Master's Advanced Recital

Other Studies in Music
3 credits  MCY528  Music Bibliography
3 credits  MTC617  Analytical Techniques

Electives
6 credits  MXXXXX  Musicology or Approved Elective
3 credits  MXXXXX  Music Education /Pedagogy or Approved Elective

Department of Vocal Performance (MVP)

MM–Choral Conducting (MCDC)
Candidates must possess and demonstrate an unquestioned gift of musical leadership based upon broad experience with choral ensembles. MVP538 (Vocal Pedagogy) and 2-3 credits of private vocal instruction must be included in the program. Admission requirements include a baccalaureate degree in music, practical experience in choral conducting through church, school, or community ensembles. Enrollment in this major is only by special permission. For detailed information, please consult the Graduate Choral Conducting Student Handbook, available from the Choral Office.

Major Area
1 credit  MVPCDI  Private Conducting Lessons
2 credits  MVP508  Score Study
2 credits  MVP538  Vocal Pedagogy
3 credits  MVP6XX  Performance Ensembles
4 credits  MVP670 1, 2, 3  Conducting Sequence
1 credit  MVP712  Master’s Recital
2 credits  MVP711  Master’s Recital Paper

Other Studies in Music
3 credits  MTC617  Analytical Techniques
2 credits  MCY535  Choral Literature I
2 credits  MCY536  Choral Literature II
1 credit  MED601  Recital Paper Preparation
2 credits  MED632  Vocal Methods Materials

Electives
4 credits  Approved electives in Voice Lessons or Diction
             MVPVOI-L Voice
             MVP650-1 Language Diction for Singers I, II
1 credit  MXXXXX  Approved Electives

MM-Vocal Performance (MVP)
The candidate must demonstrate the ability to sing in English, French, German, and Italian; be knowledgeable of the more difficult arias of opera and oratorio and of recitative in both the free and measured forms; have a thorough acquaintance with the general song literature; and be able to present a creditable recital. The candidate must participate in two semesters of choral ensemble. Each student who enters the Master of Music Degree Program in Voice must show
undergraduate credit equivalent, or enroll for the following courses before graduation: MCY522 Operatic Literature; MCY525 Art Song Literature; MVP538 Vocal Pedagogy; MVP638 Advanced Vocal Pedagogy; two semesters of college-level Italian; two semesters of college-level French, two semesters of college-level German (or demonstrate by departmental examination, acceptable proficiency in these languages).

**Major Area**
- 4 credits MVPVOI-L Private Lessons
- 4 credits MVP552 Vocal Performance Preparation
- 4 credits MVP6XX Performance Ensembles
- 2 credits MVP638 Advanced Vocal Pedagogy
- 1 credit MIP712 Master’s Recital
- 2 credits MIP711 Master’s Recital Paper

**Other Studies in Music**
- 3 credits MTC617 Analytical Techniques
- 3 credits MCYXXX Approved Musicology Course
- 1 credit MED601 Recital Paper Preparation

**Electives**
- 6 credits MXXXXX Approved Electives

**Vocal Performance Course Listing**

**Department of Keyboard Performance (MKP)**

**MM-Accompanying and Chamber Music (MKPA)**

The candidate must have had an undergraduate background in accompanying, either as an accompanying major or as a piano major with extensive experience as an accompanist. Candidates for this program should at the time of entrance manifest a pronounced ability in reading at sight. The ability to transpose and improvise is also desirable, as is a pronunciation knowledge of French, German, and Italian.

**Major Area**
- 6 credits MKPPII-L Private Lessons
- 2 credits MIP645 String-Keyboard Chamber Music
- 3 credits MKP688 Seminar in Accompanying
- 4 credits MKP691 Accompanying
- 2 credits MKP711 Recital Paper
- 1 credit MKP712 Recital

**Other Studies in Music**
- 3 credits MCY5XX Musicology
- 2 credits MKP547 Keyboard Pedagogy
- 1 credit MED601 Recital Paper Preparation
- 3 credits MTC617 Analytical Techniques

**Electives**
- 3 credits MXXXXX Electives

**MM-Keyboard Performance and Pedagogy (KPED)**
The candidate must complete prescribed courses in keyboard pedagogy and a workshop project (3 credits) with a supporting paper.

**Major Area**
- 6 credits MKPPII-L Private Lessons
- 2 credits MKP6XX Accompanying
- 2 credits MKP547 Keyboard Pedagogy
- 2 credits MKP647 Seminar in Keyboard Pedagogy
- 3 credits MKP650 Keyboard Pedagogy Workshop
- 2 credits MKP680 Keyboard Pedagogy Internship
- 3 credits MKP713 Recital/Project

**Other Studies in Music**
- 3 credits MCY527 Keyboard Literature
- 3 credits MTC617 Analytical Techniques

**Electives**
- 3 credits MCYXXX Musicology Elective
- 3 credits MXXXXX Electives

**MM-Piano Performance (MKP)**

The candidate must have acquired the principles of tone production and velocity and their application to scales, arpeggios, chords, octaves, and double notes, and must have a balanced repertoire comprising the principal baroque, classic, romantic, and modern compositions which should include compositions by representative American and foreign composers. Candidates must have had experience in ensemble playing and should be capable sight-readers.

**Major Area**
- 8 credits MKPPII-L Private Lessons
- 3 credits MKP6XX Accompanying
- 2 credits MKP711 Recital Paper
- 1 credit MKP712 Recital

**Other Studies in Music**
- 3 credits MCY526 Keyboard Literature I
- 3 credits MCY527 Keyboard Literature II
- 2 credits MEDXXX Music Education/Pedagogy Elective
- 1 credit MED601 Recital Paper Preparation
- 3 credits MTC617 Analytical Techniques

**Electives**
- 4 credits MXXXXX Electives

[Keyboard Performance Course Listing](#)

**Department of Music Education and Music Therapy (MED)**

**MM-Music Education (MED)**

**Major Area**
- 3 credits MED662 Music Learning & Curriculum
- 3 credits MED663 Research Methods in Music
- 3 credits MED664 Music Assessment
- 2 credits MED665 Seminar in Music Education
### MED7XX Thesis/Recital/Project

**Other Studies in Music**

6 credits MXXXXX Musicology and Music Theory Courses

### Electives

10 credits MXXXXX Approved Curricular Track Selected From Below

#### Thesis Track

- 3 credits MXXXXX Musicology, Music Theory, Lesson/Ensemble Electives
- 7 credits MXXXXX Approved Electives

#### Recital Track

- 2 credits MXXXXX Ensembles
- 7 credits MXXXXX Private Lessons
- 4 credits MXXXXX Approved Electives

#### Project Track

- 3 credits MXXXXX Musicology, Music Theory, Lesson/Ensemble Electives
- 7 credits MXXXXX Approved Electives

#### String Pedagogy Track

- 2 credits MXXXXX Ensembles
- 4 credits MXXXXX Private Lessons
- 3 credits MIP549 String Repertoire & Pedagogy
- 2 credits MED647 Seminar in Instrumental Music Education
- 2 credits MXXXXX Approved Electives

### MM-Music Education with Teaching Certification

A student holding a B.M. degree in music may work toward certification in Music Education concurrently with the M.M. degree in Music Education. The B.M. degree must have included at least 14 hours of music performance, 12 of music theory, 3 of conducting, 6 of music history, and credit in performance ensembles. This is a Florida Department of Education-approved program leading to initial certification as a music teacher, K-12.

#### Major Area

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<thead>
<tr>
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#### Other Studies in Music

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<td>3</td>
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<tr>
<td>3</td>
<td>MTC617</td>
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<td>6</td>
<td>MCYXXX</td>
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</tbody>
</table>

#### Music Education Electives

(Must include 3 credits of Elementary Methods & 3 credits of Secondary Methods)

**Elementary Methods Courses (3 credits required)**

- 3 credits MED542 Teaching Elementary General Music
509

3 credits MED555 Elementary Music Workshop
2 credits MED673 Music in Early Childhood

Secondary Methods Courses (3 credits required)
2 credits MED430 Teaching Jazz/Popular Music in Secondary Schools
2 credits MED544 Teaching Secondary General Music
3 credits MED549 Teaching Secondary Choral Music
3 credits MED556 Secondary General Music Workshop
3 credits MED543 Teaching Elementary & Secondary Instrumental Music

Other Music Education Electives
2 credits MED647 Seminar in Instrumental Music Education
2 credits MED674 Seminar in General Music
3 credits MED548 Music for Special Learners
3 credits MED570 Technology in Music Education
2 credits MED571 Computer Applications in Music Education I
2 credits MED572 Computer Applications in Music Education II

MM-Music Therapy (MTY)

Major Area
3 credits MED663 Music Research Methods
0 credits MED610 Music Therapy Forum
3 credits MED629 Advanced Music Therapy Practice I
3 credits MED630 Advanced Music Therapy Practice II
2 credits MED659 Graduate Practicum
3 credits MED710 Master’s Thesis

Other Studies in Music
10 credits MXXXXX Approved Graduate Level Courses in Music

Electives
One course in research design and statistics from:
3 credits EPS553 Introductory Statistics
3 credits PSY630 Advanced Psychological Methods
3 credits PSY631 Advanced Psychological Statistics I

One course in an area of clinical or research interest from:
3 credits EPS506 Foundations of Mental Health Counseling
3 credits EPS612 Counseling Theories and Practice
3 credits MED600 Psychoacoustical Foundations of Music
3 credits PSY605 Psychobiology
3 credits PSY620 Developmental Psychology

MM-Music Therapy with Undergraduate Equivalency

Major Area
3 credits MED663 Music Research Methods
0 credits MED610 Music Therapy Forum
3 credits MED629 Advanced Music Therapy Practice I
3 credits MED630 Advanced Music Therapy Practice II
6 credits MED659 Graduate Practicum
3 credits MED701 Internship
3 credits MED710 Master’s Thesis

Other Studies in Music
10 credits MXXXXX Approved Graduate Level Courses in Music
Electives
3 credits One course in research design and statistics from:
  - EPS553 Introductory Statistics (3 credits)
  - PSY630 Advanced Psychological Methods (3 credits)
  - PSY631 Advanced Psychological Statistics I (3 credits)

3 credits One course in an area of clinical or research interest from:
  - EPS506 Foundations of Mental Health Counseling (3 credits)
  - EPS612 Counseling Theories and Practice (3 credits)
  - MED600 Psychoacoustical Foundations of Music (3 credits)
  - PSY605 Cognitive Neuroscience (3 credits)
  - PSY620 Developmental Psychology (3 credits)

Undergraduate Equivalency Courses
0 credits MED010 Music Therapy Forum
1 credit MED149 Functional Techniques MTY I
1 credit MED242 Percussion Techniques
1 credit MED244 Voice Techniques
1 credit MED249 Functional Techniques MTY II
2 credits MED259 Introduction to Music Therapy
1 credit MED359 Clinical Orientation in MTY
3 credits MED545 Music in Rehabilitation
3 credits MED546 Music Psychotherapy
3 credits MED562 Psychology of Music
3 credits MED576 Music & Development
3 credits PSY202 Psychobiology
4 credits PSY204 Introduction to Biobehavioral Statistics
3 credits Either
  - PSY203 Child & Adolescent Development (3 credits)
  - Or
  - EPS270 Human Development (3 credits)
3 credits PSY352 Abnormal Psychology
3 credits PSY440 Abnormal Child Psychology
3 credits BIL109 Human Biology

Music Education and Music Therapy Course Listing

Department of Musicology (MCY)

MM-Musicology (MCY)

Major Area
3 credits MCY528 Music Bibliography
12 credits MCYXXX Musicology Electives
6 credits MCY710 Thesis

Other Studies in Music
2 credits MXXXXX Approved Ensembles
2 credits MEDXXX Music Education Elective
3 credits MTC617 Analytical Techniques

Electives
3 credits MCYXXX Electives
Musicology Course Listing

**Department of Music Theory-Composition (MTC)**

**MM-Music Composition (MTC)**

**Major Area**
- 2 credits MTC615 Composition Seminar I
- 2 credits MTC616 Composition Seminar II
- 6 credits MTC710 Thesis Composition
- 6 credits Two courses selected from the following
  - MTC611 Theory Pedagogy (3 credits)
  - MTC613 Twentieth Century Idioms (3 credits)
  - MTC617 Analytical Techniques (3 credits)

**Other Studies in Music**
- 3 credits MCY524 Contemporary Music
- 3 credits MCYXXX Music History Electives
- 2 credits MXXXXX Private Lessons
- 2 credits MXXXXX Approved Ensembles

**Electives**
- 3 credits MTCXXX Approved Elective in MTC
- 3 credits MXXXXX Graduate Level Electives

**MM-Electronic Music (MTCE)**

**Major Area**
- 2 credits MTC506 MIDI and Control Processing
- 2 credits MTC507 Digital Sound Synthesis and Processing
- 3 credits MTC521 Multimedia for Musicians
- 6 credits MTC667 Advanced Electronic and Computer Music Seminar
- 6 credits MTC710 Thesis Project

**Other Studies in Music**
- 4 credits MTC648 Electronic Music Ensemble

**Electives**
- 4 credits MTCXXX Approved Elective in MTC
- 3 credits MMIXXX Approved Elective in Music Engineering
- 3 credits MXXXXX Graduate Level Electives

**MM-Music Theory (MTCT)**

**Major Area**
- 3 credits MTC593 Schenkerian Studies I
- 3 credits MTC594 Schenkerian Studies II
- 3 credits MTC612 Advanced Comprehensive Theory
- 3 credits MTC693 Post-Tonal Theory and Analysis
- 6 credits MTC710 Thesis

**Other Studies in Music**
- 3 credits MCY528 Music Bibliography
- 3 credits MED562 Psychology of Music

**Electives**
Graduate, Frost School of Music

- 2 credits MXXXXX Performance (Major Instrument)
- 2 credits MXXXXX Approved Ensembles
- 3 credits MCYXXX Musicology Elective

**MM-Media Writing and Production (MWP)**

**Major Area**
- 3 credits MMI520 Audio Technology for Musicians
- 2 credits MTC511 Film Scoring I
- 2 credits MTC512 Film Scoring II
- 1 credit MTC553 Film Scoring III (new course)
- 3 credits MTC646 Studio Production Seminar
- 3 credits MTC696 Studio Production Ensemble
- 3 credits MTC713 Masters Media Writing Project

**Other Studies in Music**
- 3 credits MMI530 Entrepreneurship for Musicians
- 3 credits MSJ614 Advanced Orchestration
- 1 credit MSJ615 Jazz Composition Seminar I

**Electives**
- 6 credits MXXXXX Electives (3 credits must be 600 level or above)

[Music Theory and Composition Course Listing](#)

**Department of Music Media and Industry (MMI)**

**MM-Music Business and Entertainment Industries (MBEI)**

**Major Area**
- 2 credits MMI573 International Music Publishing
- 3 credits MMI574 A & R Administration and Music Licensing
- 3 credits MMI575 Entertainment Industry Contract Basics
- 3 credits MMI650 Analysis of Music Industry Agreements
- 3 credits MMI652 International Music Licensing
- 2 credits MMI673 Music Publishing Practicum
- 2 credits MMI674 Music Copyright Law
- 1 credit MMI678 Publishing and Record Industry Royalties
- 2 credits MMI702 Internship in Music Industry
- 9 credits Nine credits of School of Business Graduate Courses

**Other Studies in Music**
- 6 credits Approved electives in music

**MS-Music Engineering Technology (MUE)**

**Major Area**
- 3 credits MMI601 Advanced Digital Audio Electronics
- 3 credits MMI606 Windows Audio Plug-In Programming
- 3 credits MED562 Psychology of Music I
- 2 credits MED600 Psychoacoustical Foundations of Music
- 3 credits MTC667 Advanced Projects in Electronic Music
- 4 credits MMI6XX Audio Workshop (MMI653, 670, 671, 672)
- 3 credits MMI713 Research Project
Electives
12 credits Select one of the following emphases

**Hardware Emphasis:**
- EEN536 Digital Signal Processing (3 credits)
- EEN538 Introduction to Digital Image Processing (3 credits)
- EEN542 Digital Integrated Circuits (3 credits)
- EEN636 Advanced Digital Filter Design (3 credits)

**Software Emphasis:**
- CSC529 Introduction to Computer Graphics (3 credits)
- CSC555 Multimedia Systems (3 credits)
- CSC609 Cryptography and Data Security (3 credits)
- CSC655 Advanced Multimedia Systems (3 credits)

[Music Media and Industry Course Listing](#)

**Department of Studio Music and Jazz (MSJ)**

**MM-Jazz Performance, Instrumental (MSJI)**

**Major Area**
- 4 credits  MSJXXI-L Private Lessons
- 3 credits  MSJ6XX Jazz Ensembles
- 6 credits  MSJ66X Jazz Improvisation
- 2 credits  MSJ509 Jazz Composition I
- 2 credits  MSJ510 Jazz Composition II
- 1 credit  MSJ712 Master’s Recital
- 2 credits  MSJ711 Master’s Recital Paper

**Other Studies in Music**
- 3 credits  MSJ620 Analysis of Jazz Styles
- 3 credits  MSJ544 Jazz Pedagogy and Administration
- 1 credit  MED601 Recital Paper Preparation

**Electives**
- 4 credits  MXXXXX Approved Electives

**MM-Jazz Performance, Vocal (MSJV)**

**Major Area**
- 4 credits  MSJVOI-L Private Lessons
- 3 credits  MSJ6XX Jazz Ensembles
- 6 credits  MSJ56X Jazz Improvisation
- 2 credits  MSJ509 Jazz Composition I
- 2 credits  MSJ510 Jazz Composition II
- 1 credit  MSJ712 Master’s Recital
- 2 credits  MSJ711 Master’s Recital Paper

**Other Studies in Music**
- 3 credits  MSJ620 Analysis of Jazz Styles
- 3 credits  MSJ544 Jazz Pedagogy and Administration
- 1 credit  MED601 Recital Paper Preparation

**Electives**
- 4 credits  MXXXXX Approved Electives
MM-Jazz Pedagogy (JPED)

**Major Area**
- 4 credits MSJXXI-L Private Lessons
- 2 credits MSJ6XX Jazz Ensembles
- 3 credits MSJ56X Jazz Improvisation
- 3 credits MSJ544 Jazz Pedagogy and Administration
- 3 credits MED562 Psychology of Music
- 2 credits MED640 Seminar in Music Education
- 1 credit MED690 Teaching Music in College

**Other Studies in Music**
- 2 credits MSJ509 Jazz Composition I
- 3 credits MSJ520 Advanced Modern Arranging II
- 3 credits MSJ620 Analysis of Jazz Styles

**Electives**
- 6 credits MXXXXX Approved Electives

MM-Studio Jazz Writing (SJW)

**Major Area**
- 2 credits MSJ615 Jazz Composition Seminar I
- 3 credits MSJ521 Advanced Modern Arranging III
- 3 credits MSJ614 Advanced Orchestration
- 2 credit MSJ522 Digital Sequencing and Notation
- 4 credits MSJ675 Jazz Writing Ensemble
- 3 credits MSJ713 Master’s Jazz Writing Project

**Other Studies in Music**
- 2 credits MMI520 Audio Production
- 3 credits MMI530 Entrepreneurship for Musicians
- 2 credits MTC511 Film Scoring I
- 2 credits MTC512 Film Scoring II
- 2 credits MTC615 Composition Seminar

**Electives**
- 3 credits MXX5XX Other Elective

[Studio Music and Jazz Course Listing]

**SPECIALIST IN MUSIC EDUCATION**

The Specialist in Music Education is a terminal degree requiring 33 credit hours beyond the Master’s degree. The program emphasizes course work rather than research, and is designed for music teachers who desire post-master’s work that results in recognized professional credentials. The culminating project for the degree is a curriculum project that deals with some aspect of preschool, elementary, or secondary music education. The Specialist in Music Education degree is independent of the Doctor of Philosophy degree in Music Education, and admission to the program does not imply admission in the Doctor of Philosophy program.

**Admission Requirements**

1. Certification as a music teacher.
2. Completion of the master’s degree with an outstanding record from an accredited institution.

3. A minimum of three years of successful teaching experience.

4. Acceptable performance on the Graduate Record Examination.

5. Teaching videotape.

6. Admission interview.

Requirements

<table>
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<th>Credits</th>
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<td>9</td>
<td>EPS553 Introductory Statistics</td>
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<td>EPS605 Psychological Bases of Education</td>
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<td>MED660 History and Philosophy of Music Education</td>
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<td>MED664 Music Assessment</td>
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<td>MED680 Doctoral Seminar</td>
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<td>MED735 Curriculum Project</td>
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ARTIST DIPLOMA IN PERFORMANCE

The Artist Diploma in Performance is a program of advanced study designed for the outstanding performance career-oriented performer. The curriculum will focus on preparation for major competitions, auditions, apprenticeships, and the development of a performance career. Entrance to the program is limited to those individuals who have demonstrated exceptional performance skills by audition. A fully enrolled student can complete the eighteen-hour program in one year.

Requirements

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<th>Credits</th>
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<td>Approved Studies in Music</td>
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DOCTOR OF PHILOSOPHY (PHD)

The Doctor of Philosophy program is offered in Music Education. Requirements for the degree will conform to those for the general Doctor of Philosophy degree, listed elsewhere in this Bulletin. The Ph.D. is a research degree requiring 60 credit hours beyond the Master’s degree or 90 credit hours beyond a Bachelor’s degree. Enrollment for the Ph.D. degree is limited. Acceptance into the program will be based on academic record, Graduate Record Examination Scores, personal suitability, recommendations, experience, and demonstrated teaching competency.
Students are admitted to candidacy after successful completion of course work, qualifying examinations in musicology, music theory, and music education, and research tool requirements. Research tools are selected in consultation with the student’s advisor, and are related to the student’s proposed dissertation research. Comprehensive examinations are given after all academic work is completed to meet the candidacy requirement. The student’s dissertation research topic must be presented to and approved by the student’s committee. No student gains the right to be recommended for the degree simply by completing course requirements. Final oral examinations are administered during Fall & Spring Semesters only.

Requirements

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<td>History &amp; Philosophy of Music Education</td>
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<td>7</td>
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<td>Approved Electives</td>
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DOCTOR OF MUSICAL ARTS (DMA)

For the Doctor of Musical Arts in Performance, Keyboard Performance and Pedagogy, Composition, Jazz Composition, Jazz Performance, and Conducting, the candidate must meet all the general requirements for the Ph.D. degree with respect to residence, research tool requirements, total minimum hours, and written and oral examinations. The major differences between the D.M.A. and the Ph.D. are the creative efforts and performance that replace the dissertation requirements in the D.M.A. degree program. There will also be some variation in the research tool requirements in order that they apply in a more practical way to the needs of students.

ENTRANCE REQUIREMENTS

Selection of student based on:

1. Graduate Record Examination (Aptitude portion)
2. Academic record
3. Recommendations
4. Personal audition (Performance Majors); preliminary video tape required for instrumental conducting

5. Samples of musical composition (Composition Majors)

6. Writing Sample (major paper or thesis; Choral Conducting and Vocal Performance Majors)

**PLACEMENT EXAMINATIONS**

During the three days before registration, all new doctoral students are required to take examinations in music theory, and music history and literature, which will serve as placement tests or prerequisites for entrance to graduate courses. Courses to remedy deficiencies indicated by these examinations must be taken at the earliest opportunity.

**DOCTORAL COMMITTEE**

The committee is appointed when the student is formally admitted to a doctoral program. It will consist of a minimum of four members, three from the area of concentration and a minimum of one from the areas of Music Theory, Musicology, or Music Education (an approved member from a department outside of the Frost School of Music is possible). A committee may be expanded beyond the minimum number of members based on the needs of the student to a maximum of six. Of these, three (including the committee chairman) shall be regular members of the Graduate Faculty.

Responsibilities of the committee shall include the following:

1. Overseeing all of the students work prior to admission to candidacy, including academic program planning and advising as to recital repertoire.

2. Advising the student regarding relevant research competencies (tools) and ensuring that the student demonstrates these competencies prior to admission to candidacy.

3. Adjudging the quality of the student’s recitals, pedagogy presentations or compositions.

4. Overseeing the doctoral essay or lecture recital, including approval of the topic and proposal, supervision of the writing of the essay or lecture recital, assessment of the quality of the final essay or lecture recital, and the quality of the final essay defense. (In cases where special faculty expertise is needed for a particular essay topic, changes in membership of the doctoral committee may be made. Membership of the essay committee is recommended by the department or program concerned, and approved and appointed by the Dean of the Graduate School.)

**RESEARCH TOOL REQUIREMENTS**

The candidate will be required to show competency in the research tools recommended by the student’s doctoral committee, which is responsible for ensuring that the tools are relevant to the student and that procedures for demonstration of the competencies are appropriate. Research tools must be demonstrated and documented prior to admission to candidacy.
**COURSE WORK** (Extent of course work is determined by Placement Examinations, however, candidate must complete a minimum of 42 credit hours)

### DMA-ACCOMPANYING/CHAMBER MUSIC (MKPA)

**Accompanying Courses** - (30% of total, 18 credits)
- 6 credits Accompanying
- 4 credits Accompanying Seminar
- 8 credits Applied Piano

**Creative Activities** (20% of total, 12 credits)
- 6 credits DMA-Accompanied/Chamber Recitals (2 credits for each of 3 recitals)
- 2 credits DMA-Recital
- 1 credit MED602 DMA-Essay/Lecture Recital Proposal
- 3 credits DMA-Essay/Lecture Recital

**Allied Music Courses** (30% of total, 18 credits)
- 3 credits Music Theory (MTC617, 611, 613, or 671)
- 3 credits Music Bibliography or (MCY532 or MCY525)
- 4 credits String-Keyboard Chamber Music
- 1 credit Applied Harpsichord
- 7 credits Electives

(Up to 4 credits of foreign language electives may be taken by those students who select the Vocal Accompanying cognate or foreign language as a tool subject.)

**Cognate (20% of total, 12 credits)**

### DMA-CHORAL CONDUCTING (MCDC)

**Conducting Courses** (40% of total, 24 credits)
- 4 credits Choral Conducting Workshop MVP686, 687, 688, 689 (@ 1 credit)
- 4 credits Private Conducting MVPCDM-P (@ 1 credit)
- 4 credits Ensembles MVP600 level (@ 1 credit)
- 2 credits MVP508 Choral Score Study
- 2 credits MED632 Choral Methods
- 3 credits MTC515 Choral Arranging
- 4 credits Elective Conducting Studies
- 1 credit MED690 Teaching Music in College

**Creative Activities** (20% of total, 12 credits)
- 1 credit MED602 DMA-Essay Proposal
- 8 credits DMA-Essay
- 3 credits DMA-Recitals

**Allied Music Courses** (20% of total, 12 credits)
- 3 credits MTC617 Analytical Techniques or other MTC course
- 3 credits Graduate Music Seminars
- 6 credits Required courses in Musicology or Vocal Performance and Pedagogy, according to choice of Cognate Field

**Cognate/Electives (20% of total, 12 credits)**
DMA-COMPOSITION (MTC)

Composition Courses (20% of total, 12 credits)
- 8 credits  MTC615, MTC616 Composition Seminar
- 4 credits  MTC682 Composition Workshop

Creative Activities (20% of total, 12 credits)
- 12 credits  MTC731 DMA-Essay Research

Theory/Composition Electives (25% of total, 15 credits)
- 15 credits  Music Theory courses

Musicology Courses (15% of total, 9 credits)
- 9 credits  Musicology courses

Cognate/Electives (20% of total, 12 credits)

DMA-INSTRUMENTAL CONDUCTING (MCDI)

Performance Courses (35% of total, 21 credits)
- 12 credits  Applied Conducting
- 6 credits  Ensembles (6 large ensemble)
- 3 credits  MCY 520 History of Wind Band Literature (wind conductors) or approved elective (string conductors)

Creative Activities (20% of total, 12 credits)
- 1 credit  MED602 DMA-Essay/Lecture Recital Proposal
- 5 credits  DMA-Essay/Lecture Recital
- 6 credits  DMA-Recitals
  (2 credits for each of 3 recitals)

Allied Music Courses (25% of total, 15 credits)
- 3 credits  Musicology
- 3 credits  MTC617 Analytical Techniques or other MTC course
- 3 credits  Performance Seminars
- 5 credits  Approved Electives
- 1 credit  MED690 Teaching Music in College

Cognate/Electives (20% of total, 12 credits)

DMA-INSTRUMENTAL PERFORMANCE (MIP)

Performance Courses (40% of total, 24 credits)
- 12 credits  Applied Lessons
- 12 credits  Ensembles
  (6 large ensemble, 6 small ensemble)

Creative Activities (20% of total, 12 credits)
- 1 credit  MED602 DMA-Essay/Lecture Recital Proposal
- 5 credits  DMA-Essay/Lecture Recital
- 6 credits  DMA-Recitals
  (2 credits for each of 3 recitals)
Allied Music Courses (20% of total, 12 credits)
- 3 credits Musicology
- 3 credits MTC617 Analytical Techniques or other MTC course
- 3 credits Performance Seminars
- 2 credits Electives
- 1 credit MED690 Teaching Music in College

Cognate/Electives (20% of total, 12 credits)

**DMA-JAZZ COMPOSITION (MSJC)**

Performance Courses (20% of total, 12 credits)
- 10 credits Jazz Composition
- 2 credits Ensembles

Creative Activities (20% of total, 12 credits)
- 1 credit MED602 DMA-Essay/Lecture Recital Proposal
- 11 credits DMA-Essay/Lecture Recital

Jazz Courses (20% of total, 12 credits)
- 3 credits MSJ620 Analysis of Jazz Styles
- 3 credits MSJ544 Jazz Pedagogy and Administration/Special Project
- 3 credits Jazz Performance Ensembles
- 1 credit MED690 Teaching Music in College
- 2 credits Electives in Jazz

Allied Music Courses (20% of total, 12 credits)
- 3 credits MCY528 Music Bibliography
- 3 credits MTC617 Analytical Techniques or other MTC course
- 3 credits MED562 Psychology of Music
- 3 credits Musicology/Music Theory Electives

Cognate/Electives (20% of total, 12 credits)

**DMA-JAZZ PERFORMANCE (MSJI or MSJV)**

Performance Courses (20% of total, 12 credits)
- 10 credits Applied Lessons
- 2 credits Ensembles

Creative Activities (20% of total, 12 credits)
- 1 credit MED602 DMA-Essay/Lecture Recital Proposal
- 11 credits DMA-Essay/Lecture Recital

Jazz Courses (20% of total, 12 credits)
- 3 credits MSJ620 Analysis of Jazz Styles
- 3 credits MSJ544 Jazz Pedagogy and Administration/Special Project
- 3 credits Jazz Performance Ensembles
- 1 credit MED690 Teaching Music in College
- 2 credits Electives in Jazz

Allied Music Courses (20% of total, 12 credits)
3 credits  MCY528 Music Bibliography
3 credits  MTC617 Analytical Techniques or other MTC course
3 credits  MED520 Psychology of Music
3 credits  Musicology/Music Theory Electives

Cognate/Electives (20% of total, 12 credits)

**DMA-KEYBOARD PERFORMANCE AND PEDAGOGY (KPED)**

Keyboard Pedagogy (17% of total, 10 credits)
  2 credits  MKP547 Keyboard Pedagogy
  2 credits  MKP647 Seminar in Keyboard Pedagogy
  4 credits  MKP650 Keyboard Pedagogy Workshop
  2 credits  MKP680 Keyboard Pedagogy Internship

Creative Activities (20% of total, 12 credits)
  12 credits  MKP731 DMA-Recitals/Projects

Keyboard Performance (18% of total, 11 credits)
  8 credits  Piano Performance
  3 credits  MKP689 Accompanying (1 credit each)

Allied Music Courses (25% of total, 15 credits)
  2 credits  MCY526 Keyboard Literature
  3 credits  MCY528 Music Bibliography
  3 credits  MTC617 Analytical Techniques
  3 credits  MED562 Psychology of Music
  4 credits  Elective courses

Cognate/Electives (20% of total, 12 credits)

**DMA-MULTIPLE WOODWINDS (MIPW)**

Performance Courses (40% of total, 24 credits)
  12 credits  Applied Lessons in Flute, Oboe, Clarinet, Bassoon, and Saxophone
  12 credits  Ensembles (6 large ensemble, 6 small ensemble)

Creative Activities (20% of total, 12 credits)
  1 credit  MED602 DMA-Essay/Lecture Recital Proposal
  5 credits  DMA-Essay/Lecture Recital
  6 credits  DMA-Recitals (2 credits for each of 3 recitals)

Allied Music Courses (20% of total, 12 credits)
  3 credits  Musicology
  3 credits  MTC617 Analytical Techniques or other MTC course
  3 credits  Performance Seminars
  2 credits  Electives
  1 credit  MED690 Teaching Music in College

Cognate/Electives (20% of total, 12 credits)

**DMA-PIANO PERFORMANCE (MKP)**
Performance Courses (33% of total, 20 credits)
  12 credits  Applied Piano
  4 credits  Performance Seminars
  4 credits  Accompanying

Creative Activities (20% of total, 12 credits)
  6 credits  DMA-Recitals (2 credits for each of 3 recitals)
  2 credits  DMA-Concerto or Chamber Music Recital
  1 credit  MED602 DMA-Essay/Lecture Recital Proposal
  3 credits  DMA-Essay/Lecture Recital

Allied Music Courses (27% of total, 16 credits)
  6 credits  Music Theory
  6 credits  Performance Courses (20% of total, 12 credits)
  1 credit  String-Keyboard Chamber Music
  3 credits  Music Bibliography or Elective

Cognate (20% of total, 12 credits)

DMA-VOCAL PEDAGOGY (VPED)

Performance Courses (20% of total, 12 credits)
  8 credits  Applied Lessons in voice performance
  2 credits  MVP688 Ensembles
  2 credits  MVP552 Coaching—vocal performance

Creative Activities (20% of total, 12 credits)
  1 credit  MVP732 DMA-Recital
  1 credit  MVP712 DMA-Lecture/Recital/Workshop
  9 credits  MVP731 Doctoral Essay Research
  1 credit  MED602 Doctoral Essay Proposal

Vocal Pedagogy (30% of total, 18 credits)
  4 credits  Vocal Literature for Teaching:
               MVP650 English
               MVP651 Italian
               MVP652 German
               MVP653 French
  4 credits  MVP630 Studio Teaching Techniques
  3 credits  MVP638 Advanced Vocal Pedagogy
  3 credits  MVP639 Vocal Pedagogy Internship
  2 credits  MED680 Doctoral Seminar
  2 credits  MVP636 Voice Disorders

Allied Music Courses (10% of total, 6 credits)
  3 credits  MED562 Psychology of Music
  3 credits  MTC617 Analytical Techniques

Cognate/Electives (20% of total, 12 credits)

DMA-VOCAL PERFORMANCE (MVP)

Performance Courses (35% of total, 21 credits)
12 credits  Applied Voice
6 credits  Vocal Performance Preparation
3 credits  Opera Theatre

Creative Activities (20% of total, 12 credits)
1 credit  MED602 DMA-Essay Proposal
5 credits  DMA-Essay
6 credits  DMA-Recitals (2 credits for each of 3 recitals)

Allied Music Courses (25% of total, 15 credits)
6 credits  Musicology (6 credits Art Song Literature and Opera Literature or other MCY courses)
3 credits  MTC617 Analytical Techniques or other MTC course
3 credits  Performance Seminars
2 credits  Advanced Vocal Pedagogy
1 credit  MED690 Teaching Music in College

Cognate/Electives (20% of total, 12 credits)

COGNATES

Doctor of Musical Arts students may select an additional formal area of study through the cognate option. The Departments in which the cognate resides administers the cognate. Students must apply to the cognate Department for admission. The admission process may include an audition, interview, portfolio, or testing as determined by the cognate Department. Students must complete all requirements specified for a cognate to be recognized as having completed the cognate. Otherwise, the credits will be considered electives. No credits required in the DMA program can apply to the cognate. Any overlap will require approved course substitutions within either the DMA program or the cognate as determined to be most appropriate by the Dean of Graduate Studies.

Procedures for Entering a Cognate
1. Review the cognates offered on the Graduate Studies web site.
2. Select the cognate you would like to pursue.
3. Contact the Department in which the cognate resides and obtain written approval of your entrance. A simple e-mail by the faculty member in charge of the cognate to the Graduate Studies Office would suffice.
4. Visit the Graduate Studies Office to formally sign-up for the cognate and to obtain a copy of the Academic Program Record (APR) for the cognate.

ACCOMPANYING/CHAMBER MUSIC (12 credits)

Studio/Ensemble Accompanying (MKP691)  5 credits
String/Keyboard Ensemble (MIP645)  1 credit
Accompanying/Chamber Music Seminar  2 credits
Any one of the following courses:  1 credit
  String/Keyboard Ensemble (MIP645, 1 cr.)
  Accompanying/Chamber Music Seminar (1 cr.)
  Harpsichord, Organ, or Jazz Piano (1 cr.)
Any one of the following courses:  3 credits
  History of Chamber Music (MCY532, 3 cr.)
  Art Song Literature (MVP525, 3 cr.)
Operatic Literature (MVP522, 3 cr.)
American Musical Theater (MCY583, 3 cr.)

CONDUCTING: Choral (12 credits)
Applied Conducting Instruction 1 credit
Choral Conducting Workshop (MVP67X) 3 credits
Choral Score Study (MVP508) 2 credits
Choral Literature I (MCY535) 2 credits
Choral Literature II (MCY536) 2 credits
Choral Methods (MED632) 2 credits

CONDUCTING: Instrumental (12 credits)
MIP610 Conducting Seminar 4 credits
Approved electives in conducting and/or ensembles 3 credits
Approved electives related to the art of conducting 5 credits

HIGHER EDUCATION (12 credits)
Technology in Music Education (MED570) 3 credits
Teaching Music in College (MED690) 1 credit
Any combination of the following two courses types: 5 credits
Special Projects: Higher Ed. in Music (MED693, 1-2 cr.)
Pedagogy Course(s) in Music (2-3 cr.) 3 credits
Elective selected from one of the following: 3 credits
Organiz. & Admin. in Higher Ed. (EPS533, 3 cr.)
Higher Ed. in the U. S. (EPS603, 3 cr.)
Music Learning & Curriculum (MED560, 3 cr.)

INSTRUMENTAL PERFORMANCE (12 credits)
Applied Performance Instruction 6 credits
Approved Performance Ensembles 6 credits

JAZZ PERFORMANCE (12 credits)
Applied Performance Instruction 6 credits
Select one course from below: 3 credits
Jazz Pedagogy (MSJ544, 3 cr.)
Analysis of Jazz Styles (MSJ620, 3cr.)
Electives in Jazz Theory / Improv. / Ensembles 3 credits

KEYBOARD PEDAGOGY (12 credits)
Keyboard Pedagogy (MKP547) 2 credits
Keyboard Pedagogy (MKP593 or 693) 2 credits
Seminar in Keyboard Pedagogy (MKP647) 2 credits
Keyboard Pedagogy Workshop (MKP650) 4 credits
Keyboard Pedagogy Internship (MKP680) 2 credits

MUSIC BUSINESS (12 credits)
Copyright/Publication (MMI573) 3 credits
Music Industry Administration (MMI574) 3 credits
Entrepreneurship for Musicians (MMI530) 3 credits
Contract/Negotiations (MMI650) 3 credits

MUSIC EDUCATION (12 credits)
Music Learning & Curriculum (MED560) 3 credits
### Psychology of Music (MED562)  3 credits
### Seminar in Music Teacher Education (MED670)  1 credit
### Doctoral Seminar (MED680)  1 credit
### Teaching Music in College (MED690)  1 credit
### Course selected from one of the following:  3 credits
   - Music Assessment (MED664, 3 cr.)
   - Technology in Music Education (MED570, 3 cr.)
   - International Music Education (MED620, 3 cr.)
   - History & Philosophy of Music Education (MED660, 3 cr.)

#### MUSIC TECHNOLOGY  (12 credits)
Select courses from those below:  12 credits
- Electronic Music Studio (MTC505, 2 cr.)
- MIDI and Control Processing (MTC506, 2 cr.)
- Digital Sound Synthesis and Processing (MTC507, 2 cr.)
- Multimedia for Musicians (MTC521, 3 cr.)
- Film Scoring I (MTC511, 3 cr.)
- Film Scoring II (MTC512, 3 cr.)
- Electronic and Computer Music Seminar (MTC567)  1-3 credits
- Intro To MIDI Seq. & Digital Workstations (MSJ522, 2 cr.)
- Audio Technology for Musicians (MMI520, 2 cr.)
- Digital Audio I (MMI502, 3 cr.)
- Technology in Music Education (MED570, 3 cr.)
- Computer Applications in Music Education (MED571, 2 cr.)

#### MUSIC THEORY  (12 credits)
Select courses from those below:  12 credits
- The Aesthetics of Music (MTC501, 3 cr.)
- Sixteenth-Century Counterpoint (MTC513, 3 cr.)
- Theory Pedagogy (MTC611, 3 cr.)
- Advanced Comprehensive Theory (MTC612, 3 cr.)
- Twentieth Century Idioms (MTC613, 3 cr.)
- Analytical Techniques (MTC617, 3 cr.)

#### MUSICOLOGY  (12 credits)
- Bibliography (MCY528)  3 credits
- Approved Musicology Courses  9 credits

#### VOCAL PEDAGOGY  (12 credits)
- Advanced Vocal Pedagogy (MVP638)  2 credits
- Art Song Literature (MCY525)  4 credits
- Voice Instruction  3 credits
- Teaching Music in College (MED690)  1 credit
- Language Diction for Singers (MVP65X)  2 credits

#### VOCAL PERFORMANCE  (12 credits)
- Private Voice MVP VOM-P  4 credits
- Vocal Pedagogy (MVP538)  2 credits
- Vocal Pedagogy (MVP638)  2 credits
- Language Diction for Singers (MVP65X)  4 credits

#### VOCAL ACCOMPANYING  (12 credits)
Private Voice Lessons 2 credits
Language Diction for Singers (MVP65X) 2 credits
Vocal Accompanying (MKP687) 2 credits
Vocal Literature (Select one from below): 3 credits
  Art Song Literature (MCY525, 3 cr.)
  Operatic Literature (MCY522, 3 cr.)
Select courses from any below: 3 credits
  American Musical Theater (MCY583, 3 cr.)
  Graduate Courses in Vocal Performance

QUALIFYING EXAMINATION

To be taken upon completion of approximately 18 credit hours of work. Exams in the areas of

1. Musicology;

2. Music Theory-Composition; and

3. Music Education (If required by the program).

Performance and jazz performance majors must present a qualifying recital during the first semester in residence.

COMPREHENSIVE EXAMINATION

To be taken in major area (except performance) after completion of approximately 36 credit hours. Examination may be oral or written.

ADMISSION TO CANDIDACY

A student is admitted to candidacy after completing course work, research tool requirements, qualifying and comprehensive examinations. No student may receive the degree in the same semester or summer session in which he or she is admitted to candidacy.

PERFORMANCE AND CREATIVE REQUIREMENTS

D.M.A. students in performance, jazz performance, or keyboard performance and pedagogy may present one recital before the qualifying written examination (provided they have passed their qualifying recital). Before the second or third, depending upon program, recital they must have passed the Qualifying Examinations and removed all reservations for the written examinations in music theory, musicology, and music education, as well as having presented a proposal for the doctoral essay to their committee. Before the final recital the student must be admitted to candidacy (this requirement includes the completion of both the qualifying examination and research tool subjects). All recitals are to be presented during either Fall or Spring semesters.

Performance Majors
Students accepted in the program must present three full-length solo recitals. In addition, instrumentalists are expected to perform a concerto with orchestra or a chamber music recital. Vocalists are expected to execute one or more substantial roles in a large scale work, e.g., opera or oratorio in addition to the solo recitals. Students majoring in accompanying and chamber music will present one solo recital, one chamber music recital, and three accompanying recitals. For Keyboard Performance and Pedagogy, an approved combination of recitals and pedagogy presentations is required.

Jazz Performance Majors
Students must present three full-length recitals

Conducting Majors (Choral)
No less than two approved full recitals shall be presented by each candidate.

Conducting Majors (Instrumental)
Three approved public recitals (or the equivalent) with suitable performing groups must be given during the period of residency and prior to the oral examination.

Composition Majors
1. The candidate will be required to compose a piece of major proportions for large ensemble. In addition, no less than three works for any instrumental or vocal group combination will be required during the period of residency.

2. A formal written analysis of the major work will be required. This will serve as the Doctoral Essay for composition majors.

3. Some form of a recital or public performance of the candidate’s compositions will be required. This requirement could be fulfilled with a recital that would include representative works composed during the student’s residence.

By means of a written doctoral essay or a lecture recital all D.M.A. candidates will be expected to give evidence of their ability to make an original scholarly investigation and present its results in an articulate manner.

Final Oral Examination (administered during Fall and Spring semesters only): defense of the creative or recreative work, and the written essay or lecture recital.

LECTURE RECITAL

The lecture recital is a major presentation whose content must pertain to musical performance, musical analysis, performance practice, comparative editions, interpretation, musical style, or other issues that directly relate to a central theme of music performance. A written document of the lecture recital must be submitted to the Graduate School following procedures similar to those of the Doctoral Essay.
SCHOOL OF NURSING AND HEALTH STUDIES – GRADUATE NURSING
DEPARTMENT CODE: NUR

www.miami.edu/nursing

The School of Nursing and Health Studies offers two degrees: the Master of Science in Nursing and the Doctor of Philosophy with a major in Nursing. Admission to graduate programs in the School is subject to the rules, regulations, and procedures as set out in the Graduate Bulletin of the University of Miami. It is the responsibility of each student to understand these requirements and to be sure that they are met.

MASTER OF SCIENCE

The Master of Science in Nursing degree focuses upon selected areas of advanced practice nursing consisting of 36 to 42 semester hours credits. The degree requirements may be completed in three to seven semesters of full-time study depending on the specialty. Part-time study is also available. A minimum grade of B must be attained in all clinical courses and a minimum cumulative grade point of average of B must be maintained for graduation. Further information about each program can be obtained from the Office of Student Services, School of Nursing and Health Studies, University of Miami, P.O. Box 248153, Coral Gables, FL 33124-3850; ph (305) 284-3666.

The MSN Program is accredited by the Commission of Collegiate Nursing Education (CCNE), One DuPont Circle NW, Suite 530, Washington, DC 20036, (202) 887-6791. The Nurse Midwifery Program is accredited by the American College of Nurse Midwives Division of Accreditation, 8430 Colesville Road, Suite 1550, Silver Spring, MD 20910, (204) 485-1845, and the Nurse Anesthesia Specialty is accredited by the Council on Accreditation of Nurse Anesthesia Education Programs (COA), 222 South Prospect Avenue, Park Ridge, Illinois, 60068-4001, (847) 692-7050 (ext. 1154).

MAJORS: ACUTE CARE NURSING, PRIMARY CARE NURSING, AND COMMUNITY HEALTH NURSING

The curriculum leading to the Master of Science in Nursing degree prepares students for advanced practice nursing in Acute Care, Primary Care, or Community Health Nursing. Within the Acute Care Nursing Major, the specialty areas offered are Adult Acute Care Nurse Practitioner or Clinical Nurse Specialist and Nurse Anesthesia. Within the Primary Care Nursing Major, the specialty areas offered are Adult Nurse Practitioner, Family Nurse Practitioner, Nurse Midwifery, Psychiatric Mental Health Nursing and Women’s Health Nurse Practitioner. Within the Community Health Nursing Major, the specialty areas are Population-Based Nursing and Disease Management Nursing.

ADMISSION:

All of those wishing to take courses for graduate credit, whether or not they wish to become candidates for the Master of Science in Nursing degree (M.S.N.), must complete application for admission well in advance of registration. Professional nurses holding a Bachelor of Science degree with a major in nursing are eligible to apply for admission to the Master of Science program. Admission to the masters program requires:

1. The completed application form.
2. Official transcripts of all previous coursework, both undergraduate and graduate (with undergraduate G.P.A. of 3.0 on a 4.0 scale).
3. A satisfactory score on the quantitative and verbal portions of the Graduate Record Examination (GRE) General Test.
4. A satisfactory score on the Test of English as a Foreign Language (TOEFL) by those international applicants whose native language is not English.
5. Three written references from persons qualified to comment upon the applicants’ academic abilities and probable success in graduate study; references will be acceptable from a major professor, supervisor/employer, and other professional persons, preferably professional nursing personnel.
6. A current Florida license is required for clinical courses.
7. A statement of professional goals and objectives for graduate study.
8. An interview with one or more faculty.
9. Advanced Cardiac Life Support (ACLS) certification for the Acute Care Major.

Successful completion of a basic statistics course is a prerequisite to Research in Nursing (NUR 630). The requirement may be met in the first semester of study, but cannot be counted in the total credits required for graduation. It is recommended that the prerequisite be met before admission to the program.

**GRADUATE STUDENT RESPONSIBILITIES:**

Students in the School of Nursing and Health Studies are responsible for meeting the degree requirements. It is the student's responsibility to understand fully, and comply with all the provisions of the Bulletin and written changes to their program of study. Students are provided assistance by advisors and faculty members. Requests for deviation from the program of study or school requirements are granted only by written approval from the Dean. Students who are in violation of the provisions of this Bulletin may be withdrawn unilaterally by appropriate School officials from classes, deleted as Nursing and Health Studies students or have a stop placed upon their future enrollment. The school reserves the right to change academic requirements to include course offerings to ensure that students are receiving the latest knowledge. Changes are transmitted by written notice in the current year of the School of Nursing and Health Studies Graduate Handbook or by the Dean.

**GRADUATE ENTRY OPTION:**

Individuals who have completed an undergraduate degree in a field other than nursing and who qualify for admission as undergraduate and/or graduate students, may apply for admission as Graduate Entry students. Graduate Entry students are enrolled in a 7 semester "seamless" program. The program of study for these students will include the completion of courses required for licensure as a registered nurse and a graduate nursing major.

Admission requirements for Graduate Entry applicants are the same as those for the Masters Program, plus the following:

1. Graduate Entry students must successfully complete the following prerequisite courses, prior to admission:
   - Human Anatomy and Physiology (2 semesters)
   - Chemistry
   - Microbiology
   - Introductory Psychology
   - Statistics
Nutrition  
Human Growth and Development

2. A Florida nursing license is not required for admission but must be obtained prior to progressing into the MSN portion of the Graduate Entry Option. A summer clinical practicum is expected before beginning the advanced practice nursing clinical courses.

**DEGREE REQUIREMENTS:**

**THESIS OPTION**

The addition of a thesis to a student’s program of study must be approved by the faculty advisor. Six credits will be required for thesis work. The six credits are in addition to the total credits required for each major. The thesis represents original work approved by a thesis committee. The committee chair must be a member of the Graduate Faculty of the University. A written comprehensive examination may be required.

**GENERAL DEGREE REQUIREMENTS**

**Family Nurse Practitioner**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Fall Semester</td>
<td>NUR608 Concepts of Advanced Practice Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NUR613 Advanced Health Assessment and Diagnostic Reasoning</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NUR601 Advanced Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NUR612 Advanced Physiology/Pathophysiology for Advanced Practice Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Spring Semester</td>
<td>NUR623 Primary Health Care of Infants and Children</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NUR627 Primary Prenatal Health Care of Women</td>
<td>2</td>
</tr>
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<td></td>
<td>NUR628 Advanced Practice Nursing of Adults</td>
<td>7</td>
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<tr>
<td>Summer Semester</td>
<td>NUR630 Research and Evidence-Based Advanced Practice Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NUR647 Advanced Practice Nursing Integration</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>NUR609 Professionalism in Advanced Practice Nursing</td>
<td>2</td>
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</table>

**Total** 36

**Adult Nurse Practitioner**

<table>
<thead>
<tr>
<th>Semester</th>
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<tr>
<td>Fall Semester</td>
<td>NUR608 Concepts of Advanced Practice Nursing</td>
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</tr>
<tr>
<td></td>
<td>NUR613 Advanced Health Assessment and Diagnostic Reasoning</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NUR601 Advanced Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>NUR612 Advanced Physiology/Pathophysiology for Advanced Practice Nursing</td>
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<tr>
<td>Spring Semester</td>
<td>NUR624 Health Care Aging Adult</td>
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<td>NUR628 Advanced Practice Nursing of Adults</td>
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<tr>
<td>Summer Semester</td>
<td>NUR630 Research and Evidence-Based Advanced Practice Nursing</td>
<td>3</td>
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### Women's Health

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<th>Course Code</th>
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<td>NUR608</td>
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<tr>
<td>NUR613</td>
<td>Advanced Health Assessment and Diagnostic Reasoning</td>
<td>3</td>
</tr>
<tr>
<td>NUR601</td>
<td>Advanced Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td>NUR612</td>
<td>Advanced Physiology/Pathophysiology for Advanced Practice Nursing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>36</strong></td>
</tr>
</tbody>
</table>

#### Fall Semester 1
- NUR608 Concepts of Advanced Practice Nursing
- NUR613 Advanced Health Assessment and Diagnostic Reasoning
- NUR601 Advanced Pharmacology
- NUR612 Advanced Physiology/Pathophysiology for Advanced Practice Nursing

#### Spring Semester
- NUR627 Primary Prenatal Health Care of Women
- NUR628 Advanced Practice Nursing of Adults

#### Summer Semester
- NUR630 Research and Evidence-Based Advanced Practice Nursing
- NUR609 Professionalism in Advanced Practice Nursing
- NUR632 Care of Special Populations

### Nurse Midwifery

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>NUR608</td>
<td>Concepts of Advanced Practice Nursing</td>
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<td>Advanced Health Assessment and Diagnostic Reasoning</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
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</tbody>
</table>

#### Fall Semester 1
- NUR608 Concepts of Advanced Practice Nursing
- NUR613 Advanced Health Assessment and Diagnostic Reasoning
- NUR601 Advanced Pharmacology
- NUR612 Advanced Physiology/Pathophysiology for Advanced Practice Nursing

#### Spring Semester
- NUR 627 Primary Prenatal Health Care of Women
- NUR 628 Advanced Practice Nursing of Adults

#### Summer Semester
- NUR630 Research and Evidence-Based Advanced Practice Nursing
- NUR609 Professionalism in Advanced Practice Nursing
- NUR632 Perinatal Health Care

#### Fall Semester 2
- NUR644 Internship

**Could do dual major with addition of NUR 634 or NUR 632 and 5cr internship.**

### Acute Care Nurse Practitioner

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>NUR608</td>
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<tr>
<td>NUR613</td>
<td>Advanced Health Assessment and Diagnostic Reasoning</td>
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</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>36</strong></td>
</tr>
</tbody>
</table>

#### Fall Semester 1
- NUR608 Concepts of Advanced Practice Nursing
- NUR613 Advanced Health Assessment and Diagnostic Reasoning

531
### Nurse Anesthesia

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>NUR608</td>
<td>Concepts of Advanced Practice Nursing</td>
<td>3</td>
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<tr>
<td>NUR613</td>
<td>Advanced Health Assessment and Diagnostic Reasoning</td>
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<tr>
<td>NUR601</td>
<td>Advanced Pharmacology</td>
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<tr>
<td>NUR612</td>
<td>Advanced Physiology/Pathophysiology for Advanced Practice Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NUR570</td>
<td>Psychobiology</td>
<td>3</td>
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<tr>
<td>NUR614</td>
<td>Basic Concepts in Anesthesia Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NUR616</td>
<td>Pharmacology for Acute Care and Anesthesia Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NUR630</td>
<td>Research and Evidence-Based Advanced Practice Nursing</td>
<td>3</td>
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<td>NUR609</td>
<td>Professionalism in Advanced Practice Nursing</td>
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<td>NUR619</td>
<td>Advanced Concepts in Anesthesia Nursing I</td>
<td>3</td>
</tr>
<tr>
<td>NUR619</td>
<td>Advanced Concepts in Anesthesia Nursing II</td>
<td>3</td>
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<tr>
<td>NUR645</td>
<td>Interdisciplinary Anesthesia Nursing Internship</td>
<td>3 + Internship</td>
</tr>
<tr>
<td>NUR646</td>
<td>Interdisciplinary Anesthesia Nursing Internship II</td>
<td>3 + Internship</td>
</tr>
<tr>
<td>NUR650</td>
<td>Interdisciplinary Anesthesia Nursing Internship III</td>
<td>3 + Internship</td>
</tr>
</tbody>
</table>

**Total** 41
Psychiatric Mental Health Nursing

Fall Semester 1

NUR608  Concepts of Advanced Practice Nursing  3
NUR613  Advanced Health Assessment and Diagnostic Reasoning  3
NUR601  Advanced Pharmacology  3
NUR612  Advanced Physiology/Pathophysiology for Advanced Practice Nursing

Spring Semester

NUR635  Psychiatric and mental Health Nursing of Adults  5
NUR636  Psychiatric and mental Health Nursing of Families and Groups  7
(NUR636 shares common classes with NUR628)

Summer Semester

NUR630  Research and Evidence-Based Advanced Practice Nursing  3
NUR647  Advanced Practice Nursing Integration  7
NUR609  Professionalism in Advanced Practice Nursing  2

Total  36

Community Health Nursing Core Courses  12 credits

EPH501: Medical Biostatistic I (3)
EPH502: Medical Biostatistics II (3)
NUR590: Health Policy, Structure, Ethics (3)
NUR603: Community Health Nursing Systems Administration (3)

Community Health Nursing Specialty Courses  17 credits

NUR604: Community Health Nursing I (3)
NUR605: Field Experience in Community Health Nursing (3)
NUR606: Community Health Nursing II (5)
NUR607: Community Health Nursing III (6)

THE PH.D. PROGRAM

The Ph.D. with a major in Nursing Science requires a minimum of 60 credits of coursework beyond the masters degree. The principal goal of the Ph.D. with a major in Nursing Science is to prepare scholars and researchers who will contribute to the growth of clinical science in nursing through recognized methods of scholarly inquiry. Admission to the doctoral program is competitive.

GENERAL INFORMATION

To receive the Doctor of Philosophy degree the candidate must meet all the general requirements for the Ph.D. degree with respect to residency, and written and oral examinations. The 24 credits required for the dissertation are divided as follows: 18 dissertation semester credit hours and 2-6 credit hours required in dissertation seminar. Approval of the dissertation prospectus is required.

I. Entrance Requirements
   A. Admission. The regular admission procedures include:
1. The completed application form
2. The official transcripts of all college work previously taken, including both undergraduate and graduate
3. The official report of the appropriate entrance examination, taken within five years of the application. Applicants must submit the scores from the Graduate Record Examination; International applicants whose native language is not English must also take the Test of English as a Foreign Language (TOEFL).

B. Selection of students. Factors considered for admission include:
   1. Completion of the masters degree with an outstanding record from an accredited institution
   2. Adequacy of previous study in advanced clinical nursing
   3. Relevant experience as evidenced in curriculum vitae
   4. Recommendations
   5. Written evaluations by key professors
   6. Statement of professional goals and interests in doctoral study
   7. Admissions interview
   8. Portfolio of scholarly work related to some aspect of nursing for evaluation by the doctoral admissions committee for evidence of scholarly potential

II. Placement Evaluation
   A. Applicants enrolled in the MSN program may request admission review by the Graduate Admissions and Academic Standing Committee after completing 24 credit hours of graduate work. Admission to graduate status does not imply admission to candidacy for a degree.

   B. Applicants with master’s degrees will be evaluated by the Graduate Admissions and Academic Standing Committee individually. Additional courses may be required and must be satisfactorily completed before final approval of admission is granted.

   C. After admission to the Ph.D. in Nursing program, a Supervisory Committee will assist the student in planning a course of study.

III. General Course Work Requirements and Distribution

<table>
<thead>
<tr>
<th>For Students Entering with a Masters Degree</th>
<th>60 credits</th>
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<tbody>
<tr>
<td>Advanced Professional Nursing Core courses</td>
<td>6 credits</td>
</tr>
<tr>
<td>Philosophical and Theoretical Bases for Nursing Science (NUR 651)</td>
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<tr>
<td>Development of Nursing Science (NUR 661)</td>
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</tr>
<tr>
<td>Advanced Clinical Nursing</td>
<td>3 credits</td>
</tr>
<tr>
<td>Clinical Inquiry (NUR 655)</td>
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<tr>
<td>Nursing Research</td>
<td>11 credits</td>
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<tr>
<td>Methods and Design for Nursing Research (NUR 665)</td>
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<tr>
<td>Qualitative Methods in Qualitative Research (NUR 670)</td>
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<tr>
<td>Research Practicum (NUR 667)</td>
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<tr>
<td>Measurement of Nursing Phenomena (NUR 680)</td>
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<tr>
<td>Statistics and Computer Science courses</td>
<td>9 credits</td>
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<tr>
<td>Electives and Philosophy course</td>
<td>7 credits</td>
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<tr>
<td>Dissertation</td>
<td>24 credits</td>
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<tr>
<td>Dissertation Seminar (NUR 695)</td>
<td>2-6 credits</td>
</tr>
<tr>
<td>Doctoral Dissertation (NUR 730)</td>
<td>18 credits</td>
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</tbody>
</table>
At least 24 credits in the major and cognate fields must be taken at the University of Miami in doctoral status. Two semesters in residence, as defined in the Bulletin, are required for students in doctoral status. Doctoral students are expected to participate in the research activities of the University during residency. One-half of the total course credits must be in work only open to graduate students. Additional graduate credit may be required for individual programs.

IV. Research Residency Requirements
   The candidate will be required to show proficiency in the areas listed below. The research residency requirements are approved in consultation with the advisor and Supervisory committee, and may include examination or course work in the following:
   1. Computer Science and Application
   2. Statistics
   3. Qualitative research
   4. Nursing research

FINANCIAL ASSISTANCE

The School of Nursing and Health Studies provides the following sources of financial assistance for full time graduate students who are not employed full time by other agencies:

1. Tuition Scholarships. These awards vary in amount and are intended to assist the recipient in pursuit of study and research as required by the degree. These scholarships are awarded on a competitive basis.

2. Graduate Stipends. These cash awards, paid monthly, are intended as part of an educational assistance program for Master and Doctoral degree students. The stipends require service in the form of teaching, research assistance, or other appropriate educational activities that may be designated by the supervisor of the recipient.

For further information, contact: Office of Student Services, School of Nursing and Health Studies, University of Miami, P.O. Box 248153, Coral Gables, FL 33124-3850, ph (305) 284-3666.
INTERNATIONAL EXCHANGE and LANGUAGE PROGRAMS

INTERNATIONAL EDUCATION AND EXCHANGE PROGRAMS - Dept. Code: SAP

To help you meet the challenges of today and tomorrow, as well as to broaden your educational experience, the University of Miami International Education and Exchange Programs offer an extensive array of overseas programs in over thirty countries. Half of our programs offer coursework taught in English.

As you choose among programs, consider some of your options ... Study marine biology on the edge of Australia’s Great Barrier Reef at James Cook University; be at the nerve center of a unified Europe and study economics or politics at the University of Leipzig in Germany; immerse yourself in Japanese culture and business practices at Sophia University, Tokyo; become acquainted with Spanish language and Mexican culture at the Universidad Iberoamericana in Mexico; explore Europe's rich heritage at the University of Edinburgh in Scotland; become acquainted with the changing panorama of international relations at Uppsala University in Sweden.

These opportunities for exchange - and many more - are available through the International Education and Exchange Programs office. In addition to programs at overseas universities, the International Education and Exchange Programs office offers UM faculty-led programs abroad. These are UM courses taught by UM faculty who travel abroad with the students during Intersession, Spring Break, and Summer terms.

Many departments at the University of Miami encourage study abroad options as part of their basic curriculum. With the assistance of the International Education and Exchange Programs staff and the guidance of your advisor, you can devise a study abroad program to fit almost any major. Studying abroad is open to Sophomores, Juniors, and Seniors for a semester, a full academic year, or during the summer. Full university credit is awarded for approved courses to participants on UM study abroad programs so that you proceed normally toward graduation. Most financial aid applies.

For further information contact: UM International Education and Exchange Programs, P. O. Box 248005, Coral Gables, FL 33124-1610, (305) 284-3434. E-mail: ieep@miami.edu. Visit our website at www.miami.edu/studyabroad.

In some departments it is possible to earn graduate credits for study taken abroad. Curriculum must be worked out by the student in conjunction with an advisor.

INTENSIVE LANGUAGE INSTITUTE

The Intensive Language Institute offers comprehensive instruction in English as a second language through the Intensive English Program, a full-time course of study for international students who wish to pursue university studies in the United States. Part-time and customized language courses are also offered through the Accelerated Language Courses.

Accelerated Language Courses

Conversation classes are offered in the evenings and on weekends in Spanish, Portuguese, Italian and English. These courses focus on communicating in the chosen language.
Advanced level classes focus on Accent Reduction or Business Writing. Short-term intensive classes in Spanish and English are also offered. The Intensive Language Institute develops and conducts customized language courses on-site or on campus for businesses, organizations, and individuals with specialized language training needs. For further information, or to register for classes, please call us at (305) 284-4727 or visit us on the web at: www.educationmiami.com/ili. Email: alc.cstudies@miami.edu.

Intensive English Program

The Intensive English Program is designed to prepare students to participate successfully in the academic environment. Courses at five levels of instruction integrate the language skills of reading, writing, listening and speaking with a focus on the English language acquisition and application in an academic setting. Specialized courses on selected topics allow students to use their improving English to investigate areas of interest. Students are given a placement test upon arrival to determine the most appropriate level of study. Satisfactory completion of the highest level meets the English language requirement for acceptance to undergraduate programs at the University.

For more information contact: Intensive Language Institute, PO Box 248005, Coral Gables, FL 33124-1610, (305) 284-2752. E-mail: iep@miami.edu. Visit our website at www.iep.miami.edu.
The Miami Semester
www.miami.edu/miamisemester

The Miami Semester provides the opportunity for degree-seeking students attending other colleges, to spend a semester or summer in Miami living, studying and doing research at the University of Miami. Domestic or international students can take advantage of these unique 12-15 credit discipline focused programs. Each Miami Semester is designed to highlight the programs unique to the University, taking advantage of our geographical location, nationally known faculty, and unique environmental features.

There are several program choices, but students may earn a certificate in one of the following programmatic areas. Please note: This is for non-UM and international students.

Certificate in Film Studies

The Certificate in Film Studies focuses on theory and criticism in film. Potential screenwriters explore film in depth and those in English literature develop a complementary study in film. Students may select alternative recommended courses with the approval of an advisor.

Specific courses include the following:
- Survey of Motion Pictures CMP 103
- History of Motion Pictures (1941-present) CMP 205
- What is Cinema? CMP 306

Recommended courses include:
- Film Directors CMP 503
- American Movie Genres CMP 506
- Film, Society, and Culture CMP 507

Certificate in Film Studies (business emphasis)

The Certificate in Film Studies (business emphasis) is designed for those who want to explore the producing, marketing, agentry, personnel management, or a studio executive position – anything that has to do with the business aspect of the film industry.

Specific courses include the following:
- Survey of Motion Pictures CMP 103
- History of Motion Pictures (1941-present) CMP 205
- Legal Aspects of Motion Pictures CMP 509
- Motion Picture Marketing and Distribution CMP 552 or Producing the Motion Picture CMP 555

Certificate in International Finance and Marketing

The Certificate in International Finance and Marketing is designed for business students from other universities who want to add an international dimension to their studies. This program allows students to select from a limited set of courses offered by the School of Business. The program focuses on the international aspects of business. The program is open to students with at least a junior standing who have met the course prerequisites.

Specific courses include from two to five of the following:
- International Finance FIN 330
- International Marketing MKT 360
International Trade ECO 441  
International Monetary Economics ECO 442  
International Business Law BSL 412

**Certificate in Cuban Studies (summer only)**

Miami is home to a large number of Cuban exiles, who brought their professional backgrounds, culture, music, politics, and diversity. For the last 40+ years they have contributed to the growth and prosperity of Miami. This academic program focuses on what might happen when Castro is no longer in power and lessons learned from governments in transition.  
Specific courses include the following:  
- Cuba After Castro INS 365  
- History of Cuba: Cuban Revolution HIS 353

Students will be able to:  
- conduct research using the one-of-a-kind Cuban Heritage Collection  
- participate in special program activities throughout Miami and neighborhoods like Little Havana  
- become involved in a variety of cultural and educational activities hosted by Casa Bacardi
COURSE LISTING

Please note that courses are separated into Undergraduate and Graduate levels.

ARCHITECTURE ............................................ 540
Architecture

ARTS AND SCIENCES ........................................ 553
Aerospace Studies
Africana Studies
American Studies
Anthropology
Arabic
Art
Art History
Biochemistry and Molecular Biology
Biology
Chemistry
Classics
Computer Science
Ecosystem Science and Policy
English
Foreign Languages and Literatures
French
Geography
Geological Sciences
German
Greek
Health Science
Hebrew
History
International Studies
Italian
Japanese
Judaic Studies
Judaic Studies - Humanities
Latin
Latin American Studies
Liberal Studies
Marine Science
Mathematics
Microbiology and Immunology
Military Science
Philosophy
Physical Science
Physics
Portuguese
Psychology
Religious Studies
Sociology
Spanish
Theatre Arts
Women’s And Gender Studies

BUSINESS ADMINISTRATION. .................................................. 714
Accounting
Business Law
Computer Information Systems
Economics
Executive and Special Programs
Finance
Management
Management Science
Marketing
Political Science

COMMUNICATION ................................................................. 750
Communication
Communication: Advertising and Public Relations
Communication: Broadcasting and Broadcast Journalism
Communication: Journalism
Communication: Motion Pictures
Communication Studies
Visual Communication

EDUCATION ................................................................. 766
Educational and Psychological Studies
Exercise and Sport Science
Teaching and Learning

ENGINEERING ................................................................. 793
Biomedical Engineering
Civil, Architectural, and Environmental Engineering
Electrical and Computer Engineering
Industrial Engineering
Mechanical and Aerospace Engineering

INTERDISCIPLINARY ........................................ 835
Interdisciplinary Graduate Studies

MARINE AND ATMOSPHERIC SCIENCE ....................... 836
RSMAS—General
Applied Marine Physics
Marine and Atmospheric Chemistry
Marine Affairs and Policy
Marine Biology and Fisheries
Marine Geology and Geophysics
Marine and Physical Oceanography

MEDICINE ........................................................ 853
Epidemiology and Public Health
Physiology and Biophysics
Physical Therapy

MUSIC ............................................................ 861
Dance
Music Education and Therapy
Music: Instrumental Performance
Music: Keyboard Performance
Music Media and Industry
Musicology
Studio Music and Jazz
Music Theory and Composition
Music: Vocal Performance

NURSING AND HEALTH STUDIES ............................ 941
Healthcare Sciences
Health Studies
Nursing

INTERNATIONAL EXCHANGE AND LANGUAGE PROGRAMS ............... 951
Study Abroad Program

HONORS, FRESHMAN EXPERIENCE, FIRST YEAR SEMINARS, UNIVERSITY OF MIAMI EXPERIENCE ................................. 958
Honors Program
Freshman Experience
First Year Seminars in Arts
First Year Seminars in Literature
First Year Seminars in Natural Science
First Year Seminars in Philosophy/Religion
First Year Seminars in the Social Sciences
University of Miami Experience
ARC 101. Architecture Design I  
6 credits  
Offered Fall Semester  
The study of architecture as an intellectual and aesthetic discipline. Topics include concept, site, form and technique. Corequisite: ARC 111, 121.

ARC 102. Architecture Design II  
6 credits  
Offered Spring Semester  
Architectural response to shelter, space and setting requirements. Topics include programming, program analysis and design, anthropometrics, and architecture psychology. Prerequisite: ARC 101. Corequisite: ARC 112, 122.

ARC 110. Introduction to Architectural Design  
3 credits  
Offered First and Second Summer Sessions  
Introduction to the design process and the role of the architect in society. Building design, landscape architecture, urban planning, historic preservation, architectural theory and graphics are taught through drawing and model making in a studio setting. Open to non-architecture majors in college and high school students entering 10th, 11th and 12th grades interested in exploring the field of architecture. Prerequisite: Permission of instructor.

ARC 111. Drawing I  
3 credits  
Offered Fall Semester  
Exploration and expression of ideas through increased awareness and acquisition of visual and graphic vocabulary, stressing orthographic, oblique and conical projections; light shade and shadow; freehand sketching. Corequisite: ARC 101, 121.

ARC 112. Drawing II  
3 credits  
Offered Spring Semester  
Conical projection and freehand exploration of graphic expression and representation, studies in principles of composition, perspective, form, color, materials. Prerequisite: ARC 101, 111. Corequisite: ARC 102, 122.

ARC 121. Architecture and Culture  
3 credits  
Offered Fall Semester  
Architecture as an intellectual and aesthetic discipline. Focus on design theory, language, typology, image, form, context, and case studies. Corequisite: ARC 101, 111.

ARC 122. Architecture and Behavior  
3 credits  
Offered Spring Semester  
Those aspects of environmental psychology which affect architectural design. Studies in human behavior and the design process, application of psychological factors to the design of buildings and their environment. Prerequisite: ARC 101, 121. Corequisite: ARC 102, 122.

ARC 141. On-Site Survey of European Architecture and Urbanism  
3-6 credits  
Offered Spring Semester and First and Second Summer Sessions  
On site introduction to architecture and the city with a historical review of most European periods from classical to contemporary. Survey of European architectural and urbanistic precedents in important selected locations. Elective course open to all majors; lecture and seminar format.

ARC 171. Architecture: The Natural and the Manmade  
3 credits  
Offered By Announcement only  
A review of the relationship between mankind, the landscape, and architecture from American pre-history to the twentieth century.
ARC 191. Architecture Drawing
3 credits
Offered By Announcement only
Methods of graphic simulation for non-architecture majors, stressing orthographic, oblique and conical projections, and architectural graphic conventions: plan, elevation, section, perspective.

ARC 203. Architecture Design III
6 credits
Offered Fall Semester
Architectural response to natural environment and site requirements. Focus on site analysis and design, climate, access and circulation, landscape, relation to larger context. Prerequisite: ARC 102, Corequisite: ARC 223.

ARC 204. Architecture Design IV
6 credits
Offered Spring Semester
Building materials and structure as active constituents of architecture design. Focus on orientation, enclosure, low-energy responses, selection and assembly of construction materials, short and intermediate span structural systems. Prerequisite: ARC 203, 261. Corequisite: ARC 231.

ARC 213. Computing I
3 credits
Offered Fall and Spring Semesters
An introduction to new electronic design tools and technology available to architects today. Lectures on the history and future of computing in the profession. Prerequisite: ARC 102, 111, 112 or permission of instructor.

ARC 223. Architecture and the Environment
3 credits
Offered Fall Semester
Architectural response to natural environmental requirements. Focus on climate, control, natural energy use, ecosystems, energy flow, environmental intervention, case studies of indigenous buildings. Prerequisite: ARC 102, 122. Corequisite: ARC 203.

ARC 231. Building Structures
3 credits
Offered Spring Semester
The structural behavior and tectonic form of the basic elements of buildings. Topics include loads, stability, equilibrium, strength, and dimensions of structural form. Prerequisite: PHY 103. Corequisite: ARC 204.

ARC 261. Building Construction
3 credits
Offered Fall Semester
Material characteristics of enclosure and structural systems, case studies in traditional and modern building construction. Topics include properties of building materials; wood, masonry, concrete, steel and glass construction techniques; on-site and off-site processes; interior and exterior finishes; assemblies, detailing and building codes. Prerequisite: ARC 102. Corequisite: ARC 203.

ARC 267. History of Architecture I: Ancient, Medieval and Renaissance
3 credits
Offered Fall Semester
Studies of the history of architecture and urban design. Focus on religious and secular monuments and their settings, domestic architecture and infrastructure, regional constructional and compositional traditions from prehistory to the end of the sixteenth century. Corequisite: ARC 203.

ARC 268. History of Architecture II: Baroque through Contemporary
3 credits
Offered Spring Semester
Studies of the history of architecture and urban design. Focus on religious and secular monuments and their settings, domestic architecture and infrastructure, regional constructional and compositional traditions from the end of the sixteenth century through to the present. Corequisite: ARC 204.
ARC 292. Introduction to Architecture Design I
3 credits Offered Spring Semester
Survey of the architecture profession and introduction to architecture design for non-architecture majors. Role, opportunities, vocabulary, visual awareness, techniques and procedures of design. Prerequisite: ARC 191.

ARC 293. Introduction to Architecture Design II
3 credits Offered Fall Semester
Continuation of ARC 292 and an introduction to the interactions between architecture and the engineering disciplines for non-architecture majors. Theories of building and site design, technology as an integral component of design, program, site, climate and methodology. Prerequisite: ARC 191, 292.

ARC 294. Introduction to the Development of Architecture
3 credits Offered Fall Semester
Introduction to architecture for non-architecture majors. Vocabulary, themes, principles and processes of design, cultural, social, economic and technological influences demonstrated through historic examples. Prerequisite: Sophomore standing or permission of instructor.

ARC 301. Architecture Design
6 credits Offered First and Second Summer Sessions
Comprehensive building and site design for students transferring into the architecture program at third year level. Topics include human, environmental, cultural and technological factors. Prerequisite: Sophomore standing.

ARC 302. Theory of Classical Architecture and Urbanism
3 credits Offered Fall Semester
Theoretical basis of western classical architecture and urbanism from Greek and Roman times to today. Studies of classical theories of siting and urbanism, anthologies of classical works, and vernacular interpretations and main contemporary theories and works. Prerequisite: Permission of instructor, or ARC 204.

ARC 305. Architecture Design V
6 credits Offered Fall Semester
Environmental systems and structure as active constituents of architectural design. Topics include the integration of enclosure, structure, environmental and mechanical systems in intermediate and long span structures. Prerequisite: ARC 204. Corequisite: ARC 362, CAE 213.

ARC 306. Architecture Design VI
6 credits Offered Spring Semester
Government and finance as active constituents of architecture design. Topics include zoning regulations, building codes, principles of public health, safety and welfare, market and feasibility studies. Prerequisite: ARC 305. Corequisite: ARC 351, CAE 313.

ARC 323. On Site Study of Selected Architecture and Urbanism
3-6 credits Offered Spring Semester and First and Second Summer Sessions
On site study of specific architectural and/or urbanistic precedents at selected locations. Focus on specific period(s) and/or architect(s). Elective course open to all majors.
ARC 324. On Site Graphic Analysis of Selected Architecture and Urbanism  
3 credits Offering Spring Semester and First and Second Summer Sessions  
On site analysis and illustration of specific architectural and/or urbanistic precedents at selected locations. Diagrams, sketches, and drawings recording, analyzing and evaluating buildings and places. Focus on specific period(s) and/or architect(s). Elective course open to all majors.

ARC 351. Practice of Architecture  
3 credits Offering Spring Semester  

ARC 362. Building Systems I  
3 credits Offering Fall Semester  
Environmental and Safety Systems. Topics include mechanical - HVAC and conveyors; plumbing - fixtures and pipes; safety systems - fire safety and emergency and signal systems. Prerequisite: ARC 261, PHY 103. Corequisite: ARC 305.

ARC 363. Building Systems II  
3 credits Offering Spring Semester  
Principles and applications of light and acoustics. Topics include natural and artificial light - planning for sunlight, problems and solutions for interior and exterior illumination; sound - properties, problems and solutions in new and existing spaces. Principles and applications of electrical equipment and wiring design. Prerequisite: ARC 362, PHY 103. Corequisite: ARC 306.

ARC 371. Ancient Architecture  
3 credits Offering Fall Semester  
History of architecture and human settlements. Western European prehistory, Egypt, Mesopotamia, Persia, Aegean and Mediterranean, Greece, Rome. Prerequisite: HIS 131 and 132, ARC 204 or permission of instructor.

ARC 372. Selected Topics in World Architecture  
3 credits Offering Fall Semester  
History of architecture and human settlements. Islamic Near East, Spain, North Africa, Hindu and Buddhist India, Nepal, S. E. Asia, China, Japan, Pre-Columbian America. Prerequisite: HIS 131 and 132, ARC 204 or permission of instructor.

ARC 373. Early Christian, Byzantine, and Medieval Architecture  
3 credits Offering Fall Semester  
History of architecture and human settlements. Early Christian and Byzantine architecture in Italy, the Near East, Greece, North Africa, Eastern Europe, Medieval architecture in Western Europe. Prerequisite: HIS 131 and 132, ARC 204 or permission of instructor.

ARC 374. Renaissance Architecture  
3 credits Offering Fall Semester  
History of architecture and human settlements. Renaissance and Baroque architecture in Italy, France, Spain and Portugal, Great Britain, Austria, Germany, and neighboring countries. Prerequisite: HIS 131 and 132, ARC 204 or permission of instructor.
ARC 382. Architecture and Culture in Italy
3 credits
Offered Spring Semester
A cultural and historical framework in preparation for participation in the Rome program. A range of topics, including architecture, art, history, cinema, literature and politics presented by University faculty from a variety of disciplines. Required for participation in the Rome Program. Prerequisite: Permission of instructor.

ARC 390. History of Cities
3 credits
Offered Fall Semester
Historical overview of the origin of cities and the development of cities in the East, West, and New World. Focus on the nature of the industrial revolution and the development of the industrial city and contemporary urban settlements. Prerequisite: ARC 204.

ARC 407. Architecture Design VII
6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Elective component: student and faculty select areas of in-depth study. Topics include building types, environment, energy, community design. Prerequisite: ARC 503, 306, 231, CAE 213.

ARC 408. Architecture Design VIII
6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Elective component: student and faculty select areas of in-depth study. Topics include building types, environment, energy, community design, etc. Prerequisite: ARC 407.

ARC 452. Management of Professional Practice
3 credits
Offered Fall and Spring Semesters
Overview of the practice and the profession, legal and ethical concerns, business types and management practices, traditional and non-traditional practices and services, contracts and contractual relationships. Prerequisite: ARC 306.

ARC 475. Colonial Architecture
3 credits
Offered Fall Semester
History of architecture and human settlements. Colonial Architecture from the 16th through the 19th centuries in North and South America, the Caribbean, India and Africa. Prerequisite: ARC 204.

ARC 476. 19th and 20th Century Architecture
3 credits
Offered Fall Semester
History of architecture and human settlements. America and Europe during the 19th and 20th centuries; cultural, technological and theoretical development. Prerequisite: ARC 204 or 292, 294 or 371 or 372 or 373 or permission of the instructor.

ARC 481. Special Problems
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Group or individual investigations of significant architectural issues, offered by special arrangement only. Prerequisite: Permission of Program Director.

ARC 482. Special Problems
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Group or individual investigations of significant architectural issues, offered by special arrangement only. Prerequisite: Permission of Program Director.
ARC 483. Special Problems
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Group or individual investigations of significant architectural issues, offered by special arrangement only. Prerequisite: Permission of Program Director.

ARC 501. Architecture Design and Theory I
6 credits
Offered Fall Semester
Cultural, human and environment component and architectural responses to these: Social and aesthetic concepts, architectural psychology, climatic principles, programming analysis and design. Prerequisite: Graduate standing.

ARC 502. Architecture Design and Theory II
6 credits
Offered Spring Semester
Technology component; materials, structure, and environmental control systems as a framework for architectural design. Construction materials and methods, structural systems, mechanical systems. Prerequisite: ARC 501.

ARC 503. Architectural Design and Theory III
6 credits
Offered Fall Semester
Legal and economic component; government and finances as active constituents of architecture design. Zoning regulations, building codes, principles of public health, safety and welfare, market and feasibility studies. Prerequisite: ARC 502.

ARC 509. Architecture Design IX
6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Elective component: student and faculty select areas of in-depth study. Topics include building types, environment, energy, community design, etc. Prerequisite: ARC 408.

ARC 510. Architecture Design X
6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Elective component: student and faculty select areas of in-depth study. Topics include building types, environment, energy, community design, etc. Prerequisite: ARC 509.

ARC 511. Drawing
3 credits
Offered Fall Semester
Graphic representation and exploration of visual ideas through increased awareness of visual and graphic vocabulary, stressing projections, light, shade and shadow, perspective, and freehand sketching. Prerequisite: Graduate standing and permission of instructor.

ARC 512. Advanced Visual Analysis
3 credits
Offered By Announcement only
Drawing as a means of analyzing and recording visual experience. Composition, form, light, color and drawing as a primary device in the mental registration of visual experience. Prerequisite: ARC 204, 112.

ARC 513. Computing
3 credits
Offered Spring Semester
An introduction to new electronic design tools and technology available to architects today. Lectures on the history and future of computing in the profession. Prerequisite: Graduate standing and permission of instructor.

ARC 514. Michelangelo
3 credits
Offered Fall Semester
Drawing as a form of research across mediums to understand historical research and interpretation of Michelangelo’s work. Prerequisite: ARC 306, 112, 213 or permission of the instructor.
ARC 515. Computer Modeling
3 credits  
Offered Fall and Spring Semesters
Three-dimensional, computer modeling, and rendering. Lecture, problem solving exercises and laboratory. Prerequisite: ARC 213, 513 or permission of the instructor.

ARC 516. Architectural Watercolor Renderings
3 credits  
Offered Fall Semester
This course will use freehand drawing and watercolor painting as a vehicle to study and record the urban and architectural conditions of Coral Gables and other South Florida sites. Particular emphasis will be placed on the analytical potential of sketches (recording space, light, surfaces and color). Prerequisite: ARC 306 or permission of the instructor.

ARC 517. Construction Documents
3 credits  
Offered Fall Semester
Working drawings and specifications. Form, content and role of constituent parts of working drawings and specifications by using case studies. Prerequisite: ARC 204 and 261.

ARC 518. Documentation of Historic Architecture
3 credits  
Offered First and Second Summer Sessions
Principles of preservation and restoration, research methods, measured drawings, surveying methods, case studies. Prerequisite: ARC 204.

ARC 519. Architecture and Color
3 credits  
Offered First and Second Summer Sessions
This course focuses on the theory and practice of color and its application to architectural design. Topics include color history from Newton through Alber, the relationship between color practice in science versus art, and the discipline of color in architecture from the Neoclassical movement through the Modern Movement. Prerequisite: ARC 306 or permission of the instructor.

ARC 520. Computer Modeling II
3 credits  
Offered Spring Semester
Advanced three-dimensional computer modeling and rendering. Lecture, problem solving exercises and laboratory. Prerequisite: ARC 213 or 513 and 515 or permission of the instructor.

ARC 521. The Architecture of American Cities
3 credits  
Offered Fall Semester
Study of theories on relationships between architectural objects and urban space based on works which include Sitte, Rossi, and Norberg-Schulz. Application of selected theoretical principles to the contemporary American cities. Prerequisite: ARC 374.

ARC 522. Architecture Psychology
3 credits  
Offered By Announcement only
Environmental behavior concepts and their application to an architecture focused on designing for people. Fundamental principles covered include proxemics, privacy, personalization, territoriality, defensible space, social interaction, aesthetics, symbolism, and spatial perception, reasons for individual and cultural differences in spatial actions are outlined. Psychological and social concepts are applied to the process of design and to residential environments, neighborhoods, and public spaces. Prerequisite: Permission of instructor.

ARC 523. Interior Architecture Design
3 credits  
Offered Fall Semester
Principles and technical components of interior design. Topics include activity, analysis, finishes, furniture, fixture, lighting, and acoustics. Prerequisite: ARC 204 or permission of the instructor.
ARC 524. **Selected Topics in Interior Architecture Design**  
3 credits  
Offered Spring Semester  
Principles and technical components of interior design. Topics include interior volumetrics, finishes, furnishings and lighting. Prerequisite: ARC 204 or permission of the instructor.

ARC 525. **Landscape Arch Design I**  
3 credits  
Offered Fall and Spring Semesters  
Analysis and design of landscape spaces. Studies in historical precedent, gardens, parks, plazas, squares and response to architectural context. Prerequisite: ARC 204 or permission of the instructor.

ARC 526. **Landscape Arch Design II**  
3 credits  
Offered By Announcement only  
Analysis and design of landscape spaces. Topics include ecological principles, landforms and plant materials. Prerequisite: ARC 204 or permission of the instructor.

ARC 527. **Architecture Photography**  
3 credits  
Offered By Announcement only  
Photography with emphasis on architectural subjects. Introduction to visual principles, photographic equipment, materials, and techniques. Prerequisite: ARC 204.

ARC 528. **Historic Preservation**  
3 credits  
Offered Spring Semester  
Basic design principles for the rehabilitation of historic buildings. Evaluating character-defining details; significance analysis; context of setting issues within historic districts; applying the Secretary of the Interior's Standards for rehabilitation. Prerequisite: ARC 204.

ARC 529. **Research in Design-Methods and Procedures**  
3 credits  
Offered Fall and Spring Semesters  
Application of research methods and procedures to design issues. Historical, descriptive, analytic, experimental research methods; tools for data manipulation and communication. Prerequisite: Permission of Program Director.

ARC 530. **Architectural Principles of Harmony**  
3 credits  
Offered Fall and Spring Semesters  
The study of the essential elements of architectural design including form, proportion, light, color, ornamentation and intention. Referring to historic precedents, students will investigate the relationship between these elements through the spectrum of harmonic ratios. Emphasis on understanding Greek and Roman principles of design through analytical drawing. Prerequisite: ARC 382.

ARC 531. **Building Structures I**  
3 credits  
Offered Spring Semester  
The structural behavior and tectonic form of the elements of buildings. Topics include loads, stability, equilibrium, strength, and the dimensions of structural form. Prerequisite: PHY 103, graduate standing or permission of instructor.

ARC 532. **Building Structures II**  
3 credits  
Offered Spring Semester and First Summer Session  
The structural behavior of simple frame structures. Topics include techniques to determine basic system layout and preliminary dimensioning of key subsystems and members. Prerequisite: ARC 531.

ARC 533. **Building Structures III**  
3 credits  
Offered Fall Semester and Second Summer Session  
The structural behavior of complex structures. Topics include prestressed systems, waffle and space trusses, curved structures and longspan buildings. Prerequisite: ARC 532.
ARC 534. **The Palazzo in Italian Architecture**  
**3 credits** Offered Fall and Spring Semesters  
Study of the development of the Renaissance and Baroque palazzo in Rome and other important centers of art and culture. Emphasis on the socio-political context. Prerequisite: ARC 384.

ARC 535. **Historic Italian Urbanism**  
**3 credits** Offered Fall and Spring Semesters  
Study of Italian cities and towns from medieval to contemporary times, including a comparative analysis of history and form. Prerequisite: ARC 382.

ARC 536. **Italian Gardens**  
**3 credits** Offered Fall and Spring Semesters  
Study of Italian garden design during the Renaissance, Baroque and Mannerist periods. Emphasis on historical and political context. Prerequisite: ARC 382.

ARC 537. **Research in Rome**  
**3 credits** Offered Fall and Spring Semesters  
An exploration of Roman history, architecture and urban form through lectures, on site study and drawing assignments. Emphasis on chronological and spatial sequence of development. Prerequisite: ARC 382.

ARC 541. **Seminar on Town Design**  
**3 credits** Offered Fall Semester  
Introduction to the lexicon of urbanism; analytical presentations of the concepts of: region, town, neighborhood, corridor, district, and building type; interdisciplinary presentations, review, and criticism of current town and urban design projects.

ARC 542. **Seminar on Housing**  
**3 credits** Offered By Announcement only  
Introduction to domestic building typology; exploration of the concepts of low, medium, and high density housing with attention to social, environmental, and economic issues; presentations of current case studies. Prerequisite: ARC 306 or permission of instructor.

ARC 543. **Seminar on Retrofit of Suburbia**  
**3 credits** Offered By Announcement only  
Introduction to the critical reconstitution of the city; theory and history of the concepts of revitalization and redevelopment; presentations, review, and criticism of current case studies. Prerequisite: ARC 306 or permission of instructor.

ARC 544. **The Architecture of Palladio**  
**3 credits** Offered Fall Semester  
On site study of the architecture and urbanism of Andrea Palladio. Emphasis on the artistic precedents of the Veneto Region. Prerequisite: Permission of the instructor.

ARC 545. **Urban Composition**  
**3 credits** Offered By Announcement only  
Survey and analytical review of urban rooms as the vessel of human activity in urban culture. Study of proportional and compositional aspects of urban rooms together with economic, social, and cultural factors. Readings and discussion format. Prerequisite: ARC 306, 502, or permission of instructor.

ARC 546. **Studies of Havana**  
**3 credits** Offered Spring Semester  
Analysis of the physical structure of a major city and its environments including an exploration of its history and iconographic themes, mapping and building studies.
ARC 547. Architecture and Urban Identity
3 credits
Offered By Announcement only
Study of the relationship between architecture and urbanism focusing on the ways by which architecture provides urban identity and image of place. Case studies relating monuments, fabric and urban plans to their culture, time and place. Lecture and seminar format. Prerequisite: ARC 306 or permission of instructor.

ARC 548. Seminar in Community Development
3 credits
Offered By Announcement only
Study of the contemporary context for the development of the physical environment. Examination of public, private and third sector implementation of building and community design. Format: guest speakers, readings, discussions, and seminar. Prerequisite: ARC 305, 502, or permission of instructor.

ARC 550. Professional Lecture Series
3 credits
Offered Fall and Spring Semesters
Exposure to the various professional disciplines in South Florida that make contributions to the design process. Case study analysis and evaluation of current building project, from time of initial formulation through completion, including research, diagrammatic studies, site visits and lectures.

ARC 551. Contemporary Theories of Architecture
3 credits
Offered By Announcement only
Theoretical basis of modern architecture and different present currents and movements. Agrarianism, technism, orthodoxy, brutalism, scientism, revivalism, consumerism, rationalism, classicism. Prerequisite: ARC 204 or permission of instructor.

ARC 553. Structural Design Theory
3 credits
Offered By Announcement only
Relationship of structural systems to architectural design. Case studies in theories of structure, form and construction. Prerequisite: ARC 306 or CAE 313.

ARC 554. Architecture of South Florida
3 credits
Offered By Announcement only
History of architecture and human settlements. Studies of significant architectural landmarks and urban design of the South Florida Region, chronological growth of Miami, Miami Beach, Coral Gables, Key West and Palm Beach. Prerequisite: ARC 204 or permission of the instructor.

ARC 555. Design and Fabrication Techniques in Wood: The Lamp
3 credits
Offered Spring Semester
Design, construction and detailing of wood as applied to furnishings and interiors. Focus: lamps and illumination. Workshop based course including research, exercises, measuring, documentation and a final project.

ARC 556. Design and Fabrication Techniques in Wood - The Clock
3 credits
Offered Fall Semester
Design, construction and detailing of wood as applied to furnishings and interiors. Focus: Traditional Clock and Case Design. Workshop based course including research, exercises, measuring, documentation and a final project.

ARC 557. Design and Fabrication Techniques: Carved Panels
3 credits
Offered First and Second Summer Sessions
Design, construction and detailing of wood as applied to furnishings and interiors. Focus: low and high relief carved wood panels. Workshop based course including research, exercises, measuring, documentation and a final project.
ARCP 558. Theories of Landscape Architecture  
3 credits  
Offered Fall Semester  
Leading theories of landscape architecture which have influenced current considerations of nature, landscape and design. Prerequisite: ARC 204 or permission of instructor.

ARCP 559. Computer Aided Presentation Graphics  
3 credits  
Offered By Announcement only  
Introduction to computer aided presentation graphics from the perspective of the design professional. Topics include: desktop publishing, image processing, and desktop presentations. Prerequisite: ARC 213 or permission of instructor.

ARCP 561. Building Construction  
3 credits  
Offered Fall Semester  
Material characteristics of enclosure and structural systems, case studies in traditional and modern building construction. Topics include properties of building materials; wood, masonry, concrete, steel and glass construction techniques; on-site and off-site processes; interior and exterior finishes; assemblies, detailing and building codes. Prerequisite: Graduate standing or permission of instructor.

ARCP 562. Building Systems I  
3 credits  
Offered Fall Semester  
Environmental and Safety Systems. Topics include mechanical - HVAC and conveyors; plumbing - fixtures and pipes; electrical - equipment and wiring design; safety systems - fire safety and emergency and signal systems. Prerequisite: ARC 561 or permission of instructor.

ARCP 563. Building Systems II  
3 credits  
Offered Spring Semester  
Principles and applications of light and acoustics. Topics include natural and artificial light - planning for sunlight, problems and solutions for interior and exterior illumination; sound - properties, problems and solutions in new and existing spaces electrical equipment and wiring design. Prerequisite: ARC 562 or permission of instructor.

ARCP 564. Building Systems III  
3 credits  
Offered By Announcement only  
Direction, control and coordination of construction project activities. Topics include inspection, reporting, recording, safety standards. Prerequisite: ARC 363 or 563 or permission of instructor.

ARCP 567. History of Architecture I: Ancient, Medieval and Renaissance  
3 credits  
Offered Fall Semester  
Studies of the history of architecture and urban design. Focus on religious and secular monuments and their settings, domestic architecture and infrastructure, regional constructional and compositional traditions from prehistory to the end of the sixteenth century. Prerequisite: Graduate standing. Corequisite: ARC 501.

ARCP 568. History of Architecture II: Baroque through Contemporary  
3 credits  
Offered Spring Semester  
Studies of the history of architecture and urban design. Focus on religious and secular monuments and their settings, domestic architecture and infrastructure, regional constructional and compositional traditions from the end sixteenth century through to the present. Prerequisite: Graduate standing. Corequisite: ARC 502.

ARCP 569. Directed Readings  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
A structured program of readings and essays organized by the student and his/her graduate supervisor constituting a preparation for graduate research in the student’s chosen area of interest. Prerequisite: Permission of Program Director.
ARC 570. Modern Architecture
3 credits
Offered Spring Semester
History of architecture, landscape, and city design in the modern era.

ARC 571. Ancient Architecture
3 credits
Offered Fall Semester
History of architecture and human settlements. Western European prehistory, Egypt, Mesopotamia, Persia, Aegean and Mediterranean, Greece, Rome. Prerequisite: Graduate standing or permission of instructor.

ARC 572. Selected Topics in World Architecture
3 credits
Offered Fall Semester
History of architecture and human settlements. Islamic Near East, North Africa, Hindu and Buddhist India, Nepal, S. E. Asia, China, Japan, Pre-Columbian America. Prerequisite: Graduate standing or permission of instructor.

ARC 573. Early Christian, Byzantine, and Medieval Architecture
3 credits
Offered Fall Semester
History of architecture and human settlements. Early Christian and Byzantine architecture in Italy, the Near East, Greece, North Africa, Eastern Europe, Medieval architecture in Western Europe. Prerequisite: Graduate standing or permission of instructor.

ARC 574. Renaissance Architecture
3 credits
Offered Fall Semester
History of architecture and human settlements. Renaissance and Baroque architecture in Italy, France, Spain and Portugal, Great Britain, Austria, Germany, and neighboring countries. Prerequisite: Graduate standing or permission of instructor.

ARC 575. Colonial Architecture
3 credits
Offered Fall Semester
History of architecture and human settlements. Iberian and British Colonies from the 16th through the 19th centuries: North and South America, Caribbean, India and Africa. Prerequisite: Graduate standing or permission of instructor.

ARC 576. 19th and 20th Century Architecture
3 credits
Offered Fall Semester
History of architecture and human settlements. America and Europe during the 19th and 20th centuries; cultural, technological and theoretical development. Prerequisite: Graduate standing or permission of instructor.

ARC 577. The Architecture of Alvar Aalto
3 credits
Offered Fall Semester
An examination of the architecture of Alvar Aalto through the analysis of selected buildings. Prerequisite: Permission of the instructor.

ARC 578. Italian Rationalist Architecture
3 credits
Offered By Announcement only
History of Italian architecture and urban design between 1914 and 1950: cultural, technological, and theoretical developments; relationship between architecture, politics and propaganda; related survey of the period in other countries (France, German, Soviet Union). Prerequisite: ARC 305 or permission of the instructor.

ARC 579. History of Architecture: The Natural and the Man-Made
3 credits
Offered By Announcement only
A review of the relationship between man, the landscape, and architecture from pre-history to the twentieth century. Prerequisite: Graduate standing.
ARC 584. **Special Problems**  
1-3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Group or individual investigations of significant architectural issues, offered by special arrangement only. Prerequisite: Permission of Program Director.

ARC 585. **Special Problems**  
1-3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Group or individual investigations of significant architectural issues, offered by special arrangement only. Prerequisite: Permission of Program Director.

ARC 586. **Special Problems**  
1-3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Group or individual investigations of significant architectural issues, offered by special arrangement only. Prerequisite: Permission of Program Director.

ARC 590. **History of Cities**  
3 credits  
*Offered Fall and Spring Semesters*

Historical overview of the origin of cities and the development of cities in the East, West, and New World. Focus on the nature of the industrial revolution and the development of the industrial city and contemporary urban settlements. Prerequisite: Graduate standing or permission of instructor.

ARC 592. **Computing in Design Practice**  
3 credits  
*Offered Fall Semester*

Introduction to computer applications specific to the design professional practice and management of computing resources in a design firm. Prerequisite: ARC 213 or 513 or permission of instructor.

ARC 593. **Computer Animation**  
3 credits  
*Offered Spring Semester*

Explores the use of computer animation and advanced visualization techniques in architecture with emphasis on texture and lighting, spatial choreography and story-boarding. Prerequisite: ARC 593 or 596 or permission of instructor.

ARC 594. **Geographic Information Systems in Urban Design**  
3 credits  
*Offered Spring Semester*

Exploration of Geographic Information Systems (GIS) in urban design. Principles of GIS and their application to spatial analysis, data management and visualization. Prerequisite: ARC 213 or 513 or permission of instructor.

ARC 595. **Database Management Systems and Programming**  
3 credits  
*Offered Fall Semester*

Introduction to principles of database management and programming. Instruction of a selected database management program and a programming language. Prerequisite: Graduate standing or permission of instructor.

ARC 596. **Interactive Multimedia in Design**  
3 credits  
*Offered Spring Semester*

Integration of text, video, sound, and computer graphics to create an interactive electronic information medium. Prerequisite: ARC 213 or 513 or permission of instructor.

ARC 597. **Computer Visualization**  
3 credits  
*Offered Spring Semester*

Focus: Explores the use of various advanced visualization techniques in design. Topic will change from semester to semester. Format: lecture, laboratory and exercises. Prerequisite: ARC 593 or 596 or permission of instructor.
ARTS AND SCIENCES
Aerospace Studies

AIS 101. The Foundations of the United States Air Force I
1 credit Offered Fall Semester
Survey course designed to introduce students to the United States Air Force and encourage participation in Air Force Reserve Officer Training Corps (AFROTC). Featured topics include: overview of AFROTC, special programs offered through AFROTC, mission and organization of the Air Force, brief history of the Air Force, introduction to leadership, Air Force officer career opportunities, and an introduction to communication skills. Leadership Laboratory is mandatory for AFROTC cadets and complements this course by providing cadets with followership experiences.

AIS 102. The Foundations of the United States Air Force II
1 credit Offered Spring Semester
Survey and follow-on course to AIS 101 designed to introduce students to the United States Air Force and encourage participation in Air Force Reserve Officer Training Corps (AFROTC). Featured topics include: introduction to leadership, Air Force Core Values, introduction to interpersonal communication and team building, and a continuation of communication skills. Leadership Laboratory is mandatory for AFROTC cadets and complements this course by providing cadets with followership experiences.

AIS 150. Leadership Laboratory
0 credits Offered Fall and Spring Semesters
Leadership Laboratory (LLAB) is a dynamic and integrated grouping of leadership developmental activities designed to meet the needs and expectations of prospective Air Force second lieutenants and complement the AFROTC academic program. It is a student planned, organized, and executed practicum conducted under the supervision of the detachment commander and commandant of cadets.

AIS 201. The Evolution of USAF Air and Space Power I
1 credit Offered Fall Semester
Course designed to examine general aspects of air and space power through a historical perspective. Covers time period from first balloons and dirigibles to space-age global positioning systems of the Afghan/Iraqi Wars. Examines several fundamental truths associated with war in the third dimension: e.g. Principles of War and Tenets of Air and Space Power. Leadership Laboratory is mandatory for AFROTC cadets and complements this course by providing cadets with followership experiences.

AIS 202. The Evolution of USAF Air and Space Power II
1 credit Offered Spring Semester
Continuation of AIS 201 which provides students with knowledge level understanding for general element and employment of air and space power. Discusses the importance of Air Force Core Values with use of operational examples and historical Air Force leaders. Continues to develop communication skills. Leadership Laboratory is mandatory for AFROTC cadets and complements this course by providing cadets with followership experiences.

AIS 301. Air Force Leadership Studies I
3 credits Offered Fall Semester
Study of leadership, management fundamentals, professional knowledge, and communication skills required of Air Force junior officers. Case studies are used to examine Air Force leadership and management situations. Mandatory Leadership Laboratory complements this course by providing advanced leadership experiences in officer-type activities.
AIS 302. Air Force Leadership Studies II
3 credits
Offered Spring Semester
Continuation of AIS 301 and is a study of Air Force personnel and evaluation systems, leadership ethics, and communication skills required of Air Force junior officers. Case studies are used to examine Air Force leadership and management situations. Mandatory Leadership Laboratory complements this course by providing advanced leadership experiences in officer-type activities.

AIS 401. National Security Affairs/Preparation for Active Duty I
3 credits
Offered Fall Semester
Examines national security process, regional studies, and Air Force doctrine. Special topics of interest focus on civilian control of military and current issues affecting military professionalism. Continued emphasis is given to refining communication skills. Mandatory Leadership Laboratory complements this course by providing students advanced leadership experiences.

AIS 402. National Security Affairs/Preparation for Active Duty II
3 credits
Offered Spring Semester
Continuation of AIS 401 which examines regional studies and advanced leadership ethics. Special topics of interest focus on the military as a profession, officership, military justice, preparation for active duty, and current issues affecting military professionalism. Continued emphasis is given to refining communication skills. Mandatory Leadership Laboratory complements this course by providing students advanced leadership experiences.

Africana Studies

AAS 250. Introduction to African-American Studies
3 credits
Offered Fall Semester
Critical survey of the experiences of African-Americans in American society with emphasis on the social, cultural, political, psychological and economic dimensions of Black life.

AAS 290. Special Topics
3 credits
Offered By Announcement only
Content varies by semester. Prerequisite: Three credits in Caribbean, African and Afro-American Studies.

AAS 350. Black Leadership in the U.S.
3 credits
Offered Fall and Spring Semesters
Black leaders and leadership organizations. Emphasis on their role in overcoming oppression and barriers to advancement. Prerequisite: Three credits in AAS or permission of instructor.

AAS 490. Senior Seminar in African American Studies
3 credits
Offered Spring Semester
Prerequisite: AAS 250, nine other credits in African American Studies and junior standing or permission of instructor.

American Studies

AMS 101. Introduction to American Studies
3 credits
Offered Fall and Spring Semesters
An interdisciplinary approach to American Studies with attention to a particular theme or period. (Satisfies Social Science core requirement).

AMS 301. Topics in American Studies
3 credits
Offered Fall and Spring Semesters
Content varies by semester. Prerequisite: AMS 101 or permission of instructor.
AMS 399. Independent Study
1-3 credits
Offered By Announcement only
By arrangement with instructor; content varies. Prerequisite: AMS 101 and permission of instructor.

AMS 401. Seminar in American Studies
3 credits
Offered Fall and Spring Semesters
Content varies by semester. Prerequisite: Six credits in AMS courses.

AMS 499. Senior Thesis
3 credits
Offered By Announcement only
Thesis to be a documented study of a topic in American culture written under the direction of a member of the American Studies faculty. Prerequisite: AMS 401, senior status, and approval of Program Director.

Anthropology

APY 101. Introduction to Anthropology
3 credits
Offered Fall and Spring Semesters
A broad overview of archaeology, cultural anthropology, biological anthropology, and linguistics.

APY 201. Principles of Archaeology
3 credits
Offered Fall and Spring Semesters
History, methods, and theory of archaeology with an outline of the main characteristics of the prehistoric record throughout the world.

APY 202. Principles of Cultural Anthropology
3 credits
Offered Fall and Spring Semesters
Cultural anthropology, including such topics as economics, politics, kinship and families, health systems, religion, and personality.

APY 203. Principles of Physical Anthropology
3 credits
Offered Fall and Spring Semesters
The origin and biological development of the human species; human evolution explored by means of the fossil record of prehistoric population; differentiation and adaptation of contemporary populations in various world environments; the comparison of humans and other primates with respect to biological and behavioral variability.

APY 204. Principles of Linguistic Anthropology
3 credits
Offered Fall Semester
Human linguistic principles of phonology, morphology, and grammar to construct a framework for understanding the operation of language in cultural context. The functions of human language in structuring ideological, economic, and political realms.

APY 210. Physical Anthropology and Society
3 credits
Offered By Announcement only
An evolutionary analysis of the human species from a social science perspective. History, methods, major theories, and key findings of Physical Anthropology.

APY 301. World Prehistory
3 credits
Offered Fall Semester
The global prehistoric record, with emphasis on the development of social complexity and ancient states. Prerequisite: APY 201.
APY 306. Human Evolution
3 credits
Offered Spring Semester
The macroevolution of humans using the fossil record of vertebrates, including the development of uniquely human behavioral and anatomical adaptations, and of diversity in living populations. Prerequisite: APY 201, OR 203, OR permission of the instructor.

APY 307. Human Adaptation
3 credits
Offered Spring Semester
Human biological adaptation to different environments and stress is examined anthropologically within an evolutionary framework. Mechanisms of adaptation to temperature extremes and other climatic variables, high altitude, disease, nutritional stress, urbanization, extraterrestrial conditions, and other environmental challenges are described in relation to biological and behavioral variations among human populations. The limits of human performance and human adaptive potential in the present and future are explored. Prerequisite: Sophomore standing and any one of the following: APY 201, 202, 203: BIL 101, 109.

APY 308. Human Variation: Anthropology of Race
3 credits
Offered Fall Semester
Human biological diversity is viewed historically within a cross-cultural, evolutionary framework. Patterns of variation in human morphological, anatomical, physiological, biochemical, genetic, and behavioral characteristics are investigated in peoples living in different environments throughout the world. Observed differences among human populations are discussed with reference to traditional theories of racial taxonomy and modern perspectives in human classification. Prerequisite: Sophomore standing and any one of the following: APY 201, 202, 203: BIL 101, 109.

APY 309. Evolution of Human Behavior
3 credits
Offered Spring Semester
Origins and evolution of human behaviors as determined by fossil and archaeological evidence, primate research, and the cross-cultural analysis of behavioral variations in contemporary societies. The interaction of human biological and behavioral evolution. Prerequisite: APY 201 or 202 or 203 and three additional credits in Anthropology.

APY 310. Primate Behavior and Adaptation
3 credits
Offered Spring Semester
The taxonomy, distribution, anatomy, social behavior and adaptations to habitats of human and non-human primates as seen from an evolutionary perspective. Prerequisite: APY 203 or BIL 150 or permission of instructor.

APY 315. Folk and Alternative Medicine
3 credits
Offered Spring Semester
Historical and cultural backgrounds of health therapies, including theoretical bases of traditional ethnomedical, nonwestern, and complementary medical systems. Prerequisite: Any 200 level Anthropology course, OR any 300 level Nursing course, OR permission of the instructor.

APY 326. Paleolithic Cultures
3 credits
Offered By Announcement only
The emergence of technology, the process of domestication, and the development of symbolic systems. Prerequisite: APY 201 and three additional credits in Anthropology.
APY 330. Bronze Age Cultures
3 credits
Offered By Announcement only
An analysis of the cultural milieu of Bronze Age Greece, the Aegean Islands, and Crete from the introduction of copper and bronze down to the introduction of iron and the ethnic invasions. Archaeological history of the sites, artifact examination and recent developments in decipherment of Linear B script. Prerequisite: APY 201 and three additional credits in Anthropology.

APY 332. Old World Archaeology
3 credits
Offered By Announcement only
Pre-Classical Greek cultures following the Bronze Age, emphasizing archaeological excavations, general methodology, artifact analysis, and cultural diffusion route theories. Prerequisite: APY 201 and three additional credits in Anthropology.

APY 333. Ancient Celtic Society
3 credits
Offered By Announcement only
Early Celtic culture and technology as reflected in the Iron Age archaeological remains of Europe. Prerequisite: APY 201 AND three additional credits in Anthropology.

APY 340. Marine Archaeology
3 credits
Offered Spring Semester
Location, excavation, and study of submerged sites. Prerequisite: APY 201 or permission of instructor.

APY 345. Ancient Civilizations of Mesoamerica
3 credits
Offered Spring Semester
Major pre-Columbian cultures of Mesoamerica, from Olmec to Aztec periods, with emphasis on ancient Maya. Prerequisite: APY 201 and three additional credits in Anthropology.

APY 350. Ancient Cultures of the New World
3 credits
Offered By Announcement only
The prehistoric record of the Americas, emphasizing the belief systems and social development of ancient chiefdoms and states. Prerequisite: APY 201 AND three additional credits in Anthropology.

APY 355. Ancient People of North America
3 credits
Offered By Announcement only
The archaeological record of North America prior to European contact, exploring the relationship of art and oral history to material remains. Prerequisite: APY 201 AND three additional credits in Anthropology.

APY 356. Florida Archaeology
3 credits
Offered By Announcement only
Archaeological remains of ancient cultures in the Florida peninsula, from initial occupation to the Colonial Period. Prerequisite: APY 201 AND three additional credits in Anthropology.

APY 360. Anthropology of Food
3 credits
Offered Fall Semester
Evolution of human diet, basic nutrition, food taboos, effects of domestication, effects of diet on skeletal remains, analysis of your own food habits, and the impact of certain foods on our biocultural evolution of our species. Prerequisite: Any 200 level Anthropology course or permission of instructor.

APY 376. Economic Anthropology
3 credits
Offered By Announcement only
The structure and operation of the small-scale economy in the social system is examined. The interrelationship between social and economic systems, and the formation of non-market economies. Prerequisite: APY 202 and three additional credits in Anthropology.
APY 377. Anthropology of Political Systems and Discourse  
3 credits  
Offered By Announcement only  
Political systems and processes in tribal societies, with special emphasis on dispute settlement, the organization of political control, and the use of oratory. Case studies from Latin American and African examples. Prerequisite: APY 202 and three additional credits in Anthropology.

APY 385. Caribbean Cultures  
3 credits  
Offered Spring Semester  
Caribbean societies, including ethnic diversity, production and exchange, domestic organization, and belief systems. Prerequisite: APY 202 and three additional credits in Anthropology.

APY 386. Psychological Anthropology  
3 credits  
Offered Fall Semester  
The interaction between personality and cultural settings. Topics include cross-cultural child rearing and enculturation, behavioral development and adjustment, “deviance,” and ethnopyschiatry. Prerequisite: APY 202 OR PSY 110 and three additional credits in either Anthropology or Psychology.

APY 387. Cultural Evolution  
3 credits  
Offered Spring Semester  
Evolution of social systems and technologies, from hunting and gathering bands through industrial states. Prerequisite: APY 202 and three additional credits in Anthropology.

APY 390. African Cultures  
3 credits  
Offered By Announcement only  
Political and domestic organization, production, exchange, and belief systems of traditional African cultures, and the changes caused by increasing urbanization and modernization. Prerequisite: APY 202 and three additional credits in Anthropology.

APY 391. Gender in Ancient Cultures  
3 credits  
Offered By Announcement only  
A cross-cultural examination of the role gender played in ancient complex culture areas, such as Mesoamerica, Mesopotamia, and the Mediterranean, with emphasis on using the archaeological record to reconstruct social roles. Prerequisite: APY 201 AND three additional credits in Anthropology.

APY 392. Sex and Culture  
3 credits  
Offered Fall Semester  
A cross-cultural examination of sex roles and sexuality; gender identity, division of labor, functions of marriage, sexual practices, reproductive control, and political relationships between the sexes. Prerequisite: APY 202 and three additional credits in Anthropology.

APY 393. Drugs and Culture  
3 credits  
Offered By Announcement only  
Prerequisite: APY 202 and three additional credits in another social/behavioral science.

APY 394. Comparative Religion  
3 credits  
Offered Fall Semester  
A cross-cultural investigation of differing levels of religious belief systems examined from both etic and emic points of view.
APY 398. Coastal Cultures  
3 credits  
Offered Spring Semester  
Fishermen and their special relations to the environment, from Thailand and Sri Lanka to Alaska and the West Indies. Decision-making processes among fishermen, business concepts, responses to technology, and myths of the sea. Prerequisite: APY 202 and three credits in Anthropology, or permission of the instructor.

APY 401. Archaeology and the Evolution of Culture  
3 credits  
Offered Fall Semester  
A survey of man’s cultural evolution from prehistoric times, with emphasis given to his art and artifacts as revealed through archaeology. Focus is primarily on Old World culture of the Mediterranean area, with attention given to diffusion theories regarding culture transmission to the New World.

APY 405. Readings in Anthropology  
1-3 credits  
Offered Fall Semester  
Supervised readings on special topics in Anthropology. Prerequisite: Permission of instructor.

APY 406. Readings in Anthropology  
1-3 credits  
Offered Spring Semester  
Supervised readings on special topics in Anthropology. Prerequisite: Permission of instructor.

APY 413. Medical Anthropology  
3 credits  
Offered Fall Semester  
Cross-cultural and historical perspectives on health and illness in human evolution. Effects of heredity, environment, and culture upon human disease ecology. Biological and behavioral adaptations to disease. Prerequisite: Three credits in Anthropology, and three credits from Biology OR Nursing.

APY 414. Forensic Anthropology I: Human Osteology  
3 credits  
Offered Fall Semester  
Identification and interpretation of the human skeleton, including age, sex, hard tissue pathology and traumas. Prerequisite: APY 203, or permission of the instructor.

APY 415. Forensic Anthropology II: Fieldwork  
3 credits  
Offered Spring Semester  
The investigation, analyses, and legal aspects of human remains recovered from crime scenes and mass disasters. Prerequisite: APY 203 AND 414 or permission of the instructor.

APY 418. Seminar in Anthropology  
3 credits  
Offered Fall and Spring Semesters  
Consideration of special topics in physical anthropology, linguistics, archaeology and ethnology and their interrelationships.

APY 420. Archaeology, Architecture, and the City  
3 credits  
Offered By Announcement only  
Ancient architectural remains in the global anthropological perspective, emphasizing the role of architecture in shaping the evolution of social and political interactions. Prerequisite: APY 201 AND three additional credits in Anthropology.

APY 422. Pseudoscience in Archaeology  
3 credits  
Reconstructions of how people lived in the past that claim scientific validity, use the terminology of science, but are unsupported by evidence, can be called pseudoscientific. This course critically evaluates the field of pseudoscientific archaeology by applying the scientific method, logic, and common sense. Prerequisite: APY 201 and three additional APY credits.
APY 440. Environmental Archaeology
3 credits  Offered By Announcement only
Theory and methodologies in the reconstruction of Quaternary environments from the archaeological record. Techniques of geoarchaeology, zooarchaeology, and paleoethnobotany. Prerequisite: APY 201 and three credits in Biology or Marine Science or permission of instructor.

APY 445. Archaeology of the Ancient Maya
3 credits  Offered By Announcement only
Seminar in ancient Maya culture, including examination of archaeological remains, epigraphy, lifeways, and art. Prerequisite: APY 201 AND three additional credits in Anthropology.

APY 477. Sacrifice and Ritual
3 credits  Offered Fall Semester
Rituals from both tribal and other societies considered in a framework of a general theory of symbols and practice. Structure and function of sacrifice in the definition of cultural categories, concepts of morality, and the general relationship of humans to the supernatural. Prerequisite: APY 394 or permission of the instructor.

APY 484. Anthropological Theory
3 credits  Offered Spring Semester
Theoretical frameworks directing data collection and research methodology in anthropology. Prerequisite: APY 202 and three additional credits in Anthropology.

APY 485. Archeological Theory and Technique
3 credits  Offered By Announcement only
Theoretical traditions that shape modern archaeological research design and interpretation. Prerequisite: APY 201 AND three additional credits in Anthropology.

APY 501. Methods of Anthropological Research
3-6 credits  Offered Spring Semester
Concentration on research methods for Cultural, Archaeological, Linguistic, and/or Biological Anthropology. Prerequisite: Six credits in Anthropology at 300 level or above.

APY 502. Galapagos Political Ecology and Anthropology Field Course
3-6 credits  Offered Fall and Spring Semesters and First Summer Session
Field research in advanced topics in Cultural, Archaeological, Linguistic and/or Biological Anthropology. Preparation of data for professional presentation and publication is stressed. Prerequisite: Six credits in Anthropology at 300 level or above AND written permission from instructor.

APY 505. Museum Internship
3 credits  Offered Fall and Spring Semesters
Field work and on-site experience in museum studies conducted in conjunction with the major museums in Miami. Training and research in methods and techniques in museology. Prerequisite: Permission of instructor.

APY 506. Workshop in Anthropology
3-6 credits  Offered Fall and Spring Semesters
This course is designed for upper level and graduate students to participate in special topics in Anthropology and related fields. Prerequisite: Permission of instructor.

APY 512. Advanced Medical Anthropology
3 credits  Offered Fall and Spring Semesters
Applications of theories and methods of medical anthropology to problems in human health and disease. Prerequisite: APY 413, or three credits in Nursing, or three credits in Epidemiology and Public Health, OR permission of the instructor.
APY 518. Advanced Seminar in Anthropology
3 credits  Offered Fall and Spring Semesters
Specialized topics in Anthropology to involve students into current research specializations. Prerequisite: Six credits in Anthropology at 300 level OR above or permission of instructor.

Arabic

ARB 101. Elementary Arabic I
3 credits  Offered Fall Semester
Fundamental grammatical principles; drill in pronunciation; simple reading and translation. Closed to native speakers.

ARB 102. Elementary Arabic II
3 credits  Offered Spring Semester
Reading and translation; oral and written exercises. Closed to native speakers. Prerequisite: ARB 101 or the equivalent. Closed to native speakers.

ARB 201. Intermediate Arabic
3 credits  Offered Fall Semester
Reading and translation; oral and written exercises. Closed to native speakers. Prerequisite: Two semesters of Arabic or the equivalent. Closed to native speakers.

ARB 202. Intermediate Arabic II
3 credits  Offered Spring Semester
Continuation of Arabic 201. Readings designed to integrate listening comprehension, speaking, reading, writing skills. Discussion of Arab society, history and culture. Prerequisite: ARB 201 - Closed to native speakers.

Art

ART 101. Introduction to Drawing I
3 credits  Offered Fall and Spring Semesters and First Summer Session
Contour, cross-contour, perspective, proportion, chiaroscuro, and gesture in pictorial composition.

ART 102. Introduction to Drawing II
3 credits  Offered Fall and Spring Semesters
Experimentation, chance, exaggeration, movement, texture, and color in pictorial composition.

ART 103. Two-Dimensional Design
3 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Line, rhythm, shape, pattern, value and color in pictorial composition.

ART 104. Three-Dimensional Design
3 credits  Offered Fall and Spring Semesters and Second Summer Session
Basic 3D design principles to include: structure, shape, volume, and weight.

ART 105. Figure Drawing
3 credits  Offered Fall and Spring Semesters
Drawing the human figure: proportion, anatomy, perspective, gesture, and expressive line. Prerequisite: ART 101. Recommended: ART 102.

ART 106. Issues in Art Making
3 credits  Offered Fall Semester
Survey of theoretical, historical and contemporary approaches. Prerequisite: ART 101; 103 or 104, or permission of instructor.
ART 107. Introduction to Drawing III  
3 credits  
Continuation of ART 101 with emphasis on Renaissance perspective and alternative systems of spatial representation. Survey of materials and methods. Introduction of color. Prerequisite: ART 101.

ART 108. Introduction to Figure Modeling  
3 credits  
Modeling the human figure: proportion, anatomy, volume, gesture and form. Prerequisite: ART 104 or permission of instructor.

ART 109. Introduction to Electronic Media  
3 credits  
Computer skills for desktop publishing and digital imaging.

ART 180. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 181. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 182. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 183. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 184. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 185. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 202. Introduction to Painting  
3 credits  
Materials and techniques of easel painting. Prerequisite: ART 101 and 103, or permission of instructor.

ART 210. Introduction to Photography  
3 credits  
Camera techniques and darkroom procedures for black and white photography.

ART 217. Introduction to Sculpture  
3 credits  
Integrated approach to concept development, craftsmanship and appropriate use of materials. Prerequisite: ART 101 and 104 or permission of instructor.

ART 251. Intaglio/Relief I  
3 credits  
Drypoint, engraving, etching, aquatint, and softground; relief and intaglio printed collographs; relief printing from linoleum. Prerequisite: ART 101 and 103 and 109, or permission of instructor.

ART 252. Lithography I  
3 credits  
Beginning lithography in black and white from stones, aluminum plates, and photo plates. Prerequisite: ART 101 and 103 and 109 or permission of instructor.
ART 253. Silkscreen I
3 credits
Beginning silkscreen: monotyping with screens, reduction printing, multiple run silkscreen printing and beginning photo silkscreen. Prerequisite: ART 101 and 103 and 109 or permission of instructor.

ART 254. Computer Applications for Printmaking
3 credits
Software programs used as printmaking manipulation tools to aid in the planning of prints. Prerequisite: ART 101, 103, and 109 or permission of instructor.

ART 261. Introduction to Clay and Cast Glass Techniques
3 credits
Construction techniques: pinching, coiling, slab construction, mold making for cast glass; glazing and firing. Prerequisite: ART 101 and 103 or permission of instructor.

ART 262. Introduction to the Wheel
3 credits
Techniques of wheel throwing, glazing and firing. Prerequisite: ART 101 and 103 or permission of instructor.

ART 263. Introduction to Glass Blowing
3 credits
Forming shapes and vessels from molten glass by the use of a blow pipe and glass tools. Prerequisite: ART 104 or permission of instructor.

ART 280. Studies in Studio Art
1-3 credits
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 281. Studies in Studio Art
1-3 credits
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 282. Studies in Studio Art
1-3 credits
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 283. Studies in Studio Art
1-3 credits
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 284. Studies in Studio Art
1-3 credits
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 285. Studies in Studio Art
1-3 credits
Not offered. Transfer credit only. Studio studies taken at other institutions with no direct equivalents.

ART 291. Graphic Design I
3 credits
A comprehensive approach to the study of graphic communications. Prerequisite: ART 101 and 109, or permission of instructor.

ART 292. Multimedia I
3 credits
Introduction to interactive Flash animation and web design using time-based media. Prerequisite: ART 101 and 109, or permission of instructor.
ART 293. Typography
3 credits
Offered Fall and Spring Semesters
Type and image compositions, history, arrangement, style, aesthetics of printed communications, type software and calligraphy. Prerequisite: ART 291 or permission of instructor.

ART 301. Intermediate Painting I
3 credits

ART 302. Intermediate Painting II
3 credits
Continuation of ART 301. Prerequisite: ART 301.

ART 305. Intermediate Figure Drawing
3 credits
Continuation of ART 105. Prerequisite: ART 105.

ART 308. Intermediate Figure Modeling
3 credits
Continuation of ART 108. Prerequisite: ART 104 and 108 or permission of instructor.

ART 310. Intermediate Photography I
3 credits

ART 311. Color Photography
3 credits
Fine Art photography in color. Emphasis on craftsmanship and creative expression. Prerequisite: ART 310.

ART 312. Introduction to Digital Photography
3 credits
Introduction to the technology of electronic/computer digitized photography. Prerequisite: ART 310 and 311.

ART 317. Intermediate Sculpture I
3 credits
Incorporation of symbol and metaphor to achieve meaning, use of additional materials and technical processes. Prerequisite: ART 217.

ART 318. Intermediate Sculpture II
3 credits
Continuation of ART 317. Prerequisite: ART 317.

ART 351. Intaglio/Relief II
3 credits
Continuation of ART 251. Additional processes such as mezzotint, relief printing from woodblocks, multiple block printing, photographic xerox transfers and photo etching. Prerequisite: ART 251.

ART 352. Lithography II
3 credits
Continuation of ART 252. Color printing from stones, aluminum plates and photo litho plates. Combination of lithography with other print media. Prerequisite: ART 252.
ART 353. Silkscreen II  
3 credits  
Offered By Announcement only  
Continuation of ART 253, including silkscreening on canvas, larger format work, and advanced photo silkscreen techniques. Prerequisite: ART 253.

ART 354. Computer Assisted Printmaking: Lithography and Silkscreen  
3 credits  
Offered By Announcement only  
The use of inkjet and laser printers to make positives for black and white and process color work in photo lithography; custom color separations for multiple screen printing. Prerequisite: ART 254 or permission of instructor.

ART 361. Intermediate Clay and Cast Glass Techniques  
3 credits  
Offered Fall and Spring Semesters  
Continuation of ART 261. Prerequisite: ART 261.

ART 362. Intermediate Wheel Throwing  
3 credits  
Offered Fall and Spring Semesters  
Techniques of wheel thrown pottery. Prerequisite: ART 262.

ART 363. Cast Glass Processes  
3 credits  
Offered Fall Semester  
The art of cast glass including sand casting and lost wax techniques. Prerequisite: ART 104 or permission of instructor.

ART 364. Intermediate Glass Blowing  
3 credits  
Exploration of glass working techniques. Prerequisite: ART 263.

ART 380. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only.  
Studio studies taken at other institutions with no direct equivalents.

ART 381. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only.  
Studio studies taken at other institutions with no direct equivalents.

ART 382. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only.  
Studio studies taken at other institutions with no direct equivalents.

ART 383. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only.  
Studio studies taken at other institutions with no direct equivalents.

ART 384. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only.  
Studio studies taken at other institutions with no direct equivalents.

ART 385. Studies in Studio Art  
1-3 credits  
Not offered. Transfer credit only.  
Studio studies taken at other institutions with no direct equivalents.

ART 391. Graphic Design II  
3 credits  
Offered Fall and Spring Semesters  
Development of form and concept. Visual rhetorical strategies such as metaphors, puns, irony, and metonymy, Prerequisite: ART 291, 292, and 293.

ART 392. Multimedia II  
3 credits  
Offered Fall and Spring Semesters  
Introduction to video art, multimedia, installation art, and interactive animation. Prerequisite: ART 292 or permission of instructor.
ART 401. Advanced Painting I  
3 credits  
Development of a personal style in painting. Prerequisite: ART 302.

ART 402. Advanced Painting II  
3 credits  
Continuation of ART 401. Prerequisite: ART 401.

ART 405. Advanced Figure Drawing  
3 credits  
Continuation of ART 305. Prerequisite: ART 305.

ART 410. Advanced Photography I  
3 credits  
Development of a personal style in black and white, color, and/or digital photography. Prerequisite: ART 311 and 312.

ART 411. Intermediate Digital Photography  
3 credits  
Digital photographic imaging with an emphasis on computer integration of silver based and alternative processes. Prerequisite: ART 312 and 410.

ART 417. Advanced Sculpture I  
3 credits  
Individual and collaborative installation and site-specific art. Prerequisite: ART 318.

ART 418. Advanced Sculpture II  
3 credits  
Development of a personal visual vocabulary. Prerequisite: ART 417.

ART 451. Intaglio/Relief III  
3 credits  
Continuation of ART 351. Prerequisite: ART 351.

ART 452. Lithography III  
3 credits  
Continuation of ART 352. Prerequisite: ART 352.

ART 453. Silkscreen III  
3 credits  
Continuation of ART 353. Prerequisite: ART 353.

ART 454. Computer Assisted Printmaking: Intaglio and Relief  
3 credits  
Continuation of ART 354, photo etching and relief processes. Prerequisite: ART 354 or permission of instructor.

ART 461. Advanced Figure Sculpture  
3 credits  
Modeling from the figure. Emphasis on anatomy, line, gesture, volume, proportions and the expressive handling of clay. Prerequisite: ART 361 or permission of instructor.

ART 462. Advanced Ceramics  
3 credits  
Development of expressive skills in either handbuilding or wheel throwing techniques. Prerequisite: ART 361 or 362.

ART 491. Graphic Design III  
3 credits  
Advanced page layout coupled with extensive use of typography with applications in page design for advertising and collateral projects. Prerequisite: ART 391.
ART 492. Multimedia III  
3 credits  
Offered By Announcement only  
Video art and multimedia installations/independent study. Offered by announcement only. Prerequisite: ART 392.

ART 493. Illustration  
3 credits  
Offered By Announcement only  
Contemporary illustration for print, new media, portfolio and exhibition. Prerequisite: ART 109 and three additional credits in art.

ART 494. Critical Issues in Design and Culture  
3 credits  
Offered By Announcement only  
Analytical and critical approach to graphic design/multimedia practice. Prerequisite: ART 391.

ART 499. Honors Thesis  
3- 6 credits  
Offered Fall and Spring Semesters  
Formal thesis and project including an exhibition supervised by member of the department faculty. Prerequisite: B.F.A. candidate, senior standing and acceptance in Departmental Honors Program.

ART 501. Advanced Painting III  
3 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. Prerequisite: ART 402.

ART 502. Advanced Painting IV  
3 credits  
Offered Fall and Spring Semesters  
Continuation of ART 501. Prerequisite: ART 501.

ART 503. Independent Study in Painting  
1- 6 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. An independent study course may be repeated. Prerequisite: Permission of instructor.

ART 504. Independent Study in Drawing  
1- 6 credits  
Offered By Announcement only  
Course content decided between student and professor. An Independent Study course may be repeated. Prerequisite: Permission of instructor.

ART 505. Topics in Painting  
1- 6 credits  
Current readings and/or technical concerns not covered in the regular curriculum. Course content will vary each semester. Prerequisite: Any 400-level painting class.

ART 509. Independent Study in Other Media  
1- 6 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. Independent Study course may be repeated. Prerequisite: Permission of instructor.

ART 510. Advanced Photography III  
3 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. Prerequisite: ART 411.

ART 511. Advanced Photography IV  
3 credits  
Offered Fall and Spring Semesters  
Continuation of ART 510. Prerequisite: ART 510.

ART 512. Independent Study in Photography  
1- 6 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. An independent Study course may be repeated. Prerequisite: Permission of instructor.
ART 517. **Advanced Sculpture III**
3 credits
Examination of ongoing work in relationship to historical and contemporary interpretations issues. Prerequisite: ART 418 and permission of instructor.

ART 518. **Advanced Sculpture IV**
3 credits
Continuation of ART 517. Prerequisite: ART 517.

ART 519. **Independent Study in Sculpture**
1-6 credits
Course content decided between student and professor. An Independent Study course may be repeated. Prerequisite: Permission of instructor.

ART 551. **Intaglio/Relief IV**
3 credits
Advanced work in intaglio/relief processes; course requirements decided between student and professor. Prerequisite: ART 451.

ART 552. **Lithography IV**
3 credits
Advanced work in lithography; course requirements decided between student and professor. Prerequisite: ART 452.

ART 553. **Silkscreen IV**
3 credits
Advanced work in silkscreen. Prerequisite: ART 453.

ART 554. **Computer Assisted Printmaking**
3 credits
Advanced work in computer assisted printmaking; course requirements decided between student and professor. Prerequisite: ART 454 or permission of instructor.

ART 555. **Topics in Printmaking**
1-6 credits
Current readings and/or technical concerns not covered in the regular curriculum. Course content will vary each semester. Prerequisite: Any 400 level printmaking class.

ART 561. **Clay Bodies and Glazes**
3 credits
The chemistry of ceramics; students develop, test and use their own clays and low-to-high fire glazes. Prerequisite: ART 461 and 462.

ART 563. **Independent Study in Ceramics/Glass**
1-6 credits
Course content decided between student and professor. An Independent Study course may be repeated. Prerequisite: Permission of instructor.

ART 564. **Directed Research and Projects in Ceramics/Glass**
3 credits
Ceramic/glass approaches from early history to contemporary period, and the development of technical ability. Prerequisite: ART 561 or permission of instructor.

ART 591. **Portfolio/Business of Design**
3 credits
Individually supervised graphic design portfolio. Professional practices in design. Prerequisite: ART 491.
ART 592. Special Projects/Multimedia
3 credits
Offered By Announcement only
Video Art and multimedia portfolio includes classroom work. Prerequisite: ART 392, 491, or permission of instructor.

ART 593. Seminar in Professional Practices
1- 6 credits
Offered Fall and Spring Semesters
Advanced course with a required placement in a professional design or multimedia setting. Classroom sessions on professional topics and issues. Portfolio required. Prerequisite: Senior standing.

ART 599. Exhibition Preparation
3 credits
A seminar class devoted to the preparatory work needed to plan and promote a solo exhibition, including installation/lighting concerns. Preliminary written assignments will also be given in preparation for ART 710 Thesis. Prerequisite: Permission of instructor.

Arts History

ARH 107. History of Photography
3 credits
Offered Spring Semester
A study of photography as a visual medium of expression and communication: a chronological examination of its origins, styles and uses.

ARH 131. Survey of Western Art I
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The art of western cultures from pre-history through the Middle Ages.

ARH 132. Survey of Western Art II
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The art of western cultures from the Renaissance through the 20th century.

ARH 133. Art of Non-European Cultures
3 credits
Offered By Announcement only
The art of non-European cultures with selections from Africa, Oceania, Asia, and/or the Native Americas.

ARH 134. Ancient American Art through the Contact Period
3 credits
Indigenous American arts (Andean South America, Mesoamerica, Native North America) produced in antiquity through the European contact period.

ARH 180. Studies in Art History
1- 3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 181. Studies in Art History
1- 3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 182. Studies in Art History
1- 3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 183. Studies in Art History
1- 3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.
ARH 184. Studies in Art History
1-3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 185. Studies in Art History
1-3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 233. European Visions of the New World
3 credits
Offered By Announcement only
Survey of the European view of the Americas (16th-18th centuries) using prints, paintings, drawings, and illustrations in travel accounts.

ARH 280. Studies in Art History
1-3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 281. Studies in Art History
1-3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 282. Studies in Art History
1-3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 283. Studies in Art History
1-3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 284. Studies in Art History
1-3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 285. Studies in Art History
1-3 credits
Not offered. Transfer credit only.
Art History studies taken at other institutions with no direct equivalents.

ARH 321. Andean Art
3 credits
Offered By Announcement only
South American art from formative times through the Incan empire and the Spanish conquest (A.D. 1521). Prerequisite: ARH 133 or 134, or permission of instructor.

ARH 322. Mesoamerican Art
3 credits
Offered By Announcement only
From Olmec Beginnings (ca 1,500 B.C.) through the Teotihuacan, the Mayan and the Aztec cultures to the Spanish Conquest (A.D. 1521). Prerequisite: ARH 133 or 134, or permission of instructor.

ARH 323. Native American Art
3 credits
Offered By Announcement only
From the cultures of the Archaic Woodlands and the ancient Southwest (ca. 6,000 B.C.) to the present. Prerequisite: ARH 133 or 134, or permission of instructor.

ARH 324. Art of West Africa
3 credits
Offered By Announcement only
Traditional Art of Africa south of the Sahara and west of the Nigeria/Cameroon border from earliest forms to the present. Prerequisite: ARH 133.

ARH 325. Art of Central Africa
3 credits
Offered By Announcement only
Traditional Art of Central, Eastern, and Southern Africa from earliest forms to the present. Prerequisite: ARH 133.
ARH 326. **The Art of South Asia**  
*3 credits*  
Offered Fall Semester  
The Arts of South Asia with selections from India and Thailand. Prerequisite: ARH 133 or permission of instructor.

ARH 327. **The Art of East Asia**  
*3 credits*  
The Art of East Asia with selections from China, Korea, and Japan. Prerequisite: ARH 133 or permission of instructor.

ARH 331. **Art of Egypt and Mesopotamia**  
*3 credits*  
A study of the art and civilizations of ancient Egypt and the Tigris-Euphrates Valley. Prerequisite: ARH 131 or HIS 221.

ARH 332. **Greek Art**  
*3 credits*  
Offered By Announcement only  
The art of ancient Greek civilization. Prerequisite: ARH 131 or HIS 221.

ARH 333. **Roman Art**  
*3 credits*  
Offered By Announcement only  
Roman art from the 1st century B.C. through the 4th century A.D. Prerequisite: ARH 131 or HIS 221.

ARH 335. **Early Christian and Byzantine Art**  
*3 credits*  
Offered By Announcement only  
Christian art from the second through the fifteenth centuries in Rome and the Byzantine Empire. Prerequisite: ARH 131 or HIS 221.

ARH 336. **Medieval Art**  
*3 credits*  
Offered By Announcement only  
Western European art from the fourth through the twelfth century. Prerequisite: ARH 131 or HIS 221.

ARH 337. **Italian Renaissance Art**  
*3 credits*  
Offered By Announcement only  
The painting, sculpture, and architecture of Florence in the fifteenth century. Prerequisite: ARH 131 or HIS 221.

ARH 338. **Sixteenth Century Italian Art**  
*3 credits*  
Offered By Announcement only  
The painting, sculpture, and architecture of Italy in the sixteenth century. Prerequisite: ARH 131 or HIS 221.

ARH 339. **Northern Renaissance Art**  
*3 credits*  
Offered By Announcement only  
The painting of France and the Netherlands in the fourteenth and fifteenth centuries. Prerequisite: ARH 131 or HIS 221.

ARH 340. **Baroque Art**  
*3 credits*  
Offered By Announcement only  
Art and architecture of the seventeenth century, focusing on major cultural centers in Europe and the Americas. Prerequisite: ARH 132 or HIS 222.

ARH 341. **Eighteenth-Century European Art**  
*3 credits*  
Offered By Announcement only  
European art from 1700-1820, including Rococo and Neoclassicism, ending with Goya in Spain. Prerequisite: ARH 132 or HIS 222.

ARH 342. **Nineteenth-Century European Art**  
*3 credits*  
Offered By Announcement only  
Neo-Classicism, Romanticism, Realism, Impressionism, 1760-1900. Prerequisite: ARH 132 or HIS 222.
ARH 343. Modern Art  
3 credits  
Cezanne to Surrealism. Primarily European Art c. 1880-1940 in the context of the development of Modernism and its aesthetic theories. Prerequisite: ARH 132, HIS 222, or three credits of Humanities at the 300 level or above.

ARH 344. Contemporary Art  
3 credits  
American and European Art from the Second World War to the present in its social, political, and theoretical contexts. Prerequisite: ARH 132, HIS 222, or three credits of Humanities at the 300 level or above.

ARH 345. Art in the United States  
3 credits  
Colonial Art through the Armory Show c. 1750-1920. Prerequisite: ARH 132, HIS 222, or three credits of Humanities at the 300 level or above.

ARH 346. History of Graphic Design  
3 credits  
Evolution of Graphic Design from the invention of writing through the twentieth century concentrating on contemporary themes and technical innovations. Prerequisite: ARH 131, 132 or permission of instructor.

ARH 380. Studies in Art History  
1- 3 credits  
Not offered. Transfer credit only. Art History studies taken at other institutions with no direct equivalents.

ARH 381. Studies in Art History  
1- 3 credits  
Not offered. Transfer credit only. Art History studies taken at other institutions with no direct equivalents.

ARH 382. Studies in Art History  
1- 3 credits  
Not offered. Transfer credit only. Art History studies taken at other institutions with no direct equivalents.

ARH 383. Studies in Art History  
1- 3 credits  
Not offered. Transfer credit only. Art History studies taken at other institutions with no direct equivalents.

ARH 384. Studies in Art History  
1- 3 credits  
Not offered. Transfer credit only. Art History studies taken at other institutions with no direct equivalents.

ARH 385. Studies in Art History  
1- 3 credits  
Not offered. Transfer credit only. Art History studies taken at other institutions with no direct equivalents.

ARH 440. Seventeenth-century Dutch Art  
3 credits  
Offered Fall Semester  
Art and artists of the 17th Century Dutch Republic, including Rembrandt and Vermeer. Prerequisite: ARH 132.

ARH 499. Honors Thesis  
3- 6 credits  
Offered Fall and Spring Semesters  
Directed reading and a substantial and scholarly paper. Prerequisite: Senior standing and acceptance in Departmental Honors Program.
ARH 505. Problems in Art History  
3 credits  
Offered Fall and Spring Semesters  
A means by which the student of advanced standing may investigate areas of a specialized nature, or those which are not offered as a regular part of the curriculum. Course content will be decided in joint conference between student and instructor. Prerequisite: Any 300-level or 400-level course in Art History and permission of instructor.

ARH 506. Problems in Art History  
3 credits  
Offered Fall and Spring Semesters  
A means by which the student of advanced standing may investigate areas of a specialized nature, or those which are not offered as a regular part of the curriculum. Course content will be decided in joint conference between student and instructor. Prerequisite: Any 300-level or 400-level course in Art History and permission of instructor.

ARH 507. Museum Studies I  
3 credits  
Offered Fall and Spring Semesters  
Administrative functions of local art museums; researching selected art works in their permanent collections. Prerequisite: ARH 131, 132, one 300/400 level course in Art History, or permission of instructor.

ARH 508. Museum Studies II  
3 credits  
Offered Fall and Spring Semesters  
Organizing an art museum exhibition, and participating in the installation. Writing and composing the catalogue. Prerequisite: ARH 507.

ARH 530. Seminar in Art History  
3 credits  
Offered By Announcement only  
Special topics in western and nonwestern art. Semester's topic will be announced. Prerequisite: Permission of instructor.

ARH 560. Seminar in Nineteenth and Twentieth Century Art  
3 credits  
Offered By Announcement only  
Special topics including museum practices and theory, women’s art and contemporary issues. Prerequisite: Permission of instructor.

ARH 570. Seminar in Non-European Art  
3 credits  
Offered By Announcement only  
Special Topics in African, Oriental, Oceanic, Native North or South American art traditions. Prerequisite: ARH 133, 134, or permission of instructor.

ARH 598. Seminar in Contemporary American Art  
3 credits  
Offered Fall Semester  
Issues in Art since 1960: Aesthetic theories and ideological issues generated in contemporary art as expressed in the writing of artists and art critics. Prerequisite: ARH 344. Undergraduates must have permission of instructor.

Biochemistry and Molecular Biology

BMB 151. Freshman Seminar  
1 credit  
Offered Spring Semester  
Biochemistry and Molecular Biology and their impact on society. Basic Biochemistry and Molecular Biology information on these topics. Students write a paper and present a poster. Prerequisite: Biochemistry majors only. BIL 150. Corequisite: BIL 160, CHM 111.
BMB 251. Sophomore Seminar
1 credit  
Offered Spring Semester
Biochemistry and Molecular Biology and their impact on society. Basic Biochemistry and Molecular Biology information on these topics is presented. Students write a paper and present a poster. Prerequisite: This course is open to Biochemistry majors only. BIL 250 or 255. Corequisite: CHM 202.

BMB 258. Introduction to Biochemistry and Molecular Biology
3 credits  
Offered Spring Semester
The composition and functioning of a typical cell are described in chemical terms, leading to an understanding of how life processes occur and are regulated at the level of individual molecules and reactions. Prerequisite: CHM 112.

BMB 401. Biochemistry for the Medical Sciences
3 credits  
Offered Fall Semester
Basic areas of biochemistry are discussed including protein structure, enzymology, metabolism, and molecular genetics. Emphasis is placed on central concepts of mammalian biochemistry. This course is recommended for premedical preparation. Lecture, 3 hours. Prerequisite: A grade of C or better in CHM 202, BIL 150 and 160, or permission of instructor. Not for biochemistry majors or minors. Not open to students with credits in BMB 406 or 506.

BMB 406. Principles of Biochemistry and Molecular Biology
3 credits  
Offered By Announcement only
Protein Structure and function, enzyme mechanism and kinetics, and metabolism, focusing on energy metabolism and central concepts of metabolic regulation and of molecular biology including nucleic acid structure, protein synthesis, and DNA replication. Undergraduate majors. (Not open to students with credit in BMB 401 or 506). Prerequisite: A grade of C or better in CHM 202, BIL 150 and 160, or permission of instructor.

BMB 407. Proteins and Enzymes
3 credits  
Offered Spring Semester
Course analyzes folding and binding of proteins, kinetics, and mechanisms of enzyme action. Not open to students with credits in BMB 507. Prerequisite: BMB 406 or 506 or permission of instructor.

BMB 501. Senior Seminars
1 credit  
Offered Fall and Spring Semesters
Students attend seminars by faculty or graduate students on recent research topics in Biochemistry and Molecular Biology. Students write short reports on these seminars and critically evaluate the presentations. Prerequisite or corequisite: BMB 506.

BMB 502. Physical Biochemistry
3 credits  
Offered By Announcement only
Thermodynamics of biochemical reactions including chemical potential and equilibrium constants. Principles of diffusion and viscosity with applications to the ultracentrifuge, electrophoresis and chromatography are included. Topics in spectroscopy including visible, UV, IR absorption, and fluorescence. Biochemical applications of ORD, CD, NMR, and ESR. X-ray crystallography. Prerequisite: BMB 407.

BMB 505. Metabolic Processes
2 credits  
Offered By Announcement only
Intermediary metabolic processes. Catabolism of carbohydrates, lipids, and nitrogen compounds. Biosynthetic processes leading to amino acids, lipids, and isoprenoids, sugars, are addressed. Regulation of metabolism and cellular economy by various means, including hormones is also included. Lecture, 2 hours. Prerequisite: BMB 506 or permission of instructor.
BMB 506. Principles of Biochemistry and Molecular Biology
3 credits
Offered Fall Semester
Protein structure and function, enzyme mechanism and kinetics, and metabolism, focusing on energy metabolism and central concepts of metabolic regulation and of molecular biology including nucleic acid structure, protein synthesis, and DNA replication. (Not open to students with credit in BMB 401 or 406; for undergraduate honors credit or graduate student not majoring in biochemistry. Prerequisite: A grade of C or better in CHM 202, BIL 150 and 160 or permission of instructor.

BMB 507. Proteins and Enzymes
3 credits
Offered Spring Semester
Course analyzes the folding and binding of proteins, kinetics and mechanisms of enzyme action. For honors undergraduates. Not open to students in BMB 407. Prerequisite: BMB 406 or 506 or permission of instructor; for undergraduate honors credit or graduate students not majoring in biochemistry.

BMB 508. Biochemistry and Molecular Biology Laboratory
1 credit
Offered By Announcement only
Experience in a spectrum of biochemical experiments ranging from enzyme chemistry to recombinant DNA. Laboratory, 3 hours. Prerequisite or corequisite: BMB 506.

BMB 509. Molecular Biology of the Gene I
3 credits
Offered Fall Semester
Biochemical processes involved in the propagation and expression of genetic information in both prokaryotes and eukaryotes. Basic cellular processes of DNA replication, repair, genetic recombination, RNA transcription and processing, protein synthesis, control of gene expression, cell differentiation, and recombinant DNA technology. Reading includes both textbook assignments and original research papers. Prerequisite: BMB 506 or permission of instructor.

BMB 511. Topics in Applied BCH and Molecular Biology
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Selected topics from the fields of applied and pure biochemistry and molecular biology taught as a tutorial. Prerequisite: BMB 406 or 506 and permission of instructor.

BMB 545. Research Problems in Biochemistry and Molecular Biology
2- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Laboratory research problems in various fields of biochemistry, including literature search, experiment design, data gathering, and evaluation or results. Prerequisite: Permission of instructor.

Biology
BIL 101. Introductory Biological Science
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
An integrated presentation of important biological processes and principles. Designed as an introduction to life sciences for the non-major. Prerequisite: Not for biology majors or minors. Students with credit in BIL 150 may NOT take this course to fulfill the natural science requirement.

BIL 103. Humans and the Environment
3 credits
Survey of the general principles of ecology; the relationships of organisms to both physical and biotic aspects of their environment. Emphasis on human impact on natural communities. Prerequisite: Does not count towards the BIL major or minor.
### BIL 104. Genetics and Society
3 credits  
Offered By Announcement only  
The impact of new knowledge in genetics and heredity on society, including a consideration of questions about the inheritance of I.Q. and behavior, racial differences, genetic screening, control of reproduction, genetic engineering, forensic applications. Prerequisite: Not for biology majors or minors.

### BIL 105. Elementary Botany
3 credits  
Offered By Announcement only  
A descriptive presentation of biological principles pertaining to plant science. Survey of the plant kingdom and the importance of plants to man. Prerequisite: Not for biology majors or minors.

### BIL 106. Elementary Zoology
3 credits  
Offered By Announcement only  
A descriptive presentation of biological principles pertaining to animal science. Survey of the animal kingdom and the relationship between man and other animals. Prerequisite: Not for biology majors or minors.

### BIL 107. Introduction to Evolution
3 credits  
Offered Fall Semester  
Hereditary variation and the mechanisms of evolutionary change. Processes of species formation and the origin of adaptations. The development of evolutionary thinking from classical to contemporary time, including social issues (e.g., social Darwinism, creationism). Prerequisite: Not for Biology majors or minors.

### BIL 109. Human Biology
3 credits  
Offered Fall Semester  
A survey of the anatomy and physiology of man and his relationship to some major biological problems. Lectures and demonstrations. Prerequisite: Not for biology majors or minors.

### BIL 113. General Biology Honors Seminar
1 credit  
Offered Fall Semester  
Special topics in biology correlated with BIL 150. Corequisite: BIL 150.

### BIL 114. General Biology Honors Seminar
1 credit  
Offered Spring Semester  
Special topics in biology correlated with BIL 160. Corequisite: BIL 160.

### BIL 149. First Year Information
1 credit  
First year seminar for incoming Biology majors. Facilitation and encouragement of development of critical thinking skills, proficiency in oral and written expression, and an ability to solve problems by integrating knowledge from different disciplines and perspectives in Biology.

### BIL 150. General Biology
4 credits  
Offered Fall Semester and First Summer Session  
Principles of biology at the cellular, genetic, organismal, population, community and ecosystem levels of organization. Corequisite: BIL 151, ENG 105, and MTH 101, 105, or 107.

### BIL 151. General Biology Laboratory
1 credit  
Offered Fall Semester and First Summer Session  
Laboratory exercises to accompany BIL 150. Corequisite: BIL 150.
BIL 160. **Evolution and Biodiversity**  
4 credits  
*Offered Spring Semester and Second Summer Sessions*  
Evolutionary processes from an organismal perspective. Biosystematics, biogeography and a survey of the diversity of life, with emphasis on the morphological, ecological, and behavioral adaptations of selected representatives of the Domains of living organisms. Corequisite: BIL 161, ENG 105, and MTH 101, 105 or 107.

BIL 161. **Evolution and Biodiversity Laboratory**  
1 credit  
*Offered Spring Semester and Second Summer Sessions*  
Laboratory exercises to accompany BIL 160. Corequisite: BIL 160.

BIL 190. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.  
Special topics taken at other institutions with no direct equivalents.

BIL 191. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.  
Special topics taken at other institutions with no direct equivalents.

BIL 192. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.  
Special topics taken at other institutions with no direct equivalents.

BIL 193. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.  
Special topics taken at other institutions with no direct equivalents.

BIL 194. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.  
Special topics taken at other institutions with no direct equivalents.

BIL 195. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.  
Special topics taken at other institutions with no direct equivalents.

BIL 210. **Human Anatomy**  
3 credits  
Structural interrelationships of organ systems. Demonstrations, dissections, and discussions. Prerequisite: One year of Biology for majors with laboratory.

BIL 211. **Human Anatomy Laboratory**  
1 credit  
Laboratory to accompany BIL 210 (HSC 210). Prerequisite: BIL 210 (HSC 210).

BIL 215. **Systemic Human Physiology**  
3 credits  
Function of major human systems. Not available to students with credit in BIL 265. Prerequisite: BIL 210 (HSC 210).

BIL 216. **Systemic Human Physiology Laboratory**  
1 credit  
Experiments illustrating the physiology of human organ systems. Not available to students with credit in BIL 265 or BIL 266. Prerequisite: BIL 210 (HSC 210).

BIL 221. **Biology of Birds**  
4 credits  
*Offered By Announcement only*  
General biology of birds, field identification, natural history and migrations of southern Florida species. Lecture, 2 hours; laboratory, 3 hours; 4 field trips, 6 hours each. Binoculars needed. Prerequisite: One year of general biology with laboratory.
BIL 226. General Botany  
4 credits  
Offered By Announcement only  
Survey of the plant kingdom, including evolution, plant diversity, reproduction, structure, function and ecology. Lecture plus laboratory, 6 hours. Prerequisite: One year of Biology with laboratory or permission of instructor.

BIL 230. Introduction to Marine Biology  
3 credits  
Offered Fall Semester  

BIL 231. Introduction to Marine Biology Laboratory  
1 credit  
Offered Fall Semester  

BIL 232. Populations, Resources and the Environment  
3 credits  
Offered By Announcement only  
Populations and their interrelationships with the environment. Human demographics, and natural resource issues including compatible development and landscape changes. Prerequisite: One year of general biology with laboratory.

BIL 233. Conservation Biology  
3 credits  
Offered By Announcement only  
Concepts, problems, and practices of conservation biology. Prerequisite: One year of general biology with laboratory.

BIL 235. Ecology  
3 credits  
Offered Fall and Spring Semesters  
An Introduction to study of Organisms in relation to their environment. Lecture, 3 hours. Prerequisite: BIL 150, 151, 160, 161.

BIL 236. Ecology Lab  
1 credit  
Offered Fall and Spring Semesters  
Lab and field exercises in ecology. Some Saturday field trips required. Prerequisite or corequisite: BIL 235.

BIL 241. Animal Behavior  
3 credits  
Offered Fall and Spring Semesters  
Mechanistic and evolutionary aspects of animal behavior. A survey of systems that illustrate the control, development and function of behavior in a variety of animals. Prerequisite: One year of general biology with laboratory.

BIL 242. Animal Behavior Laboratory  
1 credit  
Offered By Announcement only  
A lab/field course in basic behavioral concepts using a variety of organisms, both vertebrate and invertebrate, in aquatic and terrestrial environments. Prerequisite or corequisite: BIL 241.

BIL 250. Genetics  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
The nature, organization, replication, expression, and evolution of the genetic materials. Prerequisite: BIL 150, 151, 160, 161.

BIL 251. Principles of Genetics Laboratory  
1 credit  
Offered Fall and Spring Semesters  
Laboratory exercises in genetics. Prerequisite or corequisite: BIL 250.
BIL 252. HON: Honors Laboratory in Genetics
2 credits
Laboratory exercises in genetics. Prerequisite or corequisite: BIL 250.

Offered Spring Semester

BIL 253. Honors Seminar in Genetics
1 credit
Special topics in genetics correlated with BIL 250. Prerequisite: BIL 250.

Offered Spring Semester

BIL 255. Cellular and Molecular Biology
3 credits
Structure, molecules, and functions of cells. Prerequisite: One year of general biology with laboratory.

Offered Fall and Spring Semesters and First and Second Summer Sessions

BIL 256. Cellular and Molecular Biology Laboratory
2 credits
Laboratory exercises in cellular and organismal physiology; involving current research techniques and applications. Prerequisite or corequisite: BIL 255.

Offered Spring Semester

BIL 257. HON: Honors Seminar in Cell Biology
1 credit
Special topics in cell and molecular biology correlated with BIL 255. Prerequisite or corequisite: BIL 255.

Offered Spring Semester

BIL 261. Comparative Vertebrate Anatomy
4 credits
Anatomy, classification, function, distribution, and evolution of vertebrate animals and their relationships to the environment. Lecture, 2 hours; laboratory, 6 hours. Prerequisite: One year of Biology with laboratory.

Offered By Announcement only

BIL 265. General Physiology
3 credits
Animal and plant physiological processes such as homeostasis, energy budget, movement, sensation, and reproduction with emphasis on the organismal level. Prerequisite: BIL 150, 151, 160, 161.

Offered Fall and Spring Semesters

BIL 266. General Physiology Laboratory
1 credit
Experiments to illustrate basic plant and animal physiological processes. Prerequisite or corequisite: BIL 265.

Offered Fall Semester

BIL 268. Neurobiology
3 credits
Neurons, organization of the nervous system, electrical properties of neurons, neurotransmitters, receptors, synaptic transmission, sensory and motor system, and complex brain functions. Prerequisite: One year of general biology with laboratory.

Offered By Announcement only

BIL 290. Studies in Biology
1-5 credits
Special topics taken at other institutions with no direct equivalents.

Not offered. Transfer credit only.

BIL 291. Studies in Biology
1-5 credits
Special topics taken at other institutions with no direct equivalents.

Not offered. Transfer credit only.

BIL 292. Studies in Biology
1-5 credits
Special topics taken at other institutions with no direct equivalents.

Not offered. Transfer credit only.

BIL 293. Studies in Biology
1-5 credits
Special topics taken at other institutions with no direct equivalents.

Not offered. Transfer credit only.
BIL 294. Studies in Biology
1- 5 credits Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

BIL 295. Studies in Biology
1- 5 credits Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

BIL 299. Seminar in Research Problems
2 credits Offered Fall and Spring Semesters
Discussion of current research of the Biology Faculty. Prerequisite: Minimum Sophomore standing.

BIL 310. Advanced Human Anatomy
4 credits
An in-depth exploration of the human body requiring extensive laboratory work, lectures, dissections, and field trips. Prerequisite: BIL 210 (HSC 210) and permission of instructor.

BIL 311. Biostatistics
3 credits Offered By Announcement only
Descriptive and inferential univariate and bivariate statistics applied to biological data. Probability, probability distributions, data description and presentation, hypothesis testing, decision making and experimental design. (Not open to students with credit in MTH 224, PSY 204 or equivalent). Two hours lecture, two hours computer workshop. Prerequisite: MTH 105 or 108 or scores of Mathematics Placement Test sufficient for admission to a calculus course. 12 credits in Biology.

BIL 321. Invertebrate Zoology
4 credits Offered By Announcement only
Biology of invertebrates, with emphasis on tropical and subtropical marine forms. Field work and combined lecture-laboratory sessions. Prerequisite: One year of Biology with laboratory.

BIL 323. Biology of Insects
3 credits Offered By Announcement only
Evolution, structure, physiology, behavior and ecology of major orders of insects. Lecture and demonstration. Prerequisite: One year of general biology with laboratory.

BIL 324. The Biology of Fishes
3 credits Offered By Announcement only
Selected topics on the ecology and physiology of fishes. Lectures on reproduction, respiration, osmoregulation, sense systems, hormonal control. Prerequisite: BIL 255 and 265, and permission of instructor.

BIL 326. Plant Taxonomy
4 credits Offered By Announcement only
Application of the principles and techniques of taxonomy to the flora of South Florida. Lecture, 2 hours; laboratory, 3 hours, and field trips. Prerequisite: One year of Biology with laboratory.

BIL 327. Marine and Fresh Water Algae
4 credits Offered By Announcement only
Fundamentals of the biology of marine and fresh water algae. Lecture, 3 hours; laboratory, 3 hours. Prerequisite: One year of general biology with laboratory.

BIL 328. Parasitology
3 credits Offered By Announcement only
Morphology, classification, life history, pathology and control of protozoan helminth and arthropod parasites. Prerequisite: BIL 150/151, BIL 160/161. Junior or senior standing or permission of instructor.
BIL 329. Parasitology Laboratory
1 credit
Laboratory exercises in parasitology. Prerequisite or corequisite: BIL 328.

BIL 331. Vertebrate Ecology
4 credits
General basis of vertebrate taxonomy. Behavior, natural history, physiological ecology, adaptive morphology and zoogeography of the vertebrates. Lecture, 3 hours; laboratory, 3 hours; field trips. Prerequisite: One year of Biology with laboratory.

BIL 332. Principles of Wildlife Management
3 credits
Principles and concepts of wildlife conservation and management. Prerequisite: BIL 235.

BIL 333. Wildlife Management Laboratory
1 credit
Field and laboratory exercises illustrating techniques of wildlife management. Prerequisite or corequisite: BIL 332.

BIL 335. Tropical Field Biology
3 credits
Intensive field study conducted during semester breaks or recesses with additional pre-trip lectures. Requires payment of trip costs. Prerequisite: One year of general biology with laboratory and permission of instructor.

BIL 336. Tropical Plant Biology
3 credits
Structure, diversity, ecology, development and physiology of major plant groups of the tropics. Lecture, 3 hours; field trips. Prerequisite: One year of general biology with laboratory.

BIL 337. Advanced Ecology Laboratory
2 credits
Research methods in physiological, behavioral, population, community, ecosystem and landscape ecology. Original research using current instrumentation in the field, the laboratory and on computer. Prerequisite: BIL 235.

BIL 338. Ecology of Southern Florida
4 credits
Structure, function and management of major natural communities. Lecture 2 hours; 6 all-day field trips (Saturdays). Prerequisite: BIL 235 and permission of instructor.

BIL 341. Behavioral Physiology
3 credits
The function and structure of the proximate mechanisms underlying behavior in an evolutionary context. Behavioral substrates, including sensory, central and peripheral aspects of nervous systems, effector organs, and hormonal influences, will be examined and compared across taxa. Prerequisite: BIL 265 or permission of instructor.

BIL 342. Neural Mechanisms of Disease
3 credits
Cellular and molecular mechanisms underlying nervous system dysfunction and mental illness. Biological bases, including clinical and therapeutic aspects, of specific neurological disorders. Prerequisite: BIL 268 or PSY 202 and permission of instructor or Director of Neuroscience Program.
BIL 345. Behavioral Endocrinology
3 credits
Offered By Announcement only
The effects of hormones on aggressive behavior, biological rhythms, ingestive behavior, reproductive behavior, and stress response in a variety of vertebrate and invertebrate species. Prerequisite: BIL 365.

BIL 351. Human Genetics
3 credits
Offered By Announcement only
Molecular organization of the human genome, methods of gene mapping, cytogenetics, population and medical genetics, current research. Lecture and discussion. Prerequisite: BIL 250.

BIL 352. Techniques in Scanning Electron Microscopy
3 credits
Offered Spring Semester
Tissue preparation, use of the scanning electron microscope, photography, and analysis and manipulation of digital images. Lecture 1 hour; laboratory 5 hours. Prerequisite: Twelve credits in biology, including one year of general biology with laboratory and permission of instructor.

BIL 353. Projects in Scanning Electron Microscopy
2 credits
Offered Fall Semester
Individual research projects in scanning electron microscopy. Six hours of laboratory. Prerequisite: BIL 352 and permission of instructor.

BIL 355. Developmental Biology
3 credits
Offered By Announcement only
Principles of differentiation, morphogenesis and development will be studied along with a critical analysis of the methods used to study these problems. Prerequisite: BIL 250 and 255.

BIL 356. Developmental Biology Laboratory
1 credit
Offered By Announcement only
Laboratory exercises in developmental biology. Prerequisite or corequisite: BIL 355.

BIL 358. Mathematical Biology
3 credits
Offered By Announcement only
Biomathematics concerned with shape and form, random processes, dynamic phenomena, and chaos in complex systems. Prerequisite: One year of general biology with laboratory; MTH 112 or 132.

BIL 359. Biophysics
3 credits
Offered By Announcement only
Analysis of problems in Biophysics, with emphasis on the statistical nature of biological processes. Examples from cellular physiology, ecology, genetics and the health sciences. Prerequisite: One year of general biology with laboratory and MTH 112 or 132, or permission of instructor.

BIL 360. Animal Physiology
3 credits
Offered By Announcement only
Principles of homeostasis and behavioral integration. Physiological and structural adaptations of animals to their environments. Prerequisite: BIL 265.

BIL 361. Cytology and Histology
3 credits
Offered By Announcement only
Structure and function of cells and cell organelles, including a survey of selected cell and tissue types in the vertebrate body. Lecture, 3 hours. Prerequisite: One year of general biology with laboratory.
**BIL 362. Cytology and Histology Laboratory**

*2 credits*  
Offered By Announcement only  
Survey of cells, tissues and organs of the vertebrate body, from prepared microscope slides and atlases of electron microscopy. Demonstrations of microscopic methods in cytology and histology. Four hours per week. Prerequisite or corequisite: BIL 361.

**BIL 363. Environmental Physiology**

*3 credits*  
Functional and adaptive significance of morphological and physiological traits of organisms in relation to their physical environment. Prerequisite: BIL 265.

**BIL 364. Environmental Physiology**

*3 credits*  
Offered Spring Semester  
Functional and adaptive significance of morphological and physiological traits of organisms in relation to their physical environment. Prerequisite: BIL 265.

**BIL 365. Endocrinology**

*3 credits*  
Offered By Announcement only  
The endocrine glands and the chemistry, mechanisms of action, and physiological effects of hormones. Emphasis on vertebrate hormones, including clinical aspects of human endocrinology. Lecture, 3 hours. Prerequisite: One year of Biology and Chemistry with laboratory.

**BIL 366. Comparative Vertebrate Physiology**

*3 credits*  
Offered By Announcement only  
Homeostasis interactions with the external environment, and special topics in physiology including life without oxygen, behavioral energetics, allometry. Prerequisite: BIL 265 or permission of the instructor.

**BIL 367. A Survey of Cancer Biology**

*3 credits*  
Offered By Announcement only  
The biological aspect of human cancers, including their incidence, diagnosis and treatment. Prerequisite: BIL 255.

**BIL 368. Cellular and Molecular Neuroscience**

*3 credits*  
Offered By Announcement only  
Biophysical, biochemical and structural features of nerve, muscle and sensory cells. Basic cellular processes underlying function and development of nervous systems. Prerequisite: BIL 255, CHM 202.

**BIL 369. Fundamentals of the Biology of Aging**

*3 credits*  
Offered By Announcement only  
How and why we age. The biology of aging at the molecular, cellular, and organismal levels is presented in a comparative and evolutionary context. Prerequisite: BIL 250, 255 or 265.

**BIL 371. Readings in Biology**

*1 credit*  
Offered Spring Semester  
Prerequisite: Permission of instructor.

**BIL 372. Readings in Biology**

*1 credit*  
Offered Fall and Spring Semesters  
Prerequisite: Permission of instructor.

**BIL 374. Readings in Biology**

*1 credit*  
Offered Fall and Spring Semesters  
Prerequisite: Permission of instructor.

**BIL 375. Readings in Biology**

*1 credit*  
Offered Fall and Spring Semesters  
Prerequisite: Permission of instructor.
BIL 381. **Workshop Leaders in Biology I**  
0-1 credits  
Offered Fall Semester

Students engage in Peer-led Team Teaching of workshops for groups of BIL 150 students. Students may enroll for this course only once. Students may serve as workshop leaders for a second time a stipend if they (1) have taken the course once before and (2) are graduating seniors. Prerequisite: A grade of “A” or “B” in BIL 150, 151, 160, and 161, or equivalent or AP outplacing; permission of instructor.

BIL 382. **Workshop Leaders in Biology II**  
0-1 credits  
Offered Spring Semester

Students engage in Peer-led Team Teaching of workshops for groups of BIL 160 students. Students may enroll for this course only once for one credit towards the biology major. Students may serve as workshop leaders for a second time for a stipend if they (1) have taken the course once before and (2) are graduating seniors. Prerequisite: A grade of “A” or “B” in BIL 150, 151, 160, and 161 or equivalent or AP outplacing; permission of instructor.

BIL 390. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.

Special topics taken at other institutions with no direct equivalents.

BIL 391. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.

Special topics taken at other institutions with no direct equivalents.

BIL 392. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.

Special topics taken at other institutions with no direct equivalents.

BIL 393. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.

Special topics taken at other institutions with no direct equivalents.

BIL 394. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.

Special topics taken at other institutions with no direct equivalents.

BIL 395. **Studies in Biology**  
1-5 credits  
Not offered. Transfer credit only.

Special topics taken at other institutions with no direct equivalents.

BIL 403. **Neuroscience Laboratory**  
4 credits  
Offered Spring Semester

Research methods and laboratory experiments in contemporary Neuroscience from individual cells to behavior. Scientific report writing and computer applications in experimental design and analysis. Lecture/Lab. Prerequisite: PSY 316 with PSY 402 or BIL 268 as pre- or corequisite.

BIL 410. **Marine Conservation Science**  
3 credits

Marine populations and ecosystems; threats to marine biological diversity; place-based management of marine ecosystems; human dimensions of marine conservation. Prerequisite: BIL 150 and 160 or equivalent.

BIL 415. **Coral Reef Science and Management**  
3 credits

Coral reefs as biophysical and socioeconomic systems. Coral reef typology, geomorphology; biotic and abiotic components of coral reef ecosystems. Prerequisite: BIL 150 and 160 or equivalent.
BIL 424. Reef Fish Identification and Survey Techniques
2 credits  
Offered By Announcement only
Basic ecology of reef fishes, field identification of tropical Atlantic coral reef fishes, analyses of fish survey data, and use of statistics software packages to detect differences in fish assemblages. Prerequisite: One year of biology for majors with laboratory; MTH 111/112; MSC 230; and Statistics (PSY 204, BIL 311, or equivalent).

BIL 431. Global Environmental Issues
3 credits  
Offered By Announcement only
Environment and global policy issues; environmental problems in the international arena and the impact of global change based on monitoring initiatives and long-term data. Prerequisite: Junior standing in international studies, environmental sciences/studies or biology.

BIL 432. Ecotoxicology
3 credits  
Offered By Announcement only
Ecological effects of contamination on populations, communities, and ecosystems and strategies for prevention and/or control measures. Prerequisite: BIL 235 and CHM 202.

BIL 468. Developmental Neuroscience
3 credits  
Offered Spring Semester
Cellular and molecular aspects of Nervous system including neuronal differentiation. Prerequisite: BIL 255, 268.

BIL 471. Special Studies in Biology
2-4 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be expressed in parentheses, following title “Special Studies” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 472. Special Studies in Biology
2-4 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be expressed in parentheses, following title “Special Studies” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 473. Special Studies in Biology
2-4 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be expressed in parentheses, following title “Special Studies” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 474. Special Studies in Biology
2-4 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be expressed in parentheses, following title “Special Studies” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 475. Special Studies in Biology
2-4 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be expressed in parentheses, following title “Special Studies” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 491. Seminar in Biology
1 credit  
Offered Fall Semester
Research seminars by distinguished biologists. Prerequisite: 24 credits in Biology.
BIL 492. Seminar in Biology
1 credit
Offered Spring Semester
Research seminars by distinguished biologists. Prerequisite: 24 credits in Biology.

BIL 495. Projects in Biology
2 credits
Offered Fall and Spring Semesters
Individual, original laboratory or field research supervised by a member of the department faculty and concluded by a formal written report. Prerequisite: Permission of instructor.

BIL 496. Projects in Biology
2 credits
Offered Fall and Spring Semesters
Individual, original laboratory or field research supervised by a member of the department faculty and concluded by a formal written report. Prerequisite: Permission of instructor.

BIL 497. Projects in Biology
2 credits
Offered Fall and Spring Semesters
Individual, original laboratory or field research supervised by a member of the department faculty and concluded by a formal written report. Prerequisite: Permission of instructor.

BIL 498. Senior Thesis
2 credits
Offered Fall and Spring Semesters
Formal thesis preparation supervised by a member of the departmental faculty including a public oral defense and submission of the written document to the department. Prerequisite or corequisite: Four (4) credits of "Projects in Biology" or equivalent.

BIL 499. Research Colloquium
1 credit
Offered Fall and Spring Semesters
Discussion of current research of Biology undergraduate students. Prerequisite: BIL 495, junior or senior standing, and permission of the Departmental Honors Director. Corequisite: BIL 496 or 497.

BIL 511. Biometry
3 credits
Offered By Announcement only
Descriptive and analytical statistics as used in biology. Emphasizes sampling, presentation of quantitative data, probability theory applications, distributions, parametric and non-parametric test procedures. Prerequisite: One semester of statistics and one year of calculus.

BIL 520. Evolution
3 credits
Offered By Announcement only
Evolutionary mechanisms and pathways: sources of hereditary variation, evolutionary forces, origins of adaptations, speciation, macroevolution, origin of life and humankind. Prerequisite: BIL 250.

BIL 521. Systematics
3 credits
Offered By Announcement only
Concepts and methods in phylogenetic systematics. Lectures, discussions, and computer labs, 3 hours. Prerequisite: Permission of instructor.

BIL 522. Plant Evolution
3 credits
Offered By Announcement only
Role of genetic variation, local adaptation, speciation, hybridization and polyploidy, and life histories in plant evolution. Prerequisite: BIL 250 or permission of instructor.
BIL 523. **Advanced Biology of Marine Invertebrates**  
4 credits  
*Offered By Announcement only*  
Detailed study of major phyla of marine invertebrates. Special emphasis on taxa found in waters off southern Florida. Field course. Lectures, laboratory, special projects, and seminars. Prerequisite: BIL 235 and 321.

BIL 525. **Herpetology**  
3 credits  
*Offered By Announcement only*  
Systematics, biogeography, and evolutionary biology of amphibians and reptiles, with emphasis on modern families. Lecture, 2 hours; laboratory, 3 hours. Prerequisite: BIL 235.

BIL 526. **Studies in the Biology of Mycorrhizae**  
2 credits  
*Offered By Announcement only*  
Readings, discussions and laboratory exercises concerning the biology of mutualistic root-inhabiting fungi and their plant hosts. Topics will vary by semester, may be repeated for credit. Prerequisite: Permission of instructor.

BIL 527. **Biology of Fungi**  
4 credits  
*Offered By Announcement only*  
Physiology and ecology of the major groups of fungi, especially those of importance as pathogens or mutualists. Combined lecture and laboratory. Prerequisite: One year of general biology with laboratory.

BIL 529. **Higher Vascular Plants**  
4 credits  
*Offered By Announcement only*  
Anatomy and morphology of higher vascular plants; emphasis on form as related to function and ecology. Lecture plus laboratory, 6 hours. Prerequisite: BIL 235.

BIL 530. **Population Genetics**  
3 credits  
*Offered By Announcement only*  
Theories of genes in populations, including an analysis of the genetic basis of microevolution; current examples from natural and experimental populations. Lecture and discussion, 3 hours. Prerequisite: BIL 250 and a year of calculus or their equivalents. A course in statistics is strongly recommended.

BIL 531. **Advanced Field Ecology**  
5 credits  
*Offered By Announcement only*  
Principles of and practical experience in quantitative sampling of community structure, plant and animal populations, and animal activities. Emphasis on individual projects. Lecture, 3 hours; laboratory and field, 10 hours alternate Saturdays plus projects. Prerequisite: One semester of Ecology and BIL 511 or another statistics course.

BIL 532. **Plant Population Biology**  
3 credits  
*Offered By Announcement only*  
Contemporary issues in plant population biology: demography, dynamics, life tables, simple models, density-dependence, life history evolution, competition, herbivory, pollination, seed dispersal and biotic defense. Prerequisite: BIL 235 and 250.

BIL 533. **Advanced Conservation Biology**  
3 credits  
*Offered By Announcement only*  
Principles of conservation biology including species concept, biodiversity, population genetics, demography, community and ecosystems ecology, habitat loss, conservation reserve design and wildlife management. Project on management planning required. Prerequisite: BIL 235, 251 or equivalents.
BIL 534. Ecological Abiotic Methods
4 credits
Theory and practice of methods and instrumentation used in ecology. Laboratory and field trips, 9 hours. Prerequisite: Ecology course, one year of chemistry with laboratory, and permission of instructor.

BIL 536. Plant Ecology
4 credits
Physiological, morphological, and life history adaptations of plants to the environment; the relationship between these adaptations; population processes and community structure and dynamics. Lecture, 3 hours; laboratory, 3 hours; field trips. Prerequisite: BIL 235 and permission of instructor.

BIL 537. Ecosystem Ecology
3 credits
Concepts and models of energy and nutrient flow, food webs, successional processes, human influences and effects of spatial heterogeneity. Prerequisite: BIL 235 or permission of instructor.

BIL 538. Wetland Ecology
3 credits
Nature, development, distribution, and function of wetland ecosystems. Prerequisite: BIL 235.

BIL 539. Wildlife Resource Philosophy and Policy
3 credits
Attitudes, philosophy, and policies that govern management of wildlife resources worldwide. Methods to influence public support for implementation of sound wildlife resource management. Prerequisite: BIL 332.

BIL 540. Ethology and Behavioral Ecology
3 credits
Evolutionary and comparative approach to concepts in animal behavior emphasizing function and mechanism. Topics include genetics of behavior, orientation, foraging, communication, and social behavior. Prerequisite: BIL 235 and either BIL 241 or 341 or permission of instructor.

BIL 541. Laboratory and Field Ethology
3 credits
Laboratory and field exercises introduce the quantitative techniques currently employed in ethological research. Both principles and practice will be covered and a term project is required. Prerequisite: BIL 236.

BIL 550. Cell Metabolism: Structure and Function
3 credits
Interactions of cell organelles within the dynamic context of intracellular microarchitecture, enzyme kinetics and bioenergetics. Prerequisite: BIL 255.

BIL 551. Current Topics in Genetics
1-2 credits
Research literature in cytogenetics, molecular, human and population genetics. Subjects vary from year to year. This course may be repeated for credit. Prerequisite: BIL 250 and permission of instructor.

BIL 554. Electron Microscopy
4 credits
Techniques in transmission electron microscopy including tissue preparation, use of the electron microscope, photography, and interpretation of micrographs. Lecture, 1 hour; laboratory, 6 hours. Prerequisite: BIL 255 or 361 and permission of instructor.
BIL 555. Projects in Electron Microscopy  
2 credits  
Offered Spring Semester  
Individual research projects in transmission electron microscopy, 6 hours. 
Prerequisite: BIL 554. Permission of instructor.

BIL 562. Ornithology  
4 credits 
Offered By Announcement only  
Advanced ornithology with stress on quantitative aspects. Prerequisite: BIL 261 or equivalent.

BIL 564. Advanced Developmental Biology  
3 credits  
Offered By Announcement only  
Comprehensive survey of the principles of development and methods of experimental analysis. Lecture, discussion and demonstration, 3 hours. 
Prerequisite: BIL 364.

BIL 566. Plant Environmental Physiology  
3 credits  
Offered By Announcement only  
Environmental influence on the physical and chemical bases of life processes in plants, including ecosystem consequences. Prerequisite: BIL 255, 265 or permission of instructor.

BIL 567. Animal Physiological Ecology  
3 credits  
Offered By Announcement only  
Physiological interactions of animals with their biotic and abiotic environments: Information integrated from tissue, organ, and whole organism levels. 
Prerequisite: BIL 265 or permission of instructor.

BIL 569. Biology of Aging  
3 credits  
Offered By Announcement only  
The hypotheses and data relating to the biological basis of aging in invertebrates and vertebrates, including humans. Prerequisite: Senior or graduate status in a biological science.

BIL 571. Advanced Special Studies in Biology  
1- 6 credits  
Offered By Announcement only  
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.

BIL 572. Advanced Special Studies in Biology  
1- 6 credits  
Offered By Announcement only  
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.

BIL 573. Advanced Special Studies in Biology  
1- 6 credits  
Offered By Announcement only  
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.

BIL 574. Advanced Special Studies in Biology  
1- 6 credits  
Offered By Announcement only  
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.

BIL 575. Advanced Special Studies in Biology  
1- 6 credits  
Offered By Announcement only  
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.
BIL 581. Survey of the History and Literature of Biology
2 credits
Offered By Announcement only
Emphasis on historical development and central concepts of biology. Prerequisite:
Senior standing and permission of instructor.

BIL 590. Studies in Biology
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

BIL 591. Studies in Biology
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

BIL 592. Studies in Biology
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

BIL 593. Studies in Biology
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

BIL 594. Studies in Biology
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

BIL 595. Studies in Biology
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

Chemistry

CHM 101. Fundamentals of Chemistry I
3 credits
Offered Fall Semester
Fundamental concepts of chemistry and their relation to living systems, utilitarian
chemical processes, and the environment. Lecture, 3 hours. Not for major or
minor credit.

CHM 103. Chemistry for Life Sciences I (Lecture)
3 credits
Offered Fall Semester
Essentials of inorganic chemistry as it applies to biological systems. Designed for
(but not limited to) those planning health-related careers. Lecture, 3 hours.

CHM 104. Chemistry for Life Sciences II (Lecture)
3 credits
Offered Spring Semester
A continuation of CHM 103, with emphasis on organic and biological chemistry,
including biochemical processes and metabolism. Lecture, 3 hours. Prerequisite:
CHM 103.

CHM 105. Chemistry for Life Sciences I (Laboratory)
1 credit
Offered Fall Semester
Designed for those students in CHM 103 requiring a laboratory course.
Laboratory, 3 hours. Prerequisite or corequisite: CHM 103.

CHM 106. Chemistry for Life Sciences II (Laboratory)
1 credit
Offered Spring Semester
Designed for those students in CHM 104 requiring a laboratory course.
Laboratory, 3 hours. Prerequisite or corequisite: CHM 104.

CHM 111. Principles of Chemistry I
3 credits
Offered Fall and Spring Semesters and First Summer Session
Fundamental principles of chemical science. The beginning course for science
majors and premedical students. Lecture, 3 hours. Prerequisite or corequisite:
MTH 105 or 107.
CHM 112. Principles of Chemistry II
3 credits  Offered Fall and Spring Semesters and Second Summer Session
Continuation of CHM 111. Lecture, 3 hours. Prerequisite: CHM 111 or 151.

CHM 113. Chemistry Laboratory I
1 credit  Offered Fall and Spring Semesters and First Summer Session
Laboratory techniques of chemistry. To accompany CHM 111. Laboratory, 3 hours. Prerequisite or corequisite: CHM 111.

CHM 114. Chemistry Laboratory II
1 credit  Offered Fall and Spring Semesters and Second Summer Session
Continuation of CHM 113. Intermediate laboratory techniques and quantitative analysis. To accompany CHM 112. Laboratory, 3 hours. Prerequisite: CHM 113; prerequisite or corequisite: CHM 112.

CHM 151. Chemistry for Engineers I
3 credits  Offered Fall and Spring Semesters
Fundamental principles of chemistry for engineering students. Not recommended for students that plan to enter Medical School. Lecture, 3 hours. Prerequisite or corequisite: MTH 105 or 107.

CHM 153. Chemistry Laboratory for Engineers
1 credit  Offered Fall and Spring Semesters
An introductory laboratory course to accompany CHM 151. The techniques of chemistry for engineering students. Prerequisite or corequisite: CHM 151.

CHM 201. Organic Chemistry I (Lecture)
3 credits  Offered Fall and Spring Semesters and First Summer Session
The chemistry of carbon compounds. Required of chemistry majors, and premedical students; recommended for majors in life sciences. Lecture, 3 hours. Prerequisite: CHM 112.

CHM 202. Organic Chemistry II (Lecture)
3 credits  Offered Fall and Spring Semesters and Second Summer Session
Continuation of CHM 201. Lecture, 3 hours. Prerequisite: CHM 201.

CHM 205. Organic Chemistry Laboratory I
1 credit  Offered Fall and Spring Semesters and First Summer Session
Introduction to techniques of organic chemistry. Laboratory, 3 hours. Prerequisite or corequisite: CHM 201.

CHM 206. Organic Chemistry Laboratory II
1 credit  Offered Fall and Spring Semesters and Second Summer Session
Continuation of CHM 205. Laboratory, 3 hours. Prerequisite: CHM 205. Prerequisite or corequisite: CHM 202.

CHM 304. Spectroscopic Methods in Chemistry and Biochemistry
3 credits  Offered Fall Semester
Modern spectroscopic methods of analysis. Lecture 3 hours; Prerequisite: CHM 202 and 206.

CHM 316. Instrumental Analytical Chemistry
3 credits  Offered Spring Semester
Modern methods of quantitative analysis. Lecture, 3 hours. Prerequisite: CHM 304 and 360.

CHM 320. Instrumental Methods in Chemistry and Biochemistry
2 credits  Offered Spring Semester
Instrumental methods in modern chemistry and biochemistry, including spectrometric, electrochemical and chromatographic (separation) techniques. Laboratory, 8 hours. Prerequisite: CHM 304. Corequisite: CHM 316.
CHM 331. Physical Chemistry for Premedical Students
3 credits
Offered Spring Semester
Fundamentals of thermodynamics as applied to gases, liquids and solutions; chemical kinetics and other selected topics. Lecture, 3 hours. Prerequisite: CHM 112, MTH 110 or 111 or 131, PHY 102 or permission of instructor.

CHM 360. Physical Chemistry I (Lecture)
3 credits
Offered Fall Semester
Introduction to physical chemistry including thermodynamics, gaseous and liquid states, solutions, homogeneous and heterogeneous equilibria. Lecture, 3 hours. Prerequisite: CHM 112, MTH 112 or 132. Prerequisite or corequisite: One semester of physics.

CHM 364. Physical Chemistry (Laboratory I)
1 credit
Offered Fall and Spring Semesters
Representative experiments in physical chemistry. Laboratory, 4 hours. Prerequisite or corequisite: CHM 331 or 360.

CHM 365. Physical Chemistry II (Lecture)
3 credits
Offered Spring Semester
Chemical kinetics, introductory quantum chemistry, molecular spectroscopy. Prerequisite: CHM 360, MTH 112. Prerequisite or corequisite: Two semesters of physics.

CHM 381. Workshop Leaders in Chemistry I
1 credit
Students engaged in Peer-Led Team Teaching of workshops for groups of CHM 111 and/or CHM 112 students may enroll for this course. May be repeated. Prerequisite: A grade of "A" or "B" in CHM 111 and 112 or AP outplacing.

CHM 382. Workshop Leaders in Chemistry II
1 credit
Students engaged in Peer-Led Team Teaching of workshops for groups of CHM 111 and/or CHM 112 students may enroll for this course. May be repeated. Prerequisite: A grade of "A" or "B" in CHM 111 and 112 or AP outplacing.

CHM 401. Environmental Chemistry
3 credits
Offered Spring Semester
Major environmental features of the earth; Role of natural and synthetic chemicals in the environment; Atmospheric and aquatic pollution; Application of acid-base theory and oxidation reduction to environmental problems. Prerequisite: CHM 111 and 112; and Junior standing; not open to students with credit in ESC 401.

CHM 416. Environmental Analysis
3 credits
Offered By Announcement only
A laboratory course using the Environmental Protection Agency's methods of sampling, sample preparation, and analysis for priority pollutants; methods of ultra-micro chemical analysis; Quality Assurance and Quality Control. Prerequisite: CHM 206.

CHM 442. Inorganic Chemistry (Laboratory)
1 credit
Offered Spring Semester
Synthesis of inorganic compounds and determination of their physical and chemical properties. CHM 541 is a corequisite for ACS chemistry majors. Laboratory, 3 hours. Prerequisite: CHM 365 and 541.

CHM 464. Physical Chemistry (Laboratory II)
1 credit
Offered Spring Semester
Continuation of CHM 364. Laboratory, 4 hours. Prerequisite: CHM 360 and 364. Prerequisite or corequisite: CHM 365.
CHM 488. Undergraduate Research
1-3 credits  Offered Fall and Spring Semesters and First and Second
Summer Sessions
Laboratory research under the direction of a member of the chemistry faculty.
Thesis optional. Course may be repeated for credit. Prerequisite: B average in
Chemistry courses and departmental consent.

CHM 490. Honors Research
1-3 credits  Offered Fall and Spring Semesters and First and Second
Summer Sessions
Laboratory research under the direction of a member of the Chemistry faculty.
Thesis required. Course may be repeated for credit. Prerequisite: Admission to
Honors Program. Chemistry Department consent. CHM 206.

CHM 520. Physical Organic Chemistry
3 credits  Offered Fall Semester
Aspects of chemical bonding, acids and bases, steoeochemistry, aromaticity,
pericyclic reactions, linear free energy relationships, transition state theory,
excited state chemistry, reactive intermediaries, mechanisms of uni- and
bimolecular reactions. Prerequisite: CHM 202 and 360.

CHM 522. Synthetic Organic Chemistry
3 credits  Offered Fall Semester
Functional group transformations, Synthon approach. Retrosynthetic analyses,
multistep syntheses. Prerequisite: CHM 202.

CHM 524. Supramolecular Chemistry
3 credits
Complexation, recognition, and catalysis as applied to bioorganic chemistry.
Steric, polar, and lipophilic interactions as well as proximity effects in the design
of synthetic enzyme mimics, cationic transport species, etc. Prerequisite: CHM
365 and 520.

CHM 525. Structural Organic Chemistry
3 credits  Offered Spring Semester
Use of electronic and vibrational spectroscopy in structure elucidation. Structure
elucidation by modern NMR; EI, CI, MALDI and Electropspray mass spectrometry.
Assignment of absolute configuration of chiral centers. Prerequisite: CHM 202.

CHM 541. Principles of Bonding and Reactivity in Inorganic Chemistry
3 credits
Bonding principles necessary to understand the structure, stability, and
fundamental reactivity of main group and transition metal inorganic compounds,
Prerequisite: CHM 365.

CHM 556. Self-Assembly and Surface Chemistry
3 credits
Methods of preparation of self-assembly monolayers and surface chemistry
properties. Prerequisite: CHM 365.

CHM 563. Electronic Structure Methods
1 credit  Offered Fall Semester
Basis sets, post-SCF methods, and potential energy surfaces. Thermodynamic,
structural, and vibrational predictions, excited states, solvation and hybrid
Hamiltonians. Prerequisite: Permission of department.

CHM 564. Molecular Simulations
1 credit  Offered By Announcement only
Classical dynamics, force-fields, sampling, periodic and stochastic boundaries,
Monte-Carlo and molecular dynamics simulations, and free energy perturbation.
Prerequisite: Permission of department.
CHM 565. **Principles of Spectroscopic Techniques**  
3 credits  
Spectroscopic techniques: nuclear magnetic resonance (NMR), mass spectra (MS), ultraviolet (UV), visible infrared (IR), fluorescence, and other specialized spectroscopic techniques. Prerequisite: CHM 365.

CHM 570. **Advanced Physical Chemistry Topics**  
3 credits

CHM 579. **Special Topics: Chemistry Internship**  
1-3 credits  
Offered By Announcement only

CHM 580. **Special Topics: Chemistry Internship**  
1-3 credits

CHM 591. **Topics in Chemistry**  
1-3 credits  
Offered By Announcement only  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule following the title, "Topics in Chemistry". Prerequisite: 20 credits in Chemistry.

CHM 592. **Topics in Chemistry**  
1-3 credits  
Offered By Announcement only  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule following the title, "Topics in Chemistry". Prerequisite: 20 credits in Chemistry.

CHM 593. **Readings in Chemistry**  
1-3 credits  
Offered By Announcement only  
Supervised readings on special topics. Offered by special arrangement. May be repeated for credit. Prerequisite: 20 credits in Chemistry and permission of the Department Chairman.

CHM 594. **Readings in Chemistry**  
1-3 credits  
Offered By Announcement only  
Supervised readings on special topics. Offered by special arrangement. May be repeated for credit. Prerequisite: 20 credits in Chemistry and permission of the Department Chairman.

**Classics**

CLA 220. **Greek and Roman Mythology**  
3 credits  
The major political, cultural, and social themes that appear in Greek and Roman mythology, examining literary and material evidence. Prerequisite: ENG 105 and 106.

CLA 301. **Ancient Greece**  
3 credits  
Greek civilization from the Late Bronze Age to the end of Greek independence at the battle of Chaeronea in 338 B.C.E. Prerequisite: Junior standing or permission of instructor.

CLA 302. **The Hellenistic Age**  
3 credits  
Conquests of Alexander the Great and the spread of Greek culture in the Near East under Alexander’s successors until the death of Cleopatra in 31 B.C.E. Prerequisite: Junior standing or permission of instructor.
CLA 303. The Roman Republic  
3 credits  
Roman civilization from the establishment of the Republic until the Battle of Actium in 31 B.C.E. Prerequisite: Junior standing or permission of instructor.

CLA 304. The Roman Empire  
3 credits  
Roman civilization from the reign of Augustus in 37 B.C.E. to the Fall of Rome in 476 C.E. Prerequisite: Junior standing or permission of instructor.

CLA 310. Literature and Culture in Classical Greece and Rome I  
3 credits  
Major pre-classical and classical Greek writers, including Homer, Sappho, Pindar, Aeschylus, Herodotus, and Sophocles, treated by close analysis, and attention to connecting themes; Greek art and archeology in reference to specific texts. Prerequisite: Three credits in literature.

CLA 311. Literature and Culture in Classical Greece and Rome II  
3 credits  
Thucydides on the Peloponnesian War; the drama of Euripides and Aristophanes; the dialogues of Plato on Socrates’ trial and death; Aristotle’s Poetics. Early Roman tradition; Rome and its relation to Greek culture; Livy on Roman history; Cicero, Virgil’s Aeneid, Marcus Aurelius. Prerequisite: Three credits in literature.

CLA 340. Greek Tragedy  
3 credits  
Readings in English of the tragedies of Aeschylus, Sophocles, and Euripides. Prerequisite: ENG 106 or permission of instructor.

CLA 370. Self and Other in the Ancient World  
3 credits  
The course examines Greek and Roman depictions of outsiders in a wide range of ancient texts and material sources. Prerequisite: ENG 105 and/or 106 or permission of instructor.

CLA 491. Directed Readings  
1-3 credits  
Content to be determined by faculty member and registering student(s). Prerequisite: Six credits in classics or permission of instructor.

CLA 505. Seminar in Ancient Studies  
3 credits  
Topics in Greek and Roman studies. Prerequisite: Junior standing or permission of instructor.

Computer Science

CSC 115. Social and Ethical Issues in Computing  
3 credits  

CSC 119. Computers and Society  
3 credits  

Offered Spring Semester
CSC 120. Computer Programming I
4 credits  Offered Fall and Spring Semesters

CSC 220. Computer Programming II
4 credits  Offered Fall and Spring Semesters
Object-oriented programming. Fundamental data structures. Elementary searching and sorting. Event-driven and concurrent programming. Using APIs. Prerequisite: CSC 120.

CSC 314. Computer Organization and Architecture
3 credits  Offered Fall and Spring Semesters
Digital logic and digital systems. Machine level representation of data. Assembly level machine organization. Memory system organization and architecture. Interfacing and communication. Functional organization. Multiprocessing and alternative architectures. Prerequisite: CSC 120.

CSC 322. System Programming
3 credits  Offered Spring Semester

CSC 329. Introduction to Game Programming
3 credits
Fundamental programming issues in game design: Software design; Version control; Basic graphics; GUI programming. Large-scale game project: Team development of a functional game; Graphics and GUI component; Networking component; Core game engine. Prerequisite: CSC 220.

CSC 401. Computer Science Practicum I
1-3 credits  Offered By Announcement only
Implementation of techniques, algorithms, and data structures being taught in a corequisite computer science course. Prerequisite: Permission of instructor.

CSC 402. Computer Science Practicum II
1-3 credits  Offered By Announcement only
Implementation of techniques, algorithms, and data structures being taught in a corequisite computer science course. Prerequisite: Permission of instructor.

CSC 403. Computer Science Practicum III
1-3 credits  Offered By Announcement only
Implementation of techniques, algorithms, and data structures being taught in a corequisite computer science course. Prerequisite: Permission of instructor.

CSC 410. Computer Science Project Planning
1-3 credits  Offered By Announcement only
Planning for the implementation of a Computer Science project, including: Problem analysis, System architecture design, Algorithm and data structure selection, User interface design, Verification and validation plan, and Prototyping. Prerequisite: Permission of instructor.

CSC 411. Computer Science Project Implementation
1-3 credits  Offered By Announcement only
Implementation of a Computer Science project, including: Hardware preparation, Component implementation, System integration, Verification and validation, and Documentation. Prerequisite: CSC 410 or permission of instructor.
CSC 412. **Computer Science Internship**  
1- 3 credits  
Offered By Announcement only  
A commercial computing environment. Normally 50 internship hours are required per credit earned (the host company must supply documentary evidence of hours worked). Prerequisite: Permission of instructor.

CSC 498. **Senior Topics in Computer Science**  
3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor.

CSC 506. **Logic**  
3 credits  
Offered By Announcement only  
Propositional and first order logic: completeness. Computational logic: Robinson’s resolution. Formalized theories: arithmetic, Godel’s incompleteness theorem, Tarski’s theorem on undefinability of truth. Prerequisite: MTH 230 or 309 or permission of the instructor.

CSC 507. **Data Security and Cryptography**  
3 credits  
Offered By Announcement only  
Access, information flow, and inference controls. Network security and management. Encryption algorithms. Cryptographic techniques. Prerequisite: (CSC 517 or 527) and permission of instructor.

CSC 517. **Data Structures and Algorithm Analysis**  
3 credits  
Offered Fall and Spring Semesters  

CSC 518. **Interpreters and Compiler Theory**  
3 credits  
Offered By Announcement only  
Translation of higher-level languages into machine language. Topics in computer translation theory include grammars, parsing, scanners, precedence relations, run-time storage and symbol table organization, semantic routines, chaining and hashing, code generation and optimization, and macro implementation. Prerequisite: CSC 519.

CSC 519. **Program Languages**  
3 credits  
Offered Fall Semester  

CSC 521. **Principles of Computer Operating Systems**  
3 credits  
Offered Fall Semester  
Process management. Scheduling and dispatch. Interprocess communication. Memory management. File systems. Device management. Security and protection. System programming for UNIX. Prerequisite: (CSC 314 or 350), (CSC 322 or permission of instructor).

CSC 523. **Principles of Filing and Database Systems**  
3 credits  
Offered Spring Semester  
Information models and systems. Database systems. Data modeling. Relational databases. Relational database design. Database query languages. Prerequisite: CSC 517.
CSC 524. **Computer Networks**  
3 credits. **Offered Spring Semester**  
Computer networks and network applications. The protocol stack. Routing, switching and bridging technologies. Models of network computing. Internet standards and protocols. Prerequisite: (CSC 314 or 350), (CSC 322 or permission of instructor).

CSC 527. **Theory of Computing**  
3 credits. **Offered Spring Semester**  
Sets, relations, and languages. Automata theory. Basic computability theory. Turing machines. The complexity classes P and NP. Prerequisite: MTH 309.

CSC 529. **Introduction to Computer Graphics**  
3 credits. **Offered By Announcement only**  

CSC 531. **Introduction to Software Engineering**  
3 credits. **Offered Fall Semester**  

CSC 540. **Algorithm Design and Analysis**  
3 credits. **Offered By Announcement only**  
Design techniques include divide-and-conquer, greedy method, dynamic programming, backtracking. Time and space complexity. Sorting, searching, combinatorial and graph algorithms. Prerequisite: CSC 517.

CSC 545. **Introduction to Artificial Intelligence**  
3 credits. **Offered By Announcement only**  

CSC 547. **Computational Geometry**  
3 credits. **Offered By Announcement only**  
Algorithms for solving geometric problems arising from application domains including graphics, robotics, and GIS. Prerequisite: CSC 517 and permission of instructor.

CSC 555. **Multimedia Systems**  
3 credits. **Offered By Announcement only**  
Specification and requirements of a multimedia hardware system, analog video, digital audio and video fundamentals, graphics file formats, data compression, CD technology, software, and multimedia application development. Prerequisite: CSC 517.

CSC 595. **Topics in Computer Science**  
1-3 credits. **Offered By Announcement only**

CSC 596. **Topics in Computer Science**  
1-3 credits. **Offered By Announcement only**

CSC 597. **Topics in Computer Science**  
1-3 credits. **Offered By Announcement only**

CSC 598. **Topics in Computer Science**  
1-3 credits. **Offered By Announcement only**
CSC 599. Topics in Computer Science
1-3 credits
Offered By Announcement only

Ecosystem Science and Policy

ECS 111. Introduction to the Earth’s Ecosystem
3 credits
Offered Fall and Spring Semesters
Earth’s ecosystem and the interactions of humans with it. Concepts in ecology, environmental science and policy. Two field trips. Team-taught.

ECS 112. Problems in Ecosystem Science and Policy
2 credits
Offered Spring Semester
Problem solving in ecology and environmental management. Class projects and case studies providing experience in identifying problems, quantifying scientific issues, and considering management options and outcomes. Extensive field experience. Team-taught. Prerequisite: ECS 111.

ECS 195. Studies in Ecosystem Science and Policy
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions but having no direct equivalents here. Prerequisite: Permission of instructor.

ECS 196. Studies in Ecosystem Science and Policy
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions but having no direct equivalents here. Prerequisite: Permission of instructor.

ECS 197. Studies in Ecosystem Science and Policy
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions but having no direct equivalents here. Prerequisite: Permission of instructor.

ECS 198. Studies in Ecosystem Science and Policy
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions but having no direct equivalents here. Prerequisite: Permission of instructor.

ECS 199. Studies in Ecosystem Science and Policy
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions but having no direct equivalents here. Prerequisite: Permission of instructor.

ECS 201. Seminar Series in Contemporary Environmental Issues I
1 credit
Offered Fall Semester
Current environmental topics involving interaction of science and policy.

ECS 202. Seminar Series in Contemporary Environmental Issues II
1 credit
Offered Spring Semester
Current environmental topics involving interaction of science and policy.

ECS 272. Special Topics in Ecosystem Science and Policy
1-3 credits
Offered By Announcement only
Content varies by semester and is indicated in parentheses following course number and title in class schedule. Prerequisite: Permission of instructor.

ECS 295. Studies in Ecosystem Science and Policy
1-5 credits
Not offered. Transfer credit only.
For courses taken at other institutions that have no equivalents here. Prerequisite: Permission of instructor.
ECS 296. Studies in Ecosystem Science and Policy  
1-5 credits  
Not offered. Transfer credit only.  
For courses taken at other institutions that have no equivalents here.  
Prerequisite: Permission of instructor.

ECS 297. Studies in Ecosystem Science and Policy  
1-5 credits  
Not offered. Transfer credit only.  
For courses taken at other institutions that have no equivalents here.  
Prerequisite: Permission of instructor.

ECS 298. Studies in Ecosystem Science and Policy  
1-5 credits  
Not offered. Transfer credit only.  
For courses taken at other institutions that have no equivalents here.  
Prerequisite: Permission of instructor.

ECS 299. Studies in Ecosystem Science and Policy  
1-5 credits  
Not offered. Transfer credit only.  
For courses taken at other institutions that have no equivalents here.  
Prerequisite: Permission of instructor.

ECS 301. Tools for Environmental Decision-Making: The Quantitative Perspective  
3 credits  
Offered Fall Semester  
Quantitative decision-making techniques and methodologies. Prerequisite: ECS 111, 112.

ECS 302. Perspectives on Environmental Decisions  
3 credits  
Offered By Announcement only  
Analytical techniques to assess human impacts on the environment. Team-taught by faculty from law, ethics, anthropology and economics with experience in local, regional and global environmental management issues. Prerequisite: ECS 111, 112.

ECS 371. Readings in Ecosystem Science and Policy  
1-2 credits  
Offered By Announcement only  
Supervised readings on special topics. Offered by special arrangement with a faculty member. May be repeated for credit. Prerequisite: Permission of instructor.

ECS 372. Special Topics in Ecosystem Science and Policy  
1-3 credits  
Offered By Announcement only  
Content varies by semester and is indicated in parentheses following course number and title in class schedule. Prerequisite: Permission of instructor.

ECS 401. Internship  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Students selecting the internship will be required to spend a minimum of 120 contact hours working in an outside firm or agency whose mission is to address environmental issues where science and policy intersect. Prerequisite: Senior standing or permission of instructor.

ECS 402. Thesis  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual, original research of independent study supervised by a UM faculty member and concluded by formal thesis preparation, public oral defense and submission of the thesis. Prerequisite: Senior standing or permission of instructor.
ECS 403. Interdisciplinary Approaches to Complex Human-Environmental Problems (Capstone Course)
3 credits Offered Spring Semester
Students with diverse disciplinary backgrounds will design an interdisciplinary study focused on an environmental problem with a major science component and significant societal implications. Students will apply quantitative methods, formulate usable policy, and communicate their results. Prerequisite: ECS 111, 112, 301, 302.

English

ENG 103. Basic Academic Writing
3 credits Offered Fall and Spring Semesters
Intensive approach to the basics of academic writing with emphasis on building written fluency, using conventions of standard written English, and editing for precision and correctness. Intended for students who need extra preparation before entering ENG 105. Not for credit toward graduation.

ENG 105. English Composition I
3 credits Offered Fall and Spring Semesters
Introduction to written academic argument and inquiry. Not for major or minor. Cannot be taken on credit-only option.

ENG 106. English Composition II
3 credits Offered Fall and Spring Semesters
Advanced approaches to written academic argument, with emphasis on textual analysis and incorporation of secondary sources. Not for major or minor. Cannot be taken on credit-only option. Prerequisite: ENG 105.

ENG 107. English Composition II: Science and Technology
3 credits Offered Fall and Spring Semesters
Advanced approaches to written academic argument, with emphasis on textual analysis and incorporating source material using readings and approaches connected to science and technology. Alternative to ENG 106. Not for major or minor. Cannot be taken on credit-only option.

ENG 201. World Literary Masterpieces I
3 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Comparative study of literary masterpieces from ancient times through the Renaissance. Satisfies writing requirement. Prerequisite: ENG 106 or equivalent.

ENG 202. World Literary Masterpieces II
3 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Comparative study of literary masterpieces from the Renaissance to the present. Satisfies writing requirement. Prerequisite: ENG 106 or equivalent.

ENG 205. Jewish Literature
3 credits Offered By Announcement only
Selections from the Bible, the Talmud, the Kabbalah, medieval poetry and prose, Yiddish and Sephardic literature, and contemporary American and Israeli writers. Prerequisite: ENG 106 or equivalent.

ENG 208. Advanced Academic Writing for Transfer Students
3 credits Offered Fall and Spring Semesters
Review of research techniques and revision strategies. Completes the university composition requirement for those students who transfer into UM with credit for one composition course from another institution. Prerequisite: Open only to transfer students who have received transfer credit for either English 105 or English 106. Not open to students who have taken either English 105 and/or 106 at UM.
**ENG 209. Creative Writing**
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Analysis and writing of Short stories and poems. Prerequisite: ENG 105 or equivalent. Cannot be taken for credit only.

**ENG 210. Literary Themes and Topics**
3 credits
Offered By Announcement only
Literary analysis and practice in critical writing through the study of selected works; themes and topics vary by semester. Course may not be repeated. Prerequisite: ENG 105 and 106.

**ENG 211. English Literature I**
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Selected readings from the middle ages to the late 18th century. Satisfies writing requirement. Prerequisite: ENG 106 or equivalent.

**ENG 212. English Literature II**
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Selected readings from the late 18th century to the present. Satisfies writing requirement. Prerequisite: ENG 106 or equivalent.

**ENG 213. American Literature I**
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Selected American authors prior to the Civil War. Satisfies writing requirement. Prerequisite: ENG 106 or equivalent.

**ENG 214. American Literature II**
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Selected American authors from the Civil War to the present. Satisfies writing requirement. Prerequisite: ENG 106 or equivalent.

**ENG 215. English and American Literature by Women**
3 credits
Offered By Announcement only
A survey of women writers from the Middle Ages to the present; explores the female literary tradition and women’s relationship to culture and society. Prerequisite: ENG 106 or equivalent.

**ENG 220. Introduction to Poetry**
3 credits
Offered By Announcement only
Introduction to the forms of poetry through the analysis of representative poems. Prerequisite: ENG 106 or equivalent.

**ENG 221. Introduction to Fiction**
3 credits
Offered By Announcement only
Forms of prose fiction and the analysis of representative short stories and novels. Prerequisite: ENG 106 or equivalent.

**ENG 250. Studies in English**
1- 5 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents.

**ENG 251. Studies in English**
1- 5 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents.

**ENG 252. Studies in English**
1- 5 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents.
ENG 253. Studies in English  
1-5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 254. Studies in English  
1-5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 255. Studies in English  
1-5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 256. Studies in English  
1-5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 257. Studies in English  
1-5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 258. Studies in English  
1-5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 259. Studies in English  
1-5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 260. African-American Literature  
3 credits  
Offered By Announcement only  
Selected readings of the eighteenth century to the present. Prerequisite: ENG 106 or equivalent.

ENG 261. Literature of the Americas  
3 credits  
Offered By Announcement only  
Selected readings from North, Central, and South American, and Caribbean literatures from their origins to the present. Prerequisite: ENG 106 or equivalent.

ENG 290. Introduction to Writing Fiction  
3 credits  
Offered Fall and Spring Semesters  
Writing with attention to forms, mechanics, and types; strategies for creating plausible short fiction. Prerequisite: ENG 106 or equivalent and ENG 209.

ENG 292. Introduction to Writing Poetry  
3 credits  
Offered By Announcement only  
Poetic types and forms, with attention to rhyme, meter, metaphor, and theme. Prerequisite: ENG 106 or equivalent and ENG 209.

ENG 301. The Study of Language  
3 credits  
Offered By Announcement only  
Language itself as an object of study; broad linguistic issues of language types, processes of language change, and language variation. Emphasis on language in “real world” applications such as law, folk culture, poetry, education, and computers. Prerequisite: ENG 105/106 or equivalent.

ENG 306. Advanced Composition  
3 credits  
Offered By Announcement only  
Composition and analysis of English prose. Topics vary. May be repeated if topics are different. Prerequisite: ENG 106 or 107.
ENG 307. Modern English Grammar
3 credits  Offered By Announcement only
Study of the three major modern systems of grammatical analysis: Traditional, structural, transformational. Some language history and phonetics also included. Recommended for prospective teachers.

ENG 310. Literature and Culture in Classical Greece and Rome, I
3 credits  Offered By Announcement only
Major pre-classical and classical Greek writers, including Homer, Sappho, Pindar, Aeschylus, Herodotus, and Sophocles, treated by close analysis, and attention to connecting themes; Greek art and archeology in reference to specific texts. Prerequisite: Three credits in literature.

ENG 311. Literature and Culture in Classical Greece and Rome, II
3 credits  Offered By Announcement only
Thucydides on the Peloponnesian War; the drama of Euripides and Aristophanes; the dialogues of Plato on Socrates’ trial and death; Aristotle’s Poetics. Early Roman tradition; Rome and its relation to Greek culture; Livy on Roman history; Cicero, Virgil’s Aeneid, Marcus Aurelius. Prerequisite: Three credits in literature.

ENG 312. The European Middle Ages
3 credits  Offered By Announcement only
British and continental literature and thought from the 5th through the 15th centuries. Prerequisite: Three credits in literature.

ENG 313. The European Renaissance
3 credits  Offered By Announcement only
Major writers of the European Renaissance, such as Petrarch, Machiavelli, Castiglione, Erasmus, More, Rabelais, Montaigne, Marguerite de Navarre. Prerequisite: Three credits in literature.

ENG 314. The European Enlightenment
3 credits  Offered By Announcement only
Major writers of the European Enlightenment, such as Locke, Montesquieu, Vico, Hume, Voltaire, Rousseau, Diderot, Lessing, Smith, and Kant. Prerequisite: Three credits in literature.

ENG 319. Shakespeare
3 credits  Offered By Announcement only
Representative comedies, histories, tragedies and romances. Prerequisite: Three credits in literature. Not for students who have taken ENG 430 or 431; may not be taken concurrently with ENG 430 or 431.

ENG 320. Literature of the Sea
3 credits  Offered By Announcement only
The sea and sea-faring as the subject of literature. Includes such writers as Homer, the "Seafarer" poet, Chaucer, Spenser, Shakespeare, Wordsworth, Byron, Cooper, Melville, Conrad, Hemingway, and Steinbeck. Prerequisite: Three credits in literature.

ENG 321. Major American Novelists
3 credits  Offered By Announcement only
Works by selected American novelists. Prerequisite: Three credits in literature.

ENG 323. Major British Novelists
3 credits  Offered By Announcement only
Works by selected British novelists. Prerequisite: Three credits in literature.

ENG 325. Major European Novelists
3 credits  Offered By Announcement only
Works by selected European novelists. Prerequisite: Three credits in literature.
ENG 330. **Advanced Business Writing**  
3 credits  
Offered By Announcement only  
Professional writing with critical attention to complex rhetorical situations. Practice in formal and informal written communication and styles. Prerequisite: ENG 106 or equivalent.

ENG 331. **Legal Writing**  
3 credits  
Offered By Announcement only  
A study of the composition of legal arguments in court opinions, legal briefs, oral arguments before the Supreme Court, and social-legal documents. Emphasis on analysis of issues, structure and style of legal writing, and the function of logic in persuasion. Prerequisite: ENG 106 or equivalent.

ENG 332. **Writing For and About Community Service**  
3 credits  
Offered By Announcement only  
Writing on social issues from sociological and literary sources, supplemented with community service activities (minimum 12 hours per semester). Prerequisite: ENG 106 or equivalent.

ENG 333. **Writing the Research Paper**  
3 credits  
Offered By Announcement only  
Advanced techniques in conducting research and writing the research paper. Use of traditional library resources, on-line searches, the Internet, and other research methods. Strategies for effective presentation of research findings. Prerequisite: ENG 106 or equivalent. Students not in the Bachelor of General Studies program need permission of instructor.

ENG 340. **Forms of the Novel**  
3 credits  
Offered By Announcement only  
Techniques and esthetics of the novel form; emphasis on major tendencies in the evolution of long prose fiction rather than on chronological development. Prerequisite: Three hours of Literature.

ENG 341. **Modern British and American Poetry**  
3 credits  
Offered By Announcement only  
Representative poets and critics of poetry since 1900; attention to the basic principles of poetics. Prerequisite: Three credits in literature.

ENG 342. **Lyric Voices and Traditions**  
3 credits  
Offered By Announcement only  
Major figures and trends in the history of lyric poetry. Prerequisite: Three credits in literature.

ENG 350. **Studies in English**  
1- 5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 351. **Studies in English**  
1- 5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 352. **Studies in English**  
1- 5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 353. **Studies in English**  
1- 5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.

ENG 354. **Studies in English**  
1- 5 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents.
ENG 355. Studies in English  
1-5 credits  
Not offered. Transfer credit only. 
Courses taken at other institutions with no direct equivalents.

ENG 356. Studies in English  
1-5 credits  
Not offered. Transfer credit only. 
Courses taken at other institutions with no direct equivalents.

ENG 357. Studies in English  
1-5 credits  
Not offered. Transfer credit only. 
Courses taken at other institutions with no direct equivalents.

ENG 358. Studies in English  
1-5 credits  
Not offered. Transfer credit only. 
Courses taken at other institutions with no direct equivalents.

ENG 359. Studies in English  
1-5 credits  
Not offered. Transfer credit only. 
Courses taken at other institutions with no direct equivalents.

ENG 360. Comparative Literature of the Black World  
3 credits  
Offered By Announcement only  
Oral and written Black literature in Africa, the United States, the Caribbean, and South America. Prerequisite: Three credits in literature.

ENG 361. Caribbean Literature  
3 credits  
Offered By Announcement only  
Introduction to twentieth-century literature with special emphasis on the regional preoccupation with a distinctly Caribbean aesthetic. Prerequisite: Three credits in literature.

ENG 362. Jewish American Literature  
3 credits  
Offered By Announcement only  
Twentieth-century Jewish writers in the United States such as Singer, Bellow, Roth, Ozick, and Malamud. Prerequisite: Three credits in literature.

ENG 363. Sephardic Literature  
3 credits  
Offered By Announcement only  
Judeo-Spanish culture and literature from medieval times to the present. Prerequisite: Three credits in literature.

ENG 365. Literature of the Holocaust  
3 credits  
Offered By Announcement only  
Literature relating to the Nazi genocide and its aftermath. Prerequisite: Three hours of literature.

ENG 366. Asian American Literature  
3 credits  
Offered By Announcement only  
Literature by Asian immigrants and exiles in the United States. Prerequisite: Three credits in literature.

ENG 372. Women Writing: Theory and Practice  
3 credits  
Offered By Announcement only  
Women writers, emphasizing the role of gender in literary creation. Prerequisite: Three credits in literature.

ENG 373. Literary Representations of Women  
3 credits  
Offered By Announcement only  
The portrayal of women in literature from ancient times to the present. Prerequisite: Three hours in Literature.
ENG 374. Women Writers  
3 credits 
Offered By Announcement only  
A study of women’s writings and feminist criticism from 1930 to the present. Prerequisite: Three hours in Literature.

ENG 375. Modern Drama  
3 credits 
Offered By Announcement only  
The major dramatists of the modern world: Ibsen, Chekhov, Strindberg, Shaw, Pirandello, and O’Neill. Prerequisite: Three credits in Literature.

ENG 376. Contemporary Drama  
3 credits 
Offered By Announcement only  
The dramatists of our time: Albee, Miller, Williams, Beckett, Sartre, Genet, Pinter, Osborne, Stoppard, Durenmatt, and others. Prerequisite: Three credits in literature.

ENG 379. Modern Literature  
3 credits 
Offered By Announcement only  
Western literature of the modern era. emphasizing roots, traditions, practices. Prerequisite: Three credits in literature.

ENG 380. Contemporary Literature  
3 credits 
Offered By Announcement only  
Fiction, drama, and poetry from World War II to the present. Prerequisite: Three credits in literature.

ENG 383. The Literature of Science Fiction  
3 credits 
Offered By Announcement only  
A general survey of the literature of science fiction, with emphasis on writings of the twentieth century. Prerequisite: Three hours of Literature.

ENG 384. The Bible as Literature  
3 credits 
Offered By Announcement only  
Selected readings from the Bible. Prerequisite: Three credits in literature.

ENG 385. Myth and Literature  
3 credits 
Offered By Announcement only  
A study of myth and ritual and their relation to literary works, from the early epic to contemporary literature. Prerequisite: Three credits in literature.

ENG 386. King Arthur in Literature  
3 credits 
Offered By Announcement only  
King Arthur in literature from the fifteenth to the twentieth century in England and America. Prerequisite: Three credits in literature.

ENG 387. Literature and Imperialism  
3 credits 
Offered By Announcement only  
Relationships between empire and literary expression. Works by authors such as Shakespeare, Behn, Defoe, Bronte, Conrad, Kipling, Melville, Yeats, Twain, and Forster. Prerequisite: Three credits in literature.

ENG 388. Literature and Popular Culture  
3 credits 
Offered By Announcement only  
Literary forms of popular expression, considered in relation to politics, ideology, gender, or race; comparison to other forms of popular culture in print, music, or the visual media. Prerequisite: Three credits in literature.

ENG 395. Special Topics  
3 credits 
Offered By Announcement only  
Content varies by semester and is indicated in parentheses following course number and title in Class Schedule. Prerequisite: Three credits in literature.
ENG 396. Special Topics
3 credits
Offered By Announcement only
Content varies by semester and is indicated in parentheses following course number and title in Class Schedule. Prerequisite: Three credits in literature.

ENG 397. Special Topics
3 credits
Offered By Announcement only
Content varies by semester and is indicated in parentheses following course number and title in Class Schedule. Prerequisite: Three credits in literature.

ENG 398. Directed Readings/Directed Research
3 credits
Offered By Announcement only
By arrangement with instructor. Content varies. Prerequisite: Permission of Director of Undergraduate Studies and three credits in literature.

ENG 401. Senior Seminar in Literature
3 credits
Offered Spring Semester
An intensive study of a literary topic or figure. Prerequisite: 15 credits in literature and at least one 400 level course in literature.

ENG 404. Creative Writing (Prose Fiction)
3 credits
Offered By Announcement only
Work toward professional standards primarily in prose fiction. Student fiction is considered in workshop sessions with comment by members of the class and instructors. Prerequisite: ENG 290 or permission of instructor and six credits in literature.

ENG 405. Creative Writing (Prose Fiction)
3 credits
Offered By Announcement only
Work toward professional standards primarily in prose fiction. Student fiction is considered in workshop sessions with comment by members of the class and instructors. Prerequisite: ENG 290 or permission of instructor and six credits in literature.

ENG 406. Creative Writing (Poetry)
3 credits
Offered By Announcement only
Work toward professional standards in poetry. Student poetry is considered in workshop sessions with comment by members of the class and by instructor. Prerequisite: ENG 292 or permission of instructor and six credits in literature.

ENG 407. Creative Writing (Poetry)
3 credits
Offered By Announcement only
Work toward professional standards in poetry. Student poetry is considered in workshop sessions with comment by members of the class and by instructor. Prerequisite: ENG 292 or permission of instructor and six credits in literature.

ENG 408. Writing Autobiography
3 credits
Offered By Announcement only
Literary style and method using student autobiography as a resource. Prerequisite: ENG 290 or 292 or permission of instructor and six credits in literature.

ENG 410. Old English Language and Literature
3 credits
Offered By Announcement only
The grammar, syntax, and phonology of Old English language; readings in Old English poetry and prose. Prerequisite: Three hours of literature.

ENG 411. Old English Literature
3 credits
Offered By Announcement only
Translation and Close analysis of Beowulf or other major poetic texts of Old English literature. Prerequisite: ENG 410, or its equivalent, and six credits in literature.
ENG 420. Chaucer
3 credits
Offered By Announcement only
Chaucer's major works. Prerequisite: Six credits in literature.

ENG 430. Shakespeare: The Early Plays
3 credits
Offered By Announcement only
Shakespeare's plays from the period 1583-1600. Prerequisite: Six credits in literature. May not be taken concurrently with ENG 319.

ENG 431. Shakespeare: The Later Plays
3 credits
Offered By Announcement only
A study of the second half of Shakespeare's canon, read in chronological sequence. The plays will be selected from those composed in the period 1600-1611. Prerequisite: Six credits in literature. May not be taken concurrently with ENG 319.

ENG 432. English Renaissance Poetry and Prose
3 credits
Offered By Announcement only
A study of such figures as Wyatt, Sidney, Spenser, Nashe, Marlowe, Shakespeare, Jonson, Donne, Bacon, Milton. Prerequisite: Six credits in literature.

ENG 433. English Renaissance Drama
3 credits
Offered By Announcement only
English drama during the sixteenth and seventeenth centuries. Prerequisite: Six credits in literature.

ENG 434. Seventeenth-Century Poetry and Prose
3 credits
Offered By Announcement only
Seventeenth-century writers and forms, including work by major and minor writers such as James I, Jonson, Donne, Bacon, Lovelace, Carew, Herrick, Andrewes, Herbert, Milton, Marvell, Clarendon, Dryden, Rochester, Behn, and Bunyan. Prerequisite: Six credits in literature.

ENG 435. Milton
3 credits
Offered By Announcement only
Selected readings in the poetry and prose of John Milton. Prerequisite: Six credits in literature.

ENG 440. Restoration and Eighteenth-Century Literature
3 credits
Offered By Announcement only
English poetry and prose, exclusive of the novel, from Dryden to Burns. Prerequisite: Six credits in literature.

ENG 441. 18th-Century British Novel
3 credits
Offered By Announcement only
The British novel through the late eighteenth century. Prerequisite: Six credits in literature.

ENG 442. Politics and Literature
3 credits
Offered By Announcement only
Relations between political theories and forms of literary expression. Prerequisite: Six credits in literature.

ENG 450. The Early Romantic Period
3 credits
Offered By Announcement only
The rise of Romanticism in England and the first generation of writers, Blake, Wordsworth, Coleridge, and their contemporaries. Prerequisite: Six credits in literature.
ENG 451. The Late Romantic Period
3 credits
Offered By Announcement only
The second generation of English Romantic writers: Byron, Shelley, Keats, and their contemporaries. Prerequisite: Six credits in literature.

ENG 455. Victorian Poetry and Prose
3 credits
Offered By Announcement only
Selected English poetry and prose of the period, exclusive of the novel. Prerequisite: Six credits in literature.

ENG 456. Nineteenth-Century English Novel
3 credits
Offered By Announcement only
Studies in the development of the English novel from Scott to Conrad. Prerequisite: Six credits in literature.

ENG 460. Modern British Literature
3 credits
Offered By Announcement only
Studies in Edwardian and Modern literature. Modernist theory and techniques will be illustrated by reference to the work of selected major figures since 1900. Prerequisite: Six credits in literature.

ENG 461. Contemporary British Literature
3 credits
Offered By Announcement only
British literature from World War II to the present. Prerequisite: Six credits in literature.

ENG 465. Irish Literature
3 credits
Offered By Announcement only
Twentieth-century Irish writers such as Yeats, Synge, Joyce, Stephens, O’Casey, Beckett, and Lavin. Consideration of Irish history, mythology, politics, and culture. Prerequisite: Six credits in literature.

ENG 466. Joyce
3 credits
Offered By Announcement only
The major works of James Joyce. Prerequisite: Six credits in literature.

ENG 470. Contemporary British and American Poetry
3 credits
Offered By Announcement only
The poetry of the contemporary period, 1945 to the present. Prerequisite: Six credits in literature.

ENG 472. Literature and Psychoanalytic Theory
3 credits
Offered By Announcement only
A study of the ways in which Literature, Literary Criticism, and Psychoanalytic Theory interact. Prerequisite: Six credits in literature.

ENG 473. Twentieth-Century Literary Theory
3 credits
Offered By Announcement only
An introduction to the major theories of the past century (e.g., psychoanalytic, formalist, materialist, feminist, new historicist). Prerequisite: Six credits in literature.

ENG 480. Early American Literature
3 credits
Offered By Announcement only
American writing before 1800. Topics such as colonialism, ethnicity, nationalism, and the ideology of individualism. Prerequisite: Six credits in literature.

ENG 482. American Literature: 1800-1865
3 credits
Offered By Announcement only
Topics such as individualism, slavery, class and gender relations. Works by Emerson, Poe, Hawthorne, Melville, Douglass, Stowe, and others. Prerequisite: Six credits in literature.
ENG 483. American Literature: 1870-1915  
3 credits  Offered By Announcement only  
The works of such writers as Twain, Howells, James, Dickinson, Robinson, Crane, Norris, London, and Dreiser. Prerequisite: Six credits in literature.

ENG 484. American Literature: 1915 to 1945  
3 credits  Offered By Announcement only  
The works of such writers as Pound, Eliot, H.D., Stein, Frost, Stevens, e.e. cummings, Ransom, Tate, Fitzgerald, Hemingway, Djuna Barnes, Faulkner, O'Neill. Prerequisite: Six credits of literature.

ENG 485. American Literature: 1945 to the Present  
3 credits  Offered By Announcement only  
An intensive inquiry into the works of such writers as Albee, Bellow, Ferlinghetti, Ginsberg, Kerouac, Mailer, Miller, O'Connor, Plath, Welty. Prerequisite: Six credits in literature.

ENG 486. Early African-American Literature  
3 credits  Offered By Announcement only  
African-American literature from the beginnings to the Harlem Renaissance of the nineteen twenties. Prerequisite: Six credits in literature.

ENG 487. Modern African-American Literature  
3 credits  Offered By Announcement only  
African-American literature from the Harlem Renaissance to the present. Prerequisite: Six credits in literature.

ENG 488. Race, Ethnicity, and Literature  
3 credits  Offered By Announcement only  
Topic varies by semester. The Construction of racial and ethnic difference in literature, focusing on the politics of group affiliation and identity. Prerequisite: Six credits in literature.

ENG 490. Studies in Women and Literature  
3 credits  Offered By Announcement only  
Content varies by semester. Topics such as women in classical antiquity, women in the middle ages, women in the Renaissance, women in the Restoration and eighteenth century, women in the Romantic and Victorian period. Prerequisite: Six credits in literature.

ENG 491. Russian and Soviet Classics in English  
3 credits  Offered By Announcement only  
Survey of Russian literature in translation from the late 19th century to the present. Prerequisite: Six credits in literature.

ENG 492. Postcolonial Literature and Theory  
3 credits  Offered By Announcement only  
The legacy of colonialism as expressed in the works of Gordimer, Rushdie, Achebe, Walcott, Cesaire, Naiapaul, Mukherjee, Crow Dog, Menchu, and others. Readings will address theoretical issues such as national formation, cultural hybridity, globalization. Prerequisite: Six credits in literature.

ENG 493. History of Literary Criticism  
3 credits  Offered By Announcement only  
Prerequisite: Six credits in literature.

ENG 494. Feminist Literary Theory  
3 credits  Offered By Announcement only  
Examination of women’s contributions to literary theory. Prerequisite: Six credits in literature including at least one 300-level course in literature.
ENG 495. Special Topics
3 credits
Content varies by semester and is indicated parenthetically following the title in the class schedule. Prerequisite: Six credits in literature.

ENG 496. Special Topics
3 credits
Content varies by semester and is indicated in parentheses following the title in the class schedule. Prerequisite: Six credits in literature.

ENG 497. Special Topics
3 credits
Content varies by semester and is indicated in parentheses following the title in the class schedule. Prerequisite: Six credits in literature.

ENG 498. Senior Thesis
3 credits
Partial requirement for Departmental Honors in English. Thesis to be a documented essay on a literary subject written under the direction of a member of the English faculty. Prerequisite: Senior status, certification by Director of Undergraduate Studies, and permission of thesis director.

ENG 499. Senior Creative Writing Project
3 credits
Partial requirement for Departmental Honors in Creative Writing. Project, in prose fiction or poetry, to be written under the direction of a member of the creative writing faculty. Prerequisite: Senior status, certification of eligibility by Director of Undergraduate Studies, and permission of project director.

ENG 504. Form in Poetry
3 credits
Poetic works as literary objects, with attention to poetic trends and the creative process. Prerequisite: Permission of instructor. Six credits in literature or Graduate standing.

ENG 505. Form in Fiction
3 credits
Fictional works as literary objects with attention to individual styles, Fictional Trends and the creative process. Prerequisite: Graduate students: permission of instructor. Undergraduates: six credits in literature and permission of instructor.

ENG 506. Modern English Grammar
3 credits
The grammatical forms and structures of modern American English.

ENG 560. Creative Writing: Fiction I
3 credits
Advanced work in the writing of fiction. Prerequisite: Permission of instructor and, for undergraduate, six credits in English at the 200 level or above.

ENG 561. Creative Writing: Fiction II
3 credits
Advanced work for students displaying superior ability for prose fiction writing. Admission by recommendation or demonstration of skills. Prerequisite: Permission of instructor.

ENG 562. Creative Writing: Poetry
3 credits
Advanced work in the writing of poetry. Prerequisite: At least six credits in English at the 200 level or above or graduate standing.
ENG 590. History of the English Language  
3 credits  
Offered By Announcement only  
Origins, affinities, and subsequent development of the English language from earliest times to the present. Nature and direction of changes in the language with reference to phonology, morphology, syntax, and vocabulary. Prerequisite: Six credits in literature or graduate standing.

ENG 595. Special Topics  
3 credits  
Offered By Announcement only  
Prerequisite: For undergraduates, six credits in literature or permission of instructor; for graduate students, permission of Director of Graduate Studies.

ENG 598. Seminar in Literature  
3 credits  
Offered By Announcement only  
Analysis of special topics in literature. Prerequisite: ENG 105 and 106 and 300-level literature course.

Foreign Languages and Literatures

FLL 321. Topics in Literary and Cultural Studies  
3 credits  
Comparative topics in the study of literature and culture. Specific topics vary; may be repeated for credit if topics differ. Taught in English. This course will not count towards the 18 credits required for the major in French or Spanish, nor for the 9 credits towards the minors offered in the department as they are presently defined. Prerequisite: Three credits in literature.

FLL 503. Introduction to Foreign Language Teaching: Theory and Practice  
3 credits  
Offered Spring Semester  
Current trends in foreign language teaching with emphasis on introductory language courses. Topics include: linguistic and psychological foundations, teaching methodologies, language skills development. Prerequisite: Graduate standing in FLL or permission of the Director of Graduate Studies.

FLL 505. Introduction to Literary Theory  
3 credits  
Offered Fall Semester  
An introduction to the major concepts, issues, and debates that inform contemporary literary criticism. Prerequisite: One literature course on the 500-level and permission of the instructor.

FLL 521. Special Topics in Literatures  
3 credits  
Offered By Announcement only  
May be repeated for credit, if topics are different. Prerequisite: Two literature courses on the 300 level and permission of instructor and Director of Graduate Studies.

FLL 597. Readings for the Ph.D. Examinations  
1-3 credits  
Offered By Announcement only  
For Ph.D. students who are preparing for exams. Prerequisite: Permission of Director of Graduate Studies.

FLL 599. Internship  
1 credit  
Offered By Announcement only  
Students work in a community or business setting on issues related to language, culture, and/or teaching.
**French**

**FRE 101. Elementary French I**

- **3 credits**
- *Offered Fall and Spring Semesters and First Summer Session*
- Pronunciation, fundamental grammatical principles, oral and written drill designed to develop the foundation for the basic language skills of listening, speaking, reading, and writing. Intended for students with no previous language study. Not open to students who have completed more than two years of high school French. Conducted in French. Closed to native speakers.

**FRE 102. Elementary French II**

- **3 credits**
- *Offered Fall and Spring Semesters and First Summer Session*
- Continuation of FRE 101. Conducted in French. Prerequisite: FRE 101 or the equivalent of FRE 101 at another institution. Closed to native speakers.

**FRE 105. Accelerated Elementary French**

- **3 credits**
- *Offered Fall and Spring Semesters*
- Intensive study of all material covered in 101 and 102. Specifically intended for students who have completed more than two years of high school French. Closed to native speakers. Class conducted in French. Prerequisite: Three or more years of high school French or the equivalent. Closed to native speakers.

**FRE 211. Intermediate French I**

- **3 credits**
- *Offered Fall and Spring Semesters and First Summer Session*
- Integrated grammar review. Diverse selection of readings: stories, plays, essays, interviews. Practice in speaking and in writing. Class conducted in French. Closed to native speakers. Prerequisite: Either FRE 102, 105, a strong high school background (4 years; good program; good grades), or AP-3 (IB-4). Closed to native speakers.

**FRE 212. Intermediate French II**

- **3 credits**
- *Offered Fall and Spring Semesters*
- Intensive preparation for 300-level work through use of various genres portraits, descriptions, short stories, film review, magazines, a novel. Workshop format, conversational skills, written projects (including an analytic paper). Course conducted in French. Students who receive less than a B in FRE 211 are recommended to take FRE 242 prior to or concurrently with FRE 212. Prerequisite: FRE 211 or AP-4 (IB-5). Closed to native speakers.

**FRE 242. Intermediate Conversation and Grammar Review**

- **3 credits**
- *Offered Fall and Spring Semesters*
- Reinforcement of oral and grammar skills. Contemporary social and cultural themes. Conducted in French. Recommended to be taken prior to or concurrently with FRE 212 by students earning less than a B in FRE 211. May be taken concurrently with any 300 level course. Prerequisite: FRE 211 or equivalent; closed to native speakers.

**FRE 301. Introduction to Literary Genres**

- **3 credits**
- *Offered Fall and Spring Semesters*
- Selected materials from various genres and periods of French Literature. Further development of critical writing skills for non-native speakers. Closed to native speakers formally educated in French. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: FRE 212 or equivalent.

**FRE 302. French Civilization**

- **3 credits**
- *Offered By Announcement only*
- Historical survey of French intellectual, artistic, and popular culture. Writing credit. Prerequisite: FRE 301 or equivalent.
FRE 321. Introduction to Literary Themes  
3 credits  
Offered By Announcement only  
The study of literature through thematic readings. May be repeated for credit if topic is different. Topics vary. Writing credit. Prerequisite: FRE 301 or equivalent.

FRE 322. Cultural Topics  
3 credits  
Offered By Announcement only  
Cultural issues in France and/or French-speaking regions. Topics such as film, Caribbean history, journalism, Francophone Africa, immigration. May be repeated for credit if topic is different. Writing credit. Prerequisite: FRE 301 or permission of the instructor; FRE 302 recommended.

FRE 363. Introduction to Medieval and Renaissance French Literature  
3 credits  
Offered By Announcement only  
French literature from the 12th century to the end of the 16th century. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: FRE 301 or equivalent.

FRE 364. Introduction to 17th and 18th Century French Literature  
3 credits  
Offered By Announcement only  
French literature from the 17th and 18th centuries. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: FRE 301 or equivalent.

FRE 365. Introduction to 19th and 20th Century French Literature  
3 credits  
Offered By Announcement only  
French literature from the 19th and 20th centuries. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: FRE 301 or equivalent.

FRE 395. Transfer Credits  
1- 3 credits  
Not offered. Transfer credit only.  
Awarded for course work at another institution for which UM has no direct equivalent.

FRE 396. Transfer Credits  
1- 3 credits  
Not offered. Transfer credit only.  
Awarded for course work at another institution for which UM has no direct equivalent.

FRE 397. Transfer Credits  
1- 3 credits  
Not offered. Transfer credit only.  
Awarded for course work at another institution for which UM has no direct equivalent.

FRE 398. Transfer Credits  
1- 3 credits  
Not offered. Transfer credit only.  
Awarded for course work at another institution for which UM has no direct equivalent.

FRE 399. Transfer Credits  
1- 3 credits  
Not offered. Transfer credit only.  
Awarded for course work at another institution for which UM has no direct equivalent.

FRE 432. Business French  
3 credits  
Commercial Vocabulary, economic and technical terminology in French. Composition based on models of business correspondence directed to French speaking countries or firms. Prerequisite: FRE 212 or permission of the instructor.
FRE 440. Phonetics
3 credits
Offered By Announcement only
French pronunciation based on phonetics. Exercises in diction and phonetic transcription. Prerequisite: FRE 301 or permission of instructor.

FRE 442. Advanced Stylistics and Composition
3 credits
Offered By Announcement only
Analysis of grammar and style. Discussion of readings. Intensive writing. Writing credit. Prerequisite: Two 300-level courses or permission of instructor.

FRE 521. Topics in French Literature
3 credits
Offered By Announcement only
May be repeated for credit, if topic is different. Prerequisite: Two courses on the 300-level.

FRE 522. Topics in French Cultures
3 credits
Offered By Announcement only
May be repeated for credit, if topic is different. Prerequisite: Two courses on the 300-level.

FRE 561. Studies in French Medieval Literature
3 credits
Offered By Announcement only
Cultural and literary trends of the Middle Ages. Topics vary; may be taken more than once if topic is different. Prerequisite: FRE 363 and two other courses at the 300 level; or permission of instructor.

FRE 562. Studies in French Renaissance Literature
3 credits
Offered By Announcement only
Cultural trends and literary movements of the French Renaissance. Topics vary: poetry, narrative, essay; may be taken more than once, if topic is different. Prerequisite: FRE 363 and two other courses at the 300 level; or permission of instructor.

FRE 563. Studies in 17th Century French Literature
3 credits
Offered By Announcement only
Cultural and literary trends in the Seventeenth Century: major writers, dramatists, moralists. Topics may vary; may be taken more than once if topic is different. Prerequisite: FRE 364 and two other courses at the 300 level; or permission of instructor.

FRE 564. Studies in 18th Century French Literature
3 credits
Offered By Announcement only
Major authors and cultural and literary trends of the Enlightenment. Topics vary; may be taken more than once, if topic is different. Prerequisite: FRE 364 and two other courses at the 300 level; or permission of instructor.

FRE 565. Studies in 19th Century French Literature
3 credits
Offered By Announcement only
Cultural and Literary trends of the period: major novelists, dramatists, and poets from Romanticism to Symbolism. Topics vary; may be taken more than once, if topic is different. Prerequisite: FRE 365 and two other courses at the 300 level; or permission of instructor.

FRE 566. Studies in 20th-21st Century French Literature
3 credits
Offered By Announcement only
Major cultural and literary movements of the 20th and 21st Centuries. Topics vary: poetry, theater, the novel; may be taken more than once, if topic is different. Prerequisite: FRE 365 and two other courses at the 300 level; or permission of instructor.
FRE 571. Women in French Literature
3 credits
Offered By Announcement only
Women writers and representations of women. Topics may vary; may be taken more than once, if topic is different. Prerequisite: Three literature courses at the 300-level.

FRE 573. Problems in Cultural Analysis
3 credits
Offered By Announcement only
French contemporary civilization including literature, aesthetics, the media, etc. May be repeated if topics are different. Prerequisite: FRE 302 and two literature course at the 300-level; or permission of instructor.

FRE 575. Francophone Literatures
3 credits
Offered By Announcement only
Francophone literatures and cultures outside of France. Topics vary; may be taken more than once, if topic is different. Prerequisite: Three literature courses at the 300-level. FRE 302 is also recommended; or permission of instructor.

FRE 591. Directed Readings
1-3 credits
Offered By Announcement only
Prerequisite: One 500-level course and permission of instructor. May be repeated for credit if topic is different.

FRE 592. Directed Readings
1-3 credits
Offered By Announcement only
Prerequisite: One 500-level course and permission of instructor.

FRE 593. Directed Readings
1-3 credits
Offered By Announcement only
Prerequisite: One 500-level course and permission of instructor.

FRE 594. Senior honors Thesis I
3 credits
Directed research for honors thesis. Prerequisite: Must have completed at least nine credits at the 300-level or above towards French major, must meet eligibility for honors in French.

FRE 595. Senior Honors Thesis II
3 credits
Directed writing of honors thesis. Prerequisite: FRE 594.

Geography

GEG 105. World Regional Geography
3 credits
Offered Fall and Spring Semesters
An introduction to geography’s basic concepts within the framework of a comprehensive survey of the world’s major regions.

GEG 110. Introduction to Human Geography
3 credits
Offered Fall and Spring Semesters
An introduction to the sub-fields of human geography by an examination of patterns and process in the international system.

GEG 120. Physical Geography
3 credits
Offered Fall and Spring Semesters
The Earth system (atmosphere; hydrosphere; biosphere; lithosphere) emphasizing the interrelationships among its constituent subsystems; human-environmental interactions and geographic dimensions of these four subsystems.
GEG 199. **Introduction to GIS (Geographic Information Systems)**

**3 credits**  
Offered Fall and Spring Semesters  
This course uses lecture and lab sessions to teach fundamental concepts in Geographic Information Systems (GIS) and introduce related geographic technologies (Global Positioning Systems, Remote Sensing, etc.). Topics include the nature and sources of digital and spatial data, map projections and datums, raster and vector data structures, raster and vector spatial analysis, and GIS project design. Students will learn to use ArcView and Idrisi, two leading GIS software programs.

GEG 201. **Topics in Geography**

**3 credits**  
Offered Fall and Spring Semesters  
Content and prerequisites vary. Prerequisite: Any 100 level GEG course.

GEG 212. **Geography of Middle America and the Caribbean**

**3 credits**  
Offered Fall Semester  
Human and physical geography of Middle America and the Caribbean.

GEG 222. **Geography of South America**

**3 credits**  
Offered Spring Semester  
Human and physical geography of South America.

GEG 232. **Geography and Development in Africa**

**3 credits**  
Offered Fall Semester  
A survey of the geography of Africa south of the Sahara, with particular emphasis on development and the role of African states in the international system.

GEG 242. **Economic and Political Geography of the Middle East**

**3 credits**  
Offered Fall Semester  
Human and physical geography of the Middle East with emphasis on current topics.

GEG 252. **United States and Canada**

**3 credits**  
Offered Spring Semester  
Human and physical geography of North America.

GEG 262. **Political Geography of Europe**

**3 credits**  
Offered Spring Semester  
Human and physical geography of contemporary Europe.

GEG 280. **Introduction to Cartography and Computer Mapping**

**3 credits**  
Offered By Announcement only  
Methods and techniques of cartography. Cartographic representation of spatial data.

GEG 301. **Topics in Geography**

**3 credits**  
Offered By Announcement only  
Content and prerequisites announced when offered. Course may be repeated for credit if content varies.

GEG 304. **World Economic Geography**

**3 credits**  
Offered Fall Semester  
Geographic analysis of the distribution of economic activities with emphasis on present-day patterns and trends of production, distribution, and consumption of the world’s major commodities. Prerequisite: Any 100 or 200-level course in Geography.

GEG 341. **Geography of Population and Development**

**3 credits**  
Offered Spring Semester  
Major world population issues are discussed, including population growth, fertility patterns, mortality change, migration, ethnicity, and population structure changes. Prerequisite: Any 100 or 200-level Geography course.
GEG 350. Gender Relations in Global Perspective: A Social and Economic Geography
3 credits
Offered Fall Semester
Comparative geographic analysis of gender (male and female) roles in their societies and associated issues. Prerequisite: Any 100 or 200 Geography course.

GEG 362. World Urban Geography
3 credits
Offered By Announcement only
An introduction to the principles and methods that apply to the geographic study of cities and urbanization. Prerequisite: Any 100- or 200-level geography course.

GEG 370. Conservation of Resources
3 credits
Offered By Announcement only
Problems of resource availability in an urban-industrial society. Prerequisite: Any 100 or 200-level Geography course.

GEG 371. Environmental Geography: Current Issues
3 credits
Offered By Announcement only
Topics selected from a wide range of current environmental problems from a geographical perspective. Students will become familiar with a wide range of ecological processes as well as the human forces that currently modify them. Prerequisite: One course in either physical geography or ecology or permission of instructor.

GEG 391. Intermediate GIS (Geographic Information Systems)
3 credits
Offered Fall and Spring Semesters
This course deals with fundamental concepts of raster and vector data manipulation and analysis through lectures and laboratory exercises. Topics covered include vector polygon editing and topology, data quality assessment, integration of raster and vector data, basic concepts of remote sensing, cartographic modeling, suitability mapping, and multi-criteria evaluations. Prerequisite: GEG 199 or permission of instructor.

GEG 392. Remote Sensing of the Environment
3 credits
Offered Spring Semester
Theory and techniques of environmental remote sensing and imagery interpretation for earth resources monitoring and management. Prerequisite: GEG 199 or permission of instructor.

GEG 420. Geopolitics
3 credits
Offered Fall Semester
Analysis of contemporary global geopolitical issues. Prerequisite: Any 100- or 200-level geography course.

GEG 430. World Cities
3 credits
Offered Spring Semester
The role of major cities in the world economy and the social consequences of globalization for urban areas. Prerequisite: Any 100- or 200-level GEG course.

GEG 471. Ecological Biogeography
3 credits
Offered By Announcement only
Survey in modern Biogeography, emphasizing ecological rather than evolutionary concepts; the distributions of species and factors that have influenced the organization of plant communities. Prerequisite: One course in either physical geography or ecology or permission of instructor.

GEG 481. Introduction to Quantitative Methods
3 credits
Offered Fall Semester
The use of basic methods or quantitative analysis in geographic research. Prerequisite: Geography major or minor and MTH 101 or equivalent.
GEG 491. GIS and Environmental Modeling  
3 credits  
Creation, editing, management and display of spatial databases in ARC/INFO, a vector-based GIS (Geographic Information System). Prerequisite: GEG 391 or permission of instructor.

GEG 495. Advanced Seminar in Human Geography  
3 credits  
Offered Spring Semester  
Seminar on development-related issues in South Asia. Prerequisite: Any 100 or 200 level GEG course.

GEG 501. Place, Region, Nature  
3 credits  
Offered By Announcement only  
Introductory seminar for Graduate students about geographic thought and geographical traditions. Prerequisite: At least six credits in Geography or permission from instructor.

GEG 503. Research Trends in Geography  
3 credits  
Offered By Announcement only  
Contemporary research trends and methodological developments.

GEG 510. Survey Research in Geography  
3 credits  
Offered By Announcement only  
The use of survey research including the choice of a survey mechanism, sampling, questionnaire design, survey logistics, survey analysis, and reporting of results.

GEG 511. Field Studies in Geography  
1- 6 credits  
Offered By Announcement only  
One to six weeks of intensive geographic field studies outside the Miami area. Lectures will be given prior to departure. The locations and topics of study will vary. Prerequisite: GEG 105 or any 200-level geography course.

GEG 515. Human Dimensions of Global Environmental Change  
3 credits  
Offered Fall Semester  
Explores the human dimensions of global environmental change using an interdisciplinary approach. The course is reading and writing intensive. Special attention is given to the central role that land-use/cover change plays in the larger realm of global environmental change. Prerequisite: GEG 105 and junior/senior standing.

GEG 520. Immigration to the United States  
3 credits  
Offered Fall Semester  
A description and analysis of current immigration patterns in the United States. Prerequisite: Any 100 or 200 level course or permission from instructor.

GEG 521. Global Trade  
3 credits  
Offered By Announcement only  
Geographic analysis of the distribution of economic activities and capabilities, with emphasis on contemporary trade patterns and policies.

GEG 522. Urbanization in the Developing World  
3 credits  
Offered Spring Semester  
Patterns and processes in large cities in the developing world are examined. Prerequisite: Any 100 or 200 level course in Geography or permission from instructor.

GEG 523. Seminar in Urban Management  
3 credits  
Offered Fall Semester  
Identification of and responses to urban problems in large cities in European and Latin American metropolitan areas. Emphasis is on demographic, cultural/ethnic, service-provision, environmental, transportation, and land-use problems. Approach is via case studies, theory applications, and planning practicalities.
GEG 525. Problems in Geography  
1-6 credits  
Offered Fall and Spring Semesters  
Content and prerequisites announced when offered. Course may be repeated for credit if content varies. Prerequisite: Geography graduate student, major, or minor only.

GEG 535. Internship in Geography  
1-4 credits  
Offered Fall and Spring Semesters  
Students are assigned to work for a local public or private agency. Prerequisite: 15 credits in geography and permission of Department.

GEG 545. Special Topics  
3 credits  
Offered Fall and Spring Semesters  
Prerequisite: Nine credits in geography.

GEG 552. Seminar on the Geography of South Florida  
3 credits  
Offered By Announcement only  
Human and physical geography of South Florida. Prerequisite: Nine credits in Geography.

GEG 570. Gender and Development  
3 credits  
Offered By Announcement only  
Theoretical and empirical examination of gender and development processes through exploration of gender and development evolution as an academic discipline and application in development practice. Prerequisite: Graduate students or permission of instructor.

GEG 582. Advanced Quantitative Methods  
3 credits  
Offered Spring Semester  
Continuation of GEG 481. The use of statistical methods and techniques in the solution of geographic research problems. Prerequisite: GEG 481.

GEG 591. Introduction to GIS (Geographic Information Systems) for graduate students  
3 credits  
Offered By Announcement only  
Overview of basic concepts in GIS (Geographic Information Systems) for students wishing to get graduate credit. This class involves a student project using GIS. There are no prerequisites for this class.

GEG 595. Advanced Seminar on South Asia  
3 credits  
Offered Spring Semester  
Seminar on development-related issues in South Asia. Prerequisite: Permission from instructor (graduate).

Geological Sciences

GSC 101. Origin and Evolution of Planet Earth  
3 credits  
Offered Fall and Spring Semesters  
The origin of the elements and the evolution of the universe. The formation and early evolution of the solar system. The differentiation of the earth into core, mantle, and crust. Origin of the oceans and atmosphere.

GSC 102. Evolution of the Biosphere  
3 credits  
Offered Fall and Spring Semesters and Second Summer Session  
The physical basis of life. The origin, early evolution, history of life on Earth. Emphasis on major crises and innovations, including the evolution of modern man.
GSC 103. Evolution of the Modern Earth’s Environment  
**3 credits**  
*Offered Fall and Spring Semesters and First Summer Session*  

GSC 104. The Coastal Environment of South Florida  
**1 credit**  
*Offered By Announcement only*  
Lectures and excursions to the coastal environment and the Everglades. Prerequisite: Not for major or minor.

GSC 105. The Global Environment  
**3 credits**  
*Offered Fall Semester*  
Ongoing problems in earth systems: global warming, ozone depletion, energy shortages, air and water pollution, radioactivity.

GSC 106. Geological Influences on Society  
**3 credits**  
*Offered Spring Semester*  

GSC 110. The Earth System  
**3 credits**  
*Offered Fall and Spring Semesters and First Summer Session*  
Interactions among the major components of the Earth System - the geosphere, the hydrosphere, the atmosphere, and the biosphere. To be taken concurrently with GSC 114 lab section.

GSC 111. Earth System History  
**4 credits**  
*Offered Fall and Spring Semesters*  
Earth History, beginning with earliest origins and surveying major steps in the evolution of the geosphere, atmosphere, hydrosphere, and biosphere.

GSC 114. Marine Geology Lab/Field Study  
**2 credits**  
*Offered Fall and Spring Semesters*  

GSC 115. Environmental Geology Lab/Field Study  
**2 credits**  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Minerals, rocks, sediments, soils, maps, imagery, fossils and paleoenvironmental reconstruction, methods for studying dynamics and human impact on surficial environments. Field introduction to environmental geology problems and methods. Corequisite: GSC 110 or 120.

GSC 131. Volcanoes and Society  
**1 credit**  
*Offered Spring Semester*  
Impact of volcanoes on past and present human civilizations. Topics include the origin of volcanoes, types of volcanic hazards, impact of volcanoes on climate, beneficial aspects of volcanic eruptions, and historical examples.

GSC 132. History of Life in the Universe  
**1 credit**  
*Offered Spring Semester*  
GSC 133. **Dinosaurs and Disasters**  
1 credit  
Offered Spring Semester  
Examination of the biology, evolution and extinction of the dinosaurs.

GSC 230. **Reef Systems Through Time**  
3 credits  
Offered Spring Semester  
Interacting geological, physical, chemical, biological, and climatic processes that define a reefal setting and system. Field trips included. Prerequisite: GSC 110, 111, or 120.

GSC 231. **Field Study of Reef Systems Through Time**  
2 credits  
Offered Spring Semester  

GSC 240. **Introduction to Marine Geology**  
3 credits  
Offered By Announcement only  
The principal marine geological environments of the world, their substrate, their sediments, their flora and fauna, and their evolution through time. Prerequisite: GSC 110 or permission of instructor.

GSC 260. **Earth Materials**  
4 credits  
Offered Fall Semester  
Physical and optical properties of common rock-forming minerals and their occurrence in igneous, metamorphic, sedimentary rocks, and ore deposits. Lecture, 3 hours; laboratory, 4 hours. Prerequisite: GSC 110; prerequisite or corequisite: CHM 111.

GSC 301. **Science and Human Affairs in the 20th Century**  
3 credits  
Offered Spring Semester  
Scientific descriptions of the technologies arising in the 20th century, and the interactions between them and our civilization. Course will be divided into four parts: World War I, the interwar years, World War II, and the postwar years. Grades will be based on weekly quizzes, three hour-exams, and a final. An extra-credit term paper will be suggested. Prerequisite: GSC 101. Corequisite of HIS 395 or 396 is suggested.

GSC 311. **Field Study of Volcanoes and Society**  
2 credits  
Offered Spring Semester  
Field trip to Popocatepetl and surrounding sites near Mexico City. Nature and impact of explosive volcanic eruptions on prehistoric civilizations. Fee required. Prerequisite: GSC 110 or permission of instructor. GSC 440 recommended.

GSC 360. **Depositional and Diagenetic Systems**  
4 credits  
Offered Fall Semester  
Sedimentary processes, sedimentology, and sedimentary diagenesis. Physical, biological and chemical sedimentation in Earth’s surficial environments. Paleoenvironmental and diagenetic history reconstruction using petrologic, hand specimen, and field methods. Cyclicity in sedimentary systems. Lecture, 3 hours; field/laboratory, 3 hours. Prerequisite: GSC 110.

GSC 380. **Paleontology and Stratigraphy**  
4 credits  
Offered Spring Semester  
Biostratigraphy, paleoecology, taphonomy, micro- and macroevolutionary processes, and physical and chemical methods used for stratigraphic correlation. Major groups of invertebrate phyla comprising the bulk of the fossil record. Lecture, 3 hours; laboratory, 2 hours. Prerequisite: GSC 111.
GSC 401. Senior Internship
3 credits
Offered By Announcement only
Field and laboratory studies conducted in conjunction with an approved academic environmental or industrial research laboratory or agency. Prerequisite: 15 credits in Geological Sciences and permission of the Department.

GSC 410. Environmental Geochemistry
3 credits
Offered Spring Semester
Natural distribution of the elements on earth, and how this is being changed. Radioactivity and energy, greenhouse warming and ozone depletion, water and waste and other environmental problems. Prerequisite: GSC 110; CHM 111 or permission from the instructor.

GSC 440. Igneous and Metamorphic Petrology
4 credits
Offered Fall Semester
Genesis and classification of igneous and metamorphic rocks, field relationships of rock assemblages, and results of recent laboratory investigations. Identification of common rock types in hand specimens and by thin-section and X-ray diffraction techniques. Lecture, 3 hours; laboratory, 3 hours. Prerequisite: GSC 260.

GSC 450. Sedimentology
4 credits
Offered By Announcement only
Sedimentary environment and processes. The geochemistry, formation and diagenesis of sediments. The role of physical and biological factors, including tectonism and climate. Use of sediments in paleoenvironmental reconstructions. Genesis of sedimentary economic deposits, with special emphasis on the formation of petroleum. Lecture, 3 hours; laboratory, 2 hours.

GSC 480. Structural Geology
4 credits
Offered Spring Semester
Behavior of rock materials; analysis, description and classification of geologic folds, faults, joints; analysis of rock fabrics; tectonic and geologic history of continents and continental margins. Lecture, 2 hours; laboratory, 2 hours. Prerequisite: GSC 440.

GSC 482. Field Methods
2 credits
Offered Spring Semester
Field and laboratory exercises in mapping, interpretation of aerial and satellite photographs interpretation; coring and sampling; sequence description and interpretation of modern and ancient environments; sediment and rock sequences. Training in field use of brunton, GPS, well logging; application to sedimentary, tectonic, and marine settings. Laboratory meets two hours/week. Field portion is on alternate Saturdays plus four day trip to Appalachians or Caribbean. Prerequisite: GSC 360 or 380.

GSC 490. Senior Thesis
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual, original research of independent study supervised by a member of the Departmental faculty and concluded by formal thesis preparation, public oral defense and submission of the thesis to the Department. Prerequisite: 3.0 GPA in major; pass departmental examination at conclusion of junior year; permission of Department.

GSC 491. Senior Thesis
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual, original research of independent study supervised by a member of the Departmental faculty and concluded by formal thesis preparation, public oral defense and submission of the thesis to the Department. Prerequisite: 3.0 GPA in major; pass departmental examination at conclusion of junior year; permission of Department.
GSC 515. Applied Environmental Geology  
3 credits
Offered Spring Semester
An advanced undergraduate/graduate course providing knowledge and methods for effective environmental site surveys, to be presented in a weekly 3-hour lecture and discussion. The course will cover policies and regulation including applied practice to comply with safe environmental conduct and valid assessment. Case study, best management practice, and appropriate field equipment and approaches will complement two one-day field trips associated with this course. Prerequisite: Permission of instructor or department chair.

GSC 520. Geology of Florida and the Caribbean  
3 credits
Offered Fall Semester
The land and marine geologic history, the natural resources and geologic hazards of Florida and the Caribbean region. Prerequisite: GSC 110, 111, 260.

GSC 540. Geophysics  
3 credits
Offered Spring Semester
The earth’s gravitational field. Geomagnetism and paleomagnetism. Seismology. Heat flow. Plate tectonics. Lecture, 3 hours; laboratory, 2 hours. Prerequisite: PHY 205, 206.

GSC 545. Introduction to Isotope and Nuclear Geology  
4 credits
Offered By Announcement only
Radioactivity and particle counting. The geological time scale. Isotope fractionation in natural systems. Mass spectrometry and the measurements of relative isotopic abundances in the ocean, the atmosphere, and the solid earth. Lecture, 2 hours; laboratory, 4 hours.

GSC 550. Hydrogeology  
3 credits
Offered Fall Semester
Movement of subterranean water. The mechanical, chemical and thermal interaction of water with porous solids, and the transport of energy and chemical constituents. The origin of porosity and permeability. The controls exerted on aquifers by the lithology, stratigraphy and structure of geologic deposits and formations. Prerequisite: 8 credits in Geological Sciences and permission of instructor.

GSC 555. Mathematical Methods for Geoscientists  
3 credits
Offered Fall Semester
Background mathematics needed to solve problems in the geosciences. Applications in tectonics, structural geology, geochemical systems, seismology and hydrology. Prerequisite: MTH 112 or 132, 211 or 310, or 312, and PHY 206, or equivalent.

GSC 556. Complexity in Coastal Systems  
4 credits
Different aspects of the coastal system and their interactions using inquiry-based learning; will include remote sensing data as a tool for data analysis and visualization. Prerequisite: Six credits in biology or geological sciences.

GSC 560. Colloquium - Current Topics in the Geosciences  
1 credit
Offered Fall Semester
Weekly presentations and discussions. Written and oral presentations required. Prerequisite: Senior standing.

GSC 561. Colloquium - Current Topics in the Geosciences  
1 credit
Offered Spring Semester
Weekly presentations and discussions. Written and oral presentations required. Prerequisite: Senior standing.
GSC 565. Fluxes of Energy and Matter in the Earth Systems
3 credits
Transport phenomena, motions, and deformation in Earth Systems. Prerequisite:
GSC 110, 360.

GSC 574. Special Studies
1-4 credits
Students engaged in approved field and/or laboratory activities, such as work at
sea or in the laboratory under supervision, may register for credit. Prerequisite:
Permission of department.

GSC 575. Special Studies
1-4 credits
Students engaged in approved field and/or laboratory activities, such as work at
sea or in the laboratory under supervision, may register for credit. Prerequisite:
Permission of department.

GSC 576. Special Studies
1-4 credits
Students engaged in approved field and/or laboratory activities, such as work at
sea or in the laboratory under supervision, may register for credit. Prerequisite:
Permission of department.

GSC 580. Summer Field Geology
4 credits
An intensive four-week summer field laboratory study of modern geological
processes and ancient rock sequences. Mapping, description and interpretation of
rock and structural sequences, paleoenvironmental reconstruction, interpretation
of tectonic history. Reports required. Touring course. Travel fee required.
Prerequisite: 18 credits in geological sciences and/or permission of instructor.

GSC 581. Summer Field Environmental Geology
2 credits
Field evaluation of environmental geology problems in marine, coastal, wetland
and terrestrial environments. Effects of human alteration of landscape, natural
hazards, pollution of ground water, surface water and soils. Role of climate change
on surficial environments. Reports required. Touring course. Travel fee required.
Corequisite: GSC 580.

GSC 582. Field Studies
1-4 credits
Conducted field trips to selected geological sites in the United States and abroad.
Report required. Prerequisite: Graduate or advanced undergraduate standing and
permission of department.

GER 101. Elementary German I
3 credits
Fundamental grammatical principles; exercises to develop a foundation for skills of
listening, speaking, reading, and writing; introduction to German culture.
Closed to native speakers.
GER 102. Elementary German II
3 credits
Continuation of GER 101. Prerequisite: GER 101 or equivalent. Closed to native speakers.

GER 211. Intermediate German I
3 credits
Continuation of GER 102, with special emphasis on essay writing. Prerequisite: GER 102 or equivalent. Closed to native speakers.

GER 212. Intermediate German II
3 credits
Integrated grammar, writing, and conversation via content-based instruction. Diverse selection of readings: stories, plays, essays, interviews, other materials. Development of skills in a workshop format. Prerequisite: GER 211 or equivalent. Closed to native speakers.

GER 301. Advanced German: Introduction to Literary Genres
3 credits
Intensive preparation for further 300-level work through use of various genres of German-language texts (short stories, poems, plays, comics, essays). Development of critical reading and writing skills. Writing credit. Prerequisite: GER 212 or equivalent. Closed to native speakers.

GER 302. German Civilization
3 credits
Historical survey of German civilization; arts, letters, science, political and social institutions. Conducted in German. Collateral readings and reports. Prerequisite: GER 212 or equivalent.

GER 310. German Texts in Translation
3 credits
Topics in German literature, philosophy, history, etc. Readings and discussion in English. Development of critical reading and writing skills. Fulfills humanities literature requirement. Writing credit. Does not fulfill foreign language requirement. May not be used for German minor credit. Prerequisite: ENG 106 and one 200-level course in Humanities or Social Sciences.

GER 321. Special Topics in German Studies
3 credits
Intensive study of a special topic. May be repeated for credit when topic varies. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: GER 301.

GER 363. Eighteenth-century German Studies
3 credits
The Enlightenment and its aftermath. Examination of the arts, sciences, letters, and political and social institutions of eighteenth-century Germanophone areas. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: GER 301.

GER 364. Nineteenth-Century German Studies
3 credits
The concept ‘German’, formation of the nation, and social unrest. Examination of the arts, sciences, letters, and political and social institutions of nineteenth-century Germanophone areas. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: GER 301.
GER 365. Twentieth-Century German Studies
3 credits
Offered By Announcement only
The second empire and the third Reich, the Weimar Republic, and the two Germanies. Examination of the arts, sciences, letters, and political and social institutions of twentieth-century Germanophone areas. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: GER 301.

GER 395. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

GER 396. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

GER 397. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

GER 398. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

GER 399. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

GER 432. Business and Diplomatic German
3 credits
Offered By Announcement only
Commercial, economic, and technical terminology. Conversation and composition based on models of business interactions and correspondence directed to German-speaking countries and firms. Writing credit. Prerequisite: GER 212.

GER 442. Advanced Stylistics and Composition
3 credits
Offered Spring Semester
Analysis of grammar and style. Discussion of readings. Intensive writing. Writing credit. Prerequisite: One 300-level GER course.

GER 521. Advanced German Studies
3 credits
Offered By Announcement only
German language, literature, culture of the 18th-20th centuries. Involves independent research. May be repeated for credit if topic is different. Prerequisite: GER 363, 364, or 365.

GER 522. Special Topics in German Literature
3 credits
Offered By Announcement only
May be repeated for credit if topic is different. Prerequisite: Two courses on the 300-level; permission of the instructor.

GER 566. German Literature of the Twentieth Century
3 credits
Offered By Announcement only
Major literary movements: prose, poetry, and drama. Prerequisite: GER 363 or 364.

GER 591. Directed Readings
1-3 credits
Offered By Announcement only
Prerequisite: Permission of the instructor.
GER 592. Directed Readings
1-3 credits
Prerequisite: Permission of the instructor. Offered By Announcement only

GER 593. Directed Readings
1-3 credits
Prerequisite: Permission of the instructor. Offered By Announcement only

GER 594. Senior Honors Thesis I
3 credits
Directed research for honors thesis. Prerequisite: Must have completed at least nine credits at the 300-level or above towards German major, must meet eligibility for honors in German.

GER 595. Senior Honors Thesis II
3 credits
Directed writing of honors thesis. Prerequisite: GER 594.

Greek

GRE 101. Elementary Ancient Greek I
3 credits
Alphabet, pronunciation, accentuation, vocabulary, grammar, reading exercises, and written exercises. Offered By Announcement only

GRE 102. Elementary Ancient Greek II
3 credits
Continuation of GRE 101. Prerequisite: GRE 101.

GRE 201. Intermediate Ancient Greek
3 credits
Reading from classical and Hellenistic authors. Students must take three semesters (13 credits) of Classical Greek to fulfill the language requirement. Offered Spring Semester

GRE 311. Introduction to Prose: Plato
3 credits
The reading of Greek prose and poetry through the study of Plato’s dialogues and Greek drama. Emphasis is on interpretation, analysis of syntax, and the acquisition of vocabulary. This course is the fourth in the introductory Greek sequence. Prerequisite: GRE 201 or permission of the instructor.

GRE 321. Introduction to Greek Poetry: Euripides
3 credits
Readings from one or two plays of Euripides. Prerequisite: GRE 201 or permission of the instructor.

GRE 411. Homer
3 credits
Readings from the Iliad and/or Odyssey. Prerequisite: GRE 201 or permission of the instructor.

GRE 421. Greek Orators
3 credits
Readings from Lysias and Demosthenes. Prerequisite: GRE 201 or permission of the instructor.

GRE 431. Greek Historians
3 credits
Readings from Herodotus and Thucydides. Prerequisite: GRE 201 or permission of the instructor.
Health Science

HSC 210. Human Anatomy
4 credits  
Offered Spring Semester
Human anatomy for students in allied health programs. Structural interrelationships of organ systems. Demonstrations, dissections, and discussions. Prerequisite: BIL 150. Students not in the Health Science or Nursing programs need permission of instructor.

HSC 220. Systemic Physiology
3 credits  
Offered Fall Semester

HSC 221. Systemic Physiology Laboratory
2 credits  
Offered Fall Semester
Experiments illustrating the physiology of organ systems. Prerequisite or corequisite: HSC 220 and permission of instructor.

HSC 310. Advanced Human Anatomy
4 credits  
Offered Spring Semester
An indepth exploration of the human body requiring extensive laboratory work, lectures, dissections and field trips. Prerequisite: HSC 210 and permission of instructor.

Hebrew

HEB 101. Elementary Hebrew I
3 credits  
Offered Fall Semester
Grammatical principles: reading for comprehension and conversation; oral and written exercises. Normally, closed to students who have completed two years of high school Hebrew. Closed to native speakers. Prerequisite: CLOSED TO NATIVE SPEAKERS.

HEB 102. Elementary Hebrew II
3 credits  
Offered Spring Semester
Continuation of 101. Closed to native speakers. Prerequisite: HEB 101 or equivalent, and CLOSED TO NATIVE SPEAKERS.

HEB 201. Intermediate Hebrew I
3 credits  
Offered Fall Semester
Integrated grammar review. Diverse selection of readings: stories, plays, essays, interviews. Practice in speaking and in writing. Class conducted in Hebrew. Closed to native speakers. Prerequisite: HEB 102 or 4 years of high school Hebrew or permission of instructor, and CLOSED TO NATIVE SPEAKERS.

HEB 202. Intermediate Hebrew II
3 credits  
Offered Spring Semester
Continuation of 201 with oral presentations, compositions, and grammar review. Class conducted in Hebrew. Closed to native speakers. Prerequisite: HEB 201 or equivalent, and CLOSED TO NATIVE SPEAKERS.

HEB 243. Hebrew for Native Speakers
3 credits
Grammar, morphology, syntax, and semantics of Modern Hebrew based on texts and media that expose the student to a multi-faceted experience of Hebrew language and culture. Prerequisite: For native and heritage speakers with some formal training in Modern Hebrew (such as an “Ulpan” in Israel or consistent study of Hebrew in a Jewish high school) or permission of instructor.
History

**HIS 192. Studies in History**
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents.

**HIS 193. Studies in History**
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents.

**HIS 194. Studies in History**
1-5 credits
Courses taken at other institutions with no direct equivalents.

**HIS 201. History of Africa, I (to 1800)**
3 credits
Offered By Announcement only
History of Africa before the Colonial period, emphasizing sources for the study of African history, African political and social institutions, the slave trade, and “legitimate” trade and markets.

**HIS 202. History of Africa, II (since 1800)**
3 credits
Offered Spring Semester
The emergence of modern Africa from about 1800 to the present, emphasizing the European conquest of Africa, African responses to colonialism, independence and the post-independence period.

**HIS 211. Development of Asian Civilization, I**
3 credits
Offered Fall Semester
History of the principal Asian societies to approximately 1600, emphasizing China and Japan.

**HIS 212. Development of Asian Civilization, II**
3 credits
Offered By Announcement only
History of the principal Asian societies since approximately 1600, emphasizing the impact of the West on China and Japan.

**HIS 221. Development of Western Civilization, I**
3 credits
Offered Fall and Spring Semesters
A survey of the development of the West from the emergence of the earliest civilizations in Mesopotamia and Egypt to the formation of modern European nation states in the sixteenth and seventeenth centuries, emphasizing the ideas, values, events, and institutions that have influenced the present.

**HIS 222. Development of Western Civilization, II**
3 credits
Offered Fall and Spring Semesters
A survey of the development of the West from the formation of modern European nation states in the sixteenth and seventeenth centuries to the present, emphasizing the rivalry of European powers, the impact of European expansion, the effect of industrialism and revolution upon Western society, and the role of the New World.

**HIS 223. Medicine and Society from the Ancient World to the Birth of the Clinic**
3 credits
This course examines medical history from the ancients through the end of the eighteenth century. The basic interpretive premise of the course is that we must understand health and illness within the context of the times as historically and social constructed entities.
HIS 224. The History of Modern Medicine  
3 credits  
This course examines the history of medicine from the late 18th century until the end of the twentieth century. During the semester, students will consider a variety of different approaches that seek to place “the rise of modern medicine” in broader historical, social, and cultural contexts.

HIS 225. History of the Modern Business Enterprise  
3 credits  
This course examines the history of big business in the nineteenth and twentieth centuries. Drawing on individual firm histories, its focus will be a comparative study of the big business experience in America, Europe, Asia, and the imperial world.

HIS 226. The World in the Twentieth Century  
3 credits  
Survey of twentieth century international history with a focus on the main political, social, and economic trends.

HIS 224. - HIS 293.
HIS 294. **Transfer Credits**

1- 5 credits  
Not offered. Transfer credit only. 
Courses for which there is no direct equivalent.

HIS 301. **The Ancient Near East**

3 credits  
Offered Fall Semester  
The civilizations of the ancient Near East, emphasizing the history and culture of Mesopotamia, Asia Minor, Syria-Palestine, and peripheral areas before the conquests of Alexander the Great. Prerequisite: Three credits in history.

HIS 302. **Ancient Egypt**

3 credits  
Offered By Announcement only  
History of Egypt from unification (ca. 3100 B.C.) until the conquest by Alexander the Great (323 B.C.). Prerequisite: Three credits in history.

HIS 304. **The Byzantine World**

3 credits  
Offered By Announcement only  
Political and cultural study of the Byzantine Empire from 330 A.D. to 1453 A.D. Prerequisite: Three credits in history.

HIS 306. **The Modern Near East**

3 credits  
Offered By Announcement only  
The Near East since 1453, emphasizing the Ottoman Empire, Arab nationalism and Zionism, the Mandate System, and the Arab-Israeli conflict. Prerequisite: Three credits in history.

HIS 307. **Egypt and the Nile Valley**

3 credits  
Offered By Announcement only  
History of the Nile Valley from the Napoleonic invasion of Egypt to the death of Emperor Menelik II of Ethiopia (1911). Prerequisite: Three credits in history.

HIS 308. **West Africa since 1000 A.D.**

3 credits  
Offered By Announcement only  
The Sudanic empires, the spread of Islam, the slave and legitimate trades, the establishment of European colonies, and the struggle for independence. Prerequisite: Three credits in history.

HIS 309. **History of Southern Africa**

3 credits  
Offered By Announcement only  
The establishment of the Dutch settlements and the apartheid system, African responses to European domination, and the collapse of apartheid and the emergence of a multi-racial South Africa. Prerequisite: Three credits in history.

HIS 315. **Imperial China**

3 credits  
Offered By Announcement only  
History of China from the origins of Chinese civilization to 1798. Prerequisite: Three credits in history.

HIS 316. **Modern China**

3 credits  
Offered By Announcement only  
History of China since 1798. Prerequisite: Three credits in history.

HIS 321. **The Greek World**

3 credits  
Offered By Announcement only  
Greek civilization from the Late Bronze Age to the end of Greek independence at the battle of Chaeronea in 338 B.C. Prerequisite: Three credits in history.

HIS 322. **The Hellenistic World**

3 credits  
Offered By Announcement only  
Conquests of Alexander the Great and the spread of Greek culture in the Near East under Alexander's successors until the death of Cleopatra in 31 B.C. Prerequisite: Three credits in history.
HIS 323. Roman Republic
3 credits  Offered By Announcement only
Roman civilization from the establishment of the Republic until the Battle of Actium in 31 BC. Prerequisite: Three credits in history.

HIS 324. Roman Empire
3 credits  Offered By Announcement only
Roman Civilization from the reign of Augustus in 27 BC to the Fall of Rome in AD 476. Prerequisite: Three credits in history.

HIS 325. The Early Middle Ages: Europe, 450-1095
3 credits  Offered By Announcement only
Western historical development from the collapse of the classical ancient world to Europe’s emergence as a distinct and viable civilization. Prerequisite: Three credits in history.

HIS 326. The High and Late Middle Ages: Europe 1095-1500
3 credits  Offered By Announcement only
The mature medieval civilization and its transformation. Prerequisite: Three credits in history.

HIS 327. The Renaissance in Florence
3 credits  Offered By Announcement only
Cultural, social, economic, religious, and political life in Florence from the time of Dante to Machiavelli, as a window onto broader developments in Renaissance Europe. Prerequisite: Three credits in History.

HIS 328. Reformation Europe
3 credits  Offered By Announcement only
The religious, political, cultural, social, and economic forces which produced a schism in 16th-century Western Christendom. Note: May be taken for credit in only one department as REL 348 or HIS 328. Prerequisite: Three credits in History.

HIS 329. Renaissance Humanism
3 credits
A movement that affected major Renaissance figures from Petrarch to Machiavelli and Erasmus. Emphasis on Education, Ethics, Literature, Religion and relationships with society. Prerequisite: Three credits in History.

HIS 330. The Scientific Revolution
3 credits
Transition between medieval science and Newtonian physics, focusing on sixteenth- and seventeenth-century developments in medicine, cosmology, physics, and scientific method. Prerequisite: Three credits in History.

HIS 331. England to the Accession of the Tudor Dynasty (to 1485)
3 credits  Offered By Announcement only
The formation of the English people and their growth to national unity and maturity. Prerequisite: Three credits in history.

HIS 332. England from the Tudors to Waterloo (1485-1815)
3 credits  Offered By Announcement only
The crisis of the English Constitution and the formation of the British Empire. Prerequisite: Three credits in history.

HIS 333. England and the Empire in the Age of Queen Victoria (1815-1901)
3 credits  Offered By Announcement only
Victorian Britain, emphasizing the manners, politics, and empire building, and the exploitation and humanitarianism of the century of Pax Britannica. Prerequisite: Three credits in history.
HIS 334. Britain and the Commonwealth in the Twentieth Century  
3 credits  
Offered By Announcement only  
The challenges and changes in Britain and its overseas dominions in the century of total war. Prerequisite: Three credits in history.

HIS 335. The French Revolution and Napoleon (1789-1815)  
3 credits  
Offered By Announcement only  
An analysis of French history from the Revolution to the collapse of the Napoleonic Empire, stressing the passing of feudalism in France. Prerequisite: Three credits in history.

HIS 336. Modern French History  
3 credits  
This course covers the political, social, cultural, economic, and military history of France since 1870. Major themes include power and decline, the weight of historical memories, issues of French identity, and the central role of the French state. Prerequisite: Three credits in History.

HIS 337. Modern European Jewish History  
3 credits  
Offered By Announcement only  
Jewish history in Europe since 1789, emphasizing the effects of the Enlightenment, nationalism and Nazism, Jewish life in Western Europe and in the communist bloc, and the impact of Israel. Prerequisite: Three credits in history.

HIS 338. The Holocaust in Historical Perspective  
3 credits  
Offered By Announcement only  
The evolution and implementation of the theory of racialism in imperial Germany and the Third Reich. Prerequisite: Three credits in history.

HIS 339. Germany from the Reformation to 1815  
3 credits  
Offered By Announcement only  
German history from the Reformation through the reorganization of the German states after the Napoleonic Wars (1815) with emphasis on the federal character of early modern Germany, religion, and topics of social and economic change. Prerequisite: Three credits in History.

HIS 340. History of Modern Germany since 1815  
3 credits  
Offered By Announcement only  
German history since 1815 concentrating on the political and social history of the German Empire, Germany’s role in World War I, the Weimar Republic and the rise of Hitler, Nazi Germany, and developments since 1945. Prerequisite: Three credits in History.

HIS 341. History of the Third Reich  
3 credits  
Offered By Announcement only  
Intellectual roots of Fascism in Germany, Hitler’s rise to power, the Nazi state and its social and economic policies, the foreign policy of the Third Reich, and Germany in World War II. Prerequisite: Three credits in History.

HIS 342. Contemporary Europe  
3 credits  
Offered By Announcement only  
A study of European history since World War I, giving special attention to contemporary economic, social, political, and international problems. Prerequisite: Three credits in history.

HIS 343. Ages of Gold and Silver: An Economic and Social History of Europe, 1450-1750  
3 credits  
Economic and social history of Europe in the early modern period. Writing intensive course. Prerequisite: Three credits in History.
HIS 344. **Medieval Russia**  
3 credits  
Offered By Announcement only  
Domestic political, economic, social and religious developments, and foreign policies from the foundation to Kiev of Rus’ through the Mongol era and the formation of Muscovy to the end of Riurikid rule in the late 16th century. Prerequisite: Three credits in history.

HIS 345. **Early Modern Russia**  
3 credits  
Offered By Announcement only  
The transition from Muscovy to Imperial Russia. Domestic political, social, economic and cultural issues, and foreign affairs will be examined with emphasis on Western influences and reactions to them during the first two centuries of Romanov rule (17th and 18th centuries). Prerequisite: Three credits in history.

HIS 346. **Imperial Russia**  
3 credits  
Offered By Announcement only  
Domestic political, social, economic and cultural developments, and foreign affairs in Russia from the beginning of the 19th century to the Russian Revolution of 1917. Prerequisite: Three credits in history.

HIS 347. **Soviet Union and Post-Soviet Russia**  
3 credits  
Offered By Announcement only  
The Soviet Union from the Russian Revolution (1917) to the disintegration of the USSR (1991), and the post-Soviet period to the present. Prerequisite: Three credits in history.

HIS 348. **Europe in the Age of Hitler and Stalin**  
3 credits  
European history between 1914 and 1945. Principal topics include the experience of two world wars, the rise of fascism and communism, the challenge of democracy, and the failure to secure a lasting peace. Prerequisite: Three credits in History.

HIS 349. **European Diplomatic History from Bismarck to the Cold War**  
3 credits  
European Diplomatic History from the Revolutions of 1848 to the Cold War period. Prerequisite: Three credits in history.

HIS 350. **Europe and the World in Modern Times**  
3 credits  
This course examines European relations with the wider world over the past several centuries. It combines the perspectives of the history of European exploration and expansion, imperialism and decolonization, global transport and trade, world wars, and globalization. Prerequisite: Three credits in History.

HIS 351. **History of the Maya**  
3 credits  
Offered By Announcement only  
Historical continuities and changes in Maya culture, economy, and politics from the classic period to contemporary times. Prerequisite: Three credits in history.

HIS 352. **The Inquisition**  
3 credits  

HIS 353. **History of Cuba**  
3 credits  
Offered By Announcement only  
The development of the Cuban nation, emphasizing the nineteenth and twentieth centuries and the Castro revolution. Prerequisite: Three credits in history.

HIS 355. **Modern Brazil**  
3 credits  
Offered By Announcement only  
Prerequisite: Three credits in history.
HIS 357. Social History of Latin America  
3 credits  
Offered By Announcement only  
Demographic changes, race and ethnic relations, immigration, and urbanization. Prerequisite: Three credits in history.

HIS 358. Women and Gender in Latin American History  
3 credits  
Offered By Announcement only  
Latin American History from colonial times to the present day using gender as a central category of historical analysis. Prerequisite: Three credits in history.

HIS 361. American Colonial History (1607-1763)  
3 credits  
Offered By Announcement only  
History of the British mainland colonies from the establishment of Jamestown to the end of the French and Indian War. Prerequisite: Three credits in history.

HIS 362. The American Revolution (1763-1783)  
3 credits  
Offered By Announcement only  
The political, social, and constitutional issues that culminated in the Declaration of Independence, and the achievement of American nationhood. Prerequisite: Three credits in history.

HIS 363. The Early Republic (1783-1850)  
3 credits  
Offered By Announcement only  
A study of the constitutional, political, territorial, economic, and social development of the United States from the end of the American Revolution to the Compromise of 1850. Prerequisite: Three credits in history.

HIS 364. Civil War and Reconstruction (1850-1877)  
3 credits  
Offered By Announcement only  
A study of the origins of the American Civil War, emphasizing the economic, political and social, as well as military aspects of the conflict, and the course and consequence of the Reconstruction period. Prerequisite: Three credits in history.

HIS 365. Emergence of Modern America (1877-1917)  
3 credits  
Offered By Announcement only  
United States from the end of Reconstruction to the First World War. Prerequisite: Three credits in history.

HIS 366. America in Crisis (1917-1945)  
3 credits  
Offered By Announcement only  
The United States from World War I through World War II. Prerequisite: Three credits in history.

HIS 367. Contemporary America  
3 credits  
Offered By Announcement only  
The United States since World War II. Prerequisite: Three credits in history.

HIS 368. Nature and the Environment in American History  
3 credits  
Shifting attitudes toward nature and the environment in American history; the rise of environmentalism and changes in public policy related to environmental conservation and preservation. Prerequisite: Three credits in History.

HIS 369. Introduction to Urban America  
3 credits  
Offered By Announcement only  
The changing role of the city in American history. The built environment. The interaction of the built environment and the lives of residents. Prerequisite: Three credits in history.
HIS 371. Immigrant, Race and Ethnicity in American History
3 credits
Offered By Announcement only
Migration and immigration in 19th- and 20th-century in the United States. How Americans have understood themselves as part of a multicultural society, and how ethnic and racial identities have been defined throughout American history. Prerequisite: Three credits in history.

HIS 372. African-American History to 1896
3 credits
Offered By Announcement only
History of people of African descent in the United States from African roots to 1896. Prerequisite: Three credits in history.

HIS 373. African-American History since 1896
3 credits
Offered By Announcement only
History of people of African descent in the United States from 1896 to the present. Prerequisite: Three credits in history.

HIS 374. History of American Women
3 credits
Offered By Announcement only
The history of women in the United States from the colonial period to the present, focusing on the contrasts between women’s public and private lives and the three waves of feminism. Prerequisite: Three credits in History.

HIS 375. Gender, Sex, and Sexuality in Early America
3 credits
Gender ideologies, gender relations, family life, attitudes towards sex, sexual behavior, and the regulation of sex in early America (1607-1800). Prerequisite: Three credits in History.

HIS 376. American Legal and Constitutional History
3 credits
Offered By Announcement only
The development of legal thought and practice in the context of American politics, economy and ideology during the twentieth century. Special consideration will be given to social movements and their treatment under the rule of law. Prerequisite: Three credits in history.

HIS 377. Sport in American History
3 credits
Offered By Announcement only
The role of sport in American culture. Sports relation to urban growth, professionalism, ethnic identity and assimilation, nationalism, and consumption. Prerequisite: Three credits in history.

HIS 379. History of the Old South (1607-1861)
3 credits
Offered By Announcement only
The American South from Jamestown to secession, emphasizing the development of plantation society, the rise of internal and external conflict, and the shaping of the idea of the “Old” South. Prerequisite: Three credits in history.

HIS 380. The New South (since 1877)
3 credits
Offered By Announcement only
History of the U.S. South from “Redemption” to the present, emphasizing Populism, Progressivism, the idea of a “New” South, and the civil rights movement. Prerequisite: Three credits in history.

HIS 381. History of Florida
3 credits
Offered By Announcement only
Florida from its discovery, exploration, and colonization to the present. Prerequisite: Three credits in history.
HIS 382. Ideas and Culture in Early American History  
3 credits 
Intellectual and cultural history in America from the colonial period to the Civil War, focusing on developments in religion, philosophy, political and social theory, and the arts. Prerequisite: Three credits in History.

HIS 383. Ideas and Culture in Modern United States History  
3 credits 
Intellectual and cultural history in the United States from 1865 to the present day, focusing on developments in philosophy, science, political theory, social criticism, and the arts. Prerequisite: Three credits in History.

HIS 385. The Growth of the American Empire  
3 credits 
Diplomatic history of the United States from the American Revolution to the present, focusing on the ideology and perceptions accompanying America’s rise to world power. Prerequisite: Three credits in history.

HIS 386. History of U.S. Relations with Latin America  
3 credits 
A study of U.S. policy toward Latin America from the early 1800s to the present, emphasizing the roles of economics, territorial expansion, ideology, and race. Prerequisite: Three credits in history.

HIS 387. American Military History  
3 credits 
The military history of the United States from the colonial period to the present, emphasizing the development of the armed forces, their operations in wartime, and their interaction with American society. Prerequisite: Three credits in history.

HIS 388. The Vietnam War  
3 credits 
U.S. involvement in Vietnam from 1945 to 1973, emphasizing the diplomatic and military components. Prerequisite: Three credits in history.

HIS 392. Transfer Credits  
1- 5 credits 
Not offered. Transfer credit only. Courses taken at other institutions with no direct equivalents.

HIS 393. Transfer Credits  
1- 5 credits 
Not offered. Transfer credit only. Courses taken at other institutions with no direct equivalents.

HIS 394. Transfer Credits  
1- 5 credits 
Not offered. Transfer credit only. Courses taken at other institutions with no direct equivalents.

HIS 395. World War I  
3 credits 
The military and political history of the First World War (1914-1918), beginning with a survey of military and naval developments in the early 20th Century and the diplomatic background of the war. Prerequisite: Three credits in history.

HIS 396. World War II  
3 credits 
The military and political history of the Second World War (1939-1945), emphasizing the effects of aviation, mechanization, and new military doctrines on the conduct of operations. Prerequisite: Three credits in history.

HIS 401. Directed Readings in African History  
1- 3 credits 
Prerequisite: Permission of instructor.
HIS 411. Directed Readings in Asian History
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Permission of instructor.

HIS 421. Directed Readings in European History
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Permission of instructor.

HIS 451. Directed Readings in Latin-American History
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Permission of instructor.

HIS 461. Directed Readings in United States History
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Permission of instructor.

HIS 491. Directed Readings in Comparative History
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Permission of instructor.

HIS 501. Studies in African History
3 credits
Offered By Announcement only
Selected topics in African history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 511. Studies in Asian History
3 credits
Offered By Announcement only
Selected topics in Asian history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 515. Studies in Chinese History
3 credits
Offered By Announcement only
Selected topics in Chinese history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 531. Studies in European History
3 credits
Offered By Announcement only
Selected topics in European history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 534. Studies in Ancient History
3 credits
Offered By Announcement only
Selected topics in Ancient history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule. Prerequisite: Three credits in history at the 300-level.

HIS 536. Studies in Medieval History
3 credits
Offered By Announcement only
Selected topics in Medieval history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in History at the 300-level.

HIS 538. Studies in Early Modern European History
3 credits
Offered By Announcement only
Selected topics in European history before the French Revolution. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in History at the 300-level.
HIS 544. **Studies in Modern European History**
3 credits
Offered By Announcement only
Selected topics in European history after the French Revolution. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 551. **Studies in Latin American History**
3 credits
Offered By Announcement only
Selected topics in Latin-American history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 553. **Studies in Colonial Latin American History**
3 credits
Offered By Announcement only
Selected topics in the colonial period of Latin-American history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 554. **Studies in Modern Latin American History**
3 credits
Offered By Announcement only
Selected topics in Latin-American history before and after Independence. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 561. **Studies in United States History**
3 credits
Offered By Announcement only
Selected topics in United States history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule. Prerequisite: Three credits in history at the 300-level.

HIS 564. **Studies in American Intellectual and Cultural History**
3 credits
Offered By Announcement only
Selected topics in American intellectual and cultural history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule. Prerequisite: Three credits in history at the 300-level.

HIS 565. **Studies in American Political and Diplomatic History**
3 credits
Offered By Announcement only
Selected topics in American political and diplomatic history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule. Prerequisite: Three credits in history at the 300-level.

HIS 569. **Studies in African-American History**
3 credits
Offered By Announcement only
Selected topics in African-American history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 570. **Studies in Public History**
3 credits
Offered By Announcement only
Selected topics in public history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 591. **Studies in Comparative History**
3 credits
Offered By Announcement only
Selected topics in Comparative History. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.
**HIS 592. Transfer Credits**  
1-5 credits  
Courses taken at other institutions with no direct equivalents.  
Not offered. Transfer credit only.

**HIS 593. Transfer Credits**  
1-5 credits  
Courses taken at other institutions with no direct equivalents.  
Not offered. Transfer credit only.

**HIS 594. Transfer Credits**  
1-5 credits  
Courses taken at other institutions with no direct equivalents.  
Not offered. Transfer credit only.

**HIS 595. Studies in Visual History**  
3 credits  
Offered By Announcement only  
Selected topics in the use of photographs and other visual evidence for historical purposes. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

**HIS 599. Independent Research**  
3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor.

**International Studies**

**INS 101. Global Perspectives**  
3 credits  
Offered Fall and Spring Semesters  
Conceptual tools to understand how a faction-ridden and fractious, but increasingly independent, global society governs itself?

**INS 102. Global Economics**  
3 credits  
The international economy. This course develops the analytical tools underlying “the economic way of thinking” and applies them to two main topics: the environment and international trade.

**INS 201. Globalization and Change in World Politics**  
3 credits  
Offered By Announcement only  
The academic and public policy debates regarding the multiple impacts of the globalization of the world economy on the politics of nation-states and on the dynamics of the international system itself. Prerequisite: INS 101 or permission of instructor.

**INS 202. INS Methodology**  
3 credits  
The approaches, methods and techniques used for designing and conducting international studies research.

**INS 210. INS Topics**  
3 credits  
Not offered. Transfer credit only.  
Special topics taken at other institutions with no direct equivalents.

**INS 310. Advanced Topics in INS**  
3 credits  
Offered Fall and Spring Semesters  
Prerequisite: INS 201 or POL 212 or permission of instructor.

**INS 311. Advanced Topics in INS II**  
3 credits  
Prerequisite: INS 201 or POL 212 or permission of instructor.
INS 320.  Global Economics II  
3 credits  
Macroeconomics and its application to the study of the international economy. Measurement of income and level of development; determinants of economic growth; inflation and unemployment; open economy macroeconomics. Prerequisite: INS 102, and ECO 211 or 212, or permission of instructor.

INS 321.  Global Political Economy  
3 credits  
The implications of the globalization of trade, production, finance, and culture on equity, social welfare and the quality of democratic institutions and practices in both the Global North and the Global South. Prerequisite: INS 102 and ECO 211 or 212, or permission of instructor.

INS 322.  Economics of Development and the Environment  
3 credits  
Structural changes that accompany economic growth that impact the environment and sustainable development. Prerequisite: INS 102, and ECO 211 or 212, or permission of instructor.

INS 330.  Introduction of Comparative Studies  
3 credits  
Introduces students to the comparative method and to the theories and concepts required to analyze political transformation of states, societies, economies and culture in a globalization world. Prerequisite: INS 201 or POL 212 or permission of instructor.

INS 335.  Democratization  
3 credits  
A comparative overview of the problems of introducing democratic and market economic institutions into areas where they have not flourished and how to maintain them in established democracies. Prerequisite: INS 201 or POL 212 or permission of instructor.

INS 341.  Nationalism, Ethnicity and Conflict  
3 credits  
Examines theories of ethnic and national conflict focusing on contemporary issues throughout the world. Prerequisite: INS 201 or POL 212 or permission of instructor.

INS 352.  Panoramic View of the Middle East  
3 credits  
The Middle East and a basic understanding of the factors, forces and processes shaping developments in the modern and contemporary history of this important world region. Prerequisite: INS 201, GEG 242 or POL 212 or permission of instructor.

INS 367.  Foreign Policy Topics  
3 credits  
Prerequisite: INS 201 or POL 212 or permission of instructor.

INS 380.  Democracy and Globalization in Latin America  
3 credits  
The global dimensions of Latin American politics, emphasizing democratization and its discontents; human rights; the emergence of transnational civil society; and the impacts of market reforms on development, equity and social inclusion. Prerequisite: INS 201 or POL 212 or permission of instructor.

INS 385.  Latin American Topics  
3 credits  
Prerequisite: INS 201 or POL 212 or permission of instructor.
INS 391. **The European Union**  
3 credits  
Offered Fall and Spring Semesters  
The course will combine 6 objectives: 1) to investigate the historical development of Europe as a civilization and as an idea through review of some main historical and political factors and ideologies from 1815-present; 2) to survey the main organizations and experiments in European integration before/after World War II; 3) to analyze the historical development of the European communities; 4) to examine major institutions of the European Union; 5) to analyze the main European Union policies and current issues; 6) to reflect upon the future of the nation-state and the idea of a united Europe, the role of transformed ideologies, and the rebirth of nationalism while pondering about future scenarios for European integration. Prerequisite: INS 101.

INS 394. **European Topics**  
3 credits  
Prerequisite: INS 201 or POL 212 or permission of instructor.

INS 410. **INS Advanced Seminar**  
3 credits  
Prerequisite: INS 201 or POL 212 or permission of instructor.

INS 411. **IR Advanced Seminar**  
3 credits  
Prerequisite: INS 201 or POL 212 or permission of instructor.

INS 415. **Independent Study**  
1-6 credits  
Prerequisite: Permission of instructor.

INS 418. **Honors Thesis**  
3 credits  
Honors thesis research. This course is required for students seeking magna or summa cum laude and those seeking departmental honors. A thesis committee comprised of three members, two from International Studies and one from the university faculty must be established. The thesis advisor must also be from International Studies. Prerequisite: Permission of advisor.

INS 419. **Honors Thesis II**  
3 credits  
Honors thesis writing. Prerequisite: INS 418.

INS 420. **Global Trade**  
3 credits  
Economic principles in global issues such as comparative advantage; specialization and trade; macroeconomics in the open economy; commercial policy; globalization; inequalities, within and among nations; and governance. Prerequisite: INS core or permission of instructor.

INS 421. **Poverty and the Environment**  
3 credits  
The processes by which a growing economy creates wealth in the form of goods and services while simultaneously increasing poverty and pollution. Prerequisite: INS 102, core, or permission of instructor.

INS 430. **Comparative Studies Seminar**  
3 credits  
Prerequisite: INS 201, or POL 212, or permission of instructor.
INS 460. United Nations Seminar
3 credits
The organization and functions of the UN, including its structure, network of agencies, and issues in which it is involved. Emphasis is given to reforms, the Millennium Development Goals, and problematic relationships among the UN member states. Prerequisite: INS 201 or POL 212 or permission of instructor.

INS 503. Int Relations Topics
3 credits
Offered By Announcement only
Selected topics in International Relations Theory. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title.

INS 504. Int Rel Topics II
3 credits
Offered By Announcement only
Selected topics in International Relations Theory. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title.

INS 510. ISSUES IN INS
3 credits
Offered By Announcement only
Analysis of current issues of international importance. Prerequisite: INS 201, INS core, or permission of instructor.

INS 511. Issues in INS II
3 credits
Offered By Announcement only
Analysis of current issues of international importance. Prerequisite: INS 201, INS core, or permission of instructor.

INS 512. International Administration
3 credits
Offered Fall Semester
Introductory course for the Master of Arts in International Administration. Prerequisite: Graduate students only.

INS 513. Information and Communication in International Relations
3 credits
Offered Fall Semester
First semester offering for students in the Master of Arts in International Administration program. Prerequisite: Graduate students only.

INS 514. World Affairs
3 credits
Offered Fall Semester
Explores the complexity of world affairs in relation to international administrative fields. First semester offering for students in the Master of Arts in International Administration program. Prerequisite: Graduate students only.

INS 515. Independent Study
1-6 credits
Prerequisite: INS core and minimum of 3.0 cumulative GPA required and permission of instructor.

INS 516. Str Thinking, Neg and Bargaining
3 credits
Offered Spring Semester
Second semester offering for students in the Master of International Administration program. Prerequisite: Graduate students only.
INS 517. Practicum in International Administration
3 credits
Offered By Announcement only
Each student in the Master of Arts in International Studies (with a specialization in International Administration) is required to complete a three (3) credit practicum/internship during the summer months subsequent to their completion of the fall and spring semester. The purpose of the practicum is to give each student the necessary skills to help advance their professional careers. Prerequisite: Permission of program coordinator.

INS 519. Internship
1-3 credits
Prerequisite: Permission of instructor.

INS 520. Microeconomics for INS
3 credits
Offered By Announcement only
Microeconomics for students of international studies. Topics will include rationality, market failure and comparative advantage. Prerequisite: Graduate student or permission of instructor.

INS 521. INT’L ECON TOPICS II (International Economic System Topics)
3 credits
Offered By Announcement only
Selected topics in International Economics. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title.

INS 522. Latin American Political Economy
3 credits
Latin American political economy including analysis of market reform and integration of the region into the world economy. Prerequisite: Graduate student or permission of instructor.

INS 523. Economics of Terrorism
3 credits
Economic resources of terrorist movements today: their financing, acquisition of tools, recruitment, and operations. Prerequisite: Graduate student or INS 102 or permission of instructor.

INS 524. INTL ECON Topics
3 credits
Prerequisite: Graduate student or permission of instructor.

INS 530. Comparative Analysis
3 credits
Offered By Announcement only
Advanced overview of the comparative method. Required for students specializing in Comparative Studies at the graduate level. Prerequisite: Graduate student or permission of instructor.

INS 531. Dictatorship and Human Rights
3 credits
Offered By Announcement only
How have societies coped with traumatic pasts, and how have they faced the tension between remembering and forgetting? This course will explore these issues with a view to various approaches and scenarios. Prerequisite: Graduate student or permission of instructor.

INS 532. Globalization and Human Rights
3 credits
Offered By Announcement only
The integration of markets has many concerned for the political and economic rights of the common citizen. This course examines The effect of globalization on the human rights standards throughout the world. Prerequisite: Graduate student or permission of instructor.
INS 533. Transnational Social Movements  
3 credits  
Focuses on global civic activism and contentious politics, with particular attention to transnational non-state actors - NGOs, social movements, environmental protection, and the emergence of a global civil society. Prerequisite: Graduate student or permission of instructor.

INS 534. Military, State and Society  
3 credits  
The role of the military in state formation; questions of military rule, civilian control, and social structures in contemporary world politics. Prerequisite: Graduate student or permission of instructor.

INS 536. Comparative Political Regimes  
3 credits  
Literature concerned with the transition from authoritarianism to democracy in various parts of the world. Prerequisite: Graduate student or permission of instructor.

INS 537. Comparative Political Economy  
3 credits  
Compares how domestic politics and macroeconomic policies interact with globalization. Case studies include welfare states in the U.S. and Europe, East Asian development, postcommunist transitions and market restructuring in Latin America and Africa. Prerequisite: Graduate student or permission of instructor.

INS 540. National Security  
3 credits  
Offered By Announcement only  
The central issues concerning European security since World War II, with emphasis on the period since the end of the cold war. Prerequisite: Graduate student or permission of instructor.

INS 541. The Role of Intelligence in U.S. National Security  
3 credits  
Offered By Announcement only  
Required alternate for students concentrating in Strategic Studies. Explains what is intelligence, how it is collected and analyzed, and what it contributes to U.S. national security. Discusses the issue of secret intelligence activities in a democratic society.

INS 542. Drug-Trafficking in the Americas  
3 credits  
Offered By Announcement only  
The political economy of the U.S.-Latin American drug trade in the 20th Century along with the dynamics of the U.S.-led war on drugs through the first years of the Twenty First Century. Prerequisite: Graduate student or permission of instructor.

INS 543. National Security and Foreign Policy  
3 credits  
Explores alternative conceptualizations of "security" and the new challenges to U.S. national security that have emerged in the Post-Cold War era. Prerequisite: Graduate student or permission of instructor.

INS 550. Non-Western Regional Topics  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate student or INS 201 or permission of instructor.

INS 551. Regional Topics II  
3 credits  
Offered By Announcement only  
Selected topics in International Business. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title.
INS 560. US Foreign Policy
3 credits
The leading approaches to the analysis of American foreign policy. Particular emphasis will be placed on the post-Cold War period and the new challenges to U.S. foreign policy of the 21st century. Prerequisite: Graduate student or permission of instructor.

INS 561. Negotiation and Bargaining
3 credits
Examines the nature of diplomatic negotiation through readings and discussion of international negotiation and through the case method, selecting several cases of high-level policy issues in which the United States has been a principal actor. Prerequisite: Graduate student or permission of instructor.

INS 562. International Peace and Conflict Resolution
3 credits
The major sources of conflict, and what resources are available for making and keeping the peace? This class introduces students to the most fundamental concerns of the field of International Relations (IR), and especially of its subfield IPCR. Prerequisite: Graduate student or permission of instructor.

INS 563. International Organizations
3 credits
The role, function, and impact on states of international governmental and non-governmental organizations in critical areas like peace and security, human rights, economic development, and environmental degradation. Prerequisite: Graduate student or permission of instructor.

INS 564. International Law
3 credits
Offered Fall and Spring Semesters and First Summer Session
How international law affects the conduct of states. Issues include jurisdiction, diplomatic immunity, the use of armed force, peaceful dispute settlement among states, human rights, and the International Criminal Court. Prerequisite: Graduate student or permission of instructor.

INS 565. The World Before European Domination
3 credits
The historical roots of the contemporary international system. Its objective is to question the standard Eurocentric perspective on the rise of the West to a dominant position in the global system. Prerequisite: 15 credits in advanced level social sciences or permission of instructor.

INS 566. US-Latin American Relations
3 credits
Political, economic and strategic aspects of U.S.-Latin American relations; the historical experience and contemporary issues, including the influence of extra-regional parties such as Europe and China. Prerequisite: Graduate student or permission of instructor.

INS 567. Foreign Policy Topics
3 credits
Prerequisite: Graduate student or INS 201 or permission of instructor.

INS 570. Globalization and Health
3 credits
Offered Fall Semester
Globalization and its benefits and threats to public health; the relationship between global economic, political, social, cultural, environmental and technological changes and their impact on human health. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.
INS 571. International Development and Human Welfare
3 credits
Offered Spring Semester
Health and development links; macroeconomic policies and their impact on social equity; poverty and structural inequities; and other key issues that influence human development. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 572. Global Health Policy and Ethics
3 credits
Offered Fall and Spring Semesters
National, regional and global health policies with special consideration to ethical and human rights issues; policies and the moral considerations that shape public health policy. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 573. Disasters, Terrorism and Global Public Health
3 credits
The historical processes and present trends of disasters, terrorism, humanitarian emergencies and their impact on human health, safety and security. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 580. Latin American Comparative Politics
3 credits
Offered Fall Semester
The major intellectual debates shaping the field of comparative politics including: (1) development, (2) military politics, (3) democratization and (4) the emergence of new social movements. Prerequisite: Graduate student or permission of instructor.

INS 581. Politics and Ideology in Latin America
3 credits
Offered By Announcement only
The roles played by both “class” and the “new social movements” in the emergence of new modes of political representation. Prerequisite: Graduate student or permission of instructor.

INS 582. Problems of Latin American Democracies
3 credits
Offered By Announcement only
The Left and the Right, business, and indigenous movements along with issues such as transitional justice, state reform, public security, human rights and the politics of memory. Prerequisite: Graduate student or permission of instructor.

INS 583. Chile: Politics and Society
3 credits
Offered By Announcement only
Changes in Chilean politics and society. The three chronological parts of Chilean history: pre-1973, the years of dictatorship and the contemporary transition to democracy since 1990. Prerequisite: Graduate student or permission of instructor.

INS 584. Latin American Thought
3 credits
Offered Spring Semester and First Summer Session
The evolution of Latin American thought through political and intellectual history; the classical writings of the main "pensadores", and a comparative analysis of contemporary ideological trends. Prerequisite: Graduate student or INS 201 or POL 212 or permission of instructor.

INS 585. Dilemmas of Mexican Democracy
3 credits
Contemporary politics in Mexico and US-Mexican relations first-hand during visits to Mexico City and Oaxaca. Meetings with Mexican scholars and civil society leaders are included. Prerequisite: Graduate student or permission of instructor.
INS 586. Brazil in Transition  
3 credits  
The social, economic, cultural transformations shaping Brazilian politics. In addition to visiting Rio de Janeiro and Salvador, there will be seminars with Brazilian academics and social and political activists. Prerequisite: Graduate students or permission of instructor.

INS 587. Politics in Central America  
3 credits  
The domestic issues of the Central American republics and their relationships with the United States, other western hemisphere countries and the global system. Prerequisite: Graduate student or permission of instructor.

INS 588. Politics in the Andes  
3 credits  
The domestic issues of the Andean republics and their relationships with the United States, other western hemisphere countries and the global system. Prerequisite: Graduate student or permission of instructor.

INS 589. Argentine Politics and Society  
3 credits  
Seminar offered in Buenos Aires covering dilemmas of democratic consolidation, social justice, and market reform. Students will meet with Argentine social scientists and leaders of major social, economic, and political movements. Prerequisite: Graduate student or permission of instructor.

INS 591. The European Union  
3 credits  
Offered Fall and Spring Semesters  
The European Union’s history, institutions, policies and contemporary issues. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 592. European Union and the World  
3 credits  
The European Union’s development, its main institutions and policies followed by an analysis of the main features of the European Union’s external relations. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 593. European Security  
3 credits  
Offered Spring Semester  
Regional security in Europe, focusing on NATO expansion, EU expansion, Russian foreign policy, and related issues. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 594. European Topics  
3 credits  
Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 595. European Social Movements  
3 credits  
Offered Spring Semester  
The major social movements active today throughout Europe including those concerned with the environment, agriculture, poverty, racism, defending social democracy, the rights of workers, minorities, and women. Prerequisite: Graduate student, upper level student or permission of instructor.

INS 599. Special Topics  
3 credits  
Offered By Announcement only
Italian

**ITA 101. Elementary Italian I**
3 credits
*Offered Fall and Spring Semesters*
Drill in pronunciation, grammatical principles, reading and translation, oral and written exercises. Normally closed to students who have completed two years of high school Italian. Closed to native speakers.

**ITA 102. Elementary Italian II**
3 credits
*Offered Fall and Spring Semesters*
Continuation of ITA 101. Closed to native speakers. Prerequisite: ITA 101. Closed to native speakers.

**ITA 211. Intermediate Italian I**
3 credits
*Offered Fall and Spring Semesters*
Integrated grammar review. Diverse selection of readings: stories, plays, essays, interviews. Practice in speaking and in writing. Class conducted in Italian. Prerequisite: Closed to native speakers. ITA 102, a strong high school background (4 years; good program; good grades).

**ITA 212. Intermediate Italian II**
3 credits
*Offered Fall and Spring Semesters*
This course uses different genres of texts (portraits, descriptions, short stories, film reviews, magazines) to explore different ways of writing and to prepare students for 300-level work. Structured in a workshop format, the course also develops conversational skills. Class conducted in Italian. Closed to native speakers. Prerequisite: ITA 211; closed to native speakers.

**ITA 301. Introduction to Literary Genres**
3 credits
*Offered By Announcement only*
Genres and periods of Italian literature. Writing skills for non-native speakers. Closed to native speakers formally educated in Italian. Writing credit. Prerequisite: ITA 212 or equivalent.

**ITA 310. Italian Texts in Translation**
3 credits
Intensive study, in English translation, of a topic, theme, author, period, or literary movement. May be repeated when the topic varies. Writing Credit. Prerequisite: ENG 105 and 106, or equivalent.

**ITA 321. Special Topics in Italian Literature**
3 credits
*Offered By Announcement only*
Intensive study of an author, a period, or a literary movement. May be repeated for credit when the topic varies. Writing credit. Prerequisite: ITA 212 or equivalent.

**ITA 363. Introduction to Medieval and Renaissance Italian Literature**
3 credits
*Offered By Announcement only*
Culture and literature in Italian vernacular from its earliest document through the Renaissance. May be used to fulfill humanities literature requirement. Writing credit. Prerequisite: ITA 212 or equivalent.

**ITA 364. Introduction to 17th-19th Century Italian Literature**
3 credits
*Offered By Announcement only*
Italian culture and literature from the Baroque to the nineteenth century. May be used to fulfill humanities literature requirement. Writing credit. Prerequisite: ITA 212 or equivalent.
ITA 365. **Introduction to 20th Century Italian Literature**
3 credits  
Offered By Announcement only
Italian culture and literature of the twentieth century. May be used to fulfill humanities literature requirement. Writing credit. Prerequisite: ITA 212 or equivalent.

ITA 395. **Transfer Credits**
1-3 credits  
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

ITA 396. **Transfer Credits**
1-3 credits  
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

ITA 397. **Transfer Credits**
1-3 credits  
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

ITA 398. **Transfer Credits**
1-3 credits  
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

ITA 399. **Transfer Credits**
1-3 credits  
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

ITA 591. **Directed Readings**
1-3 credits  
Offered By Announcement only
Prerequisite: Permission of the instructor.

ITA 592. **Directed Readings**
1-3 credits  
Offered By Announcement only
Prerequisite: Permission of the instructor.

ITA 593. **Directed Readings**
1-3 credits  
Offered By Announcement only
Prerequisite: Permission of the instructor.

**Japanese**

JPN 101. **Elementary Japanese I**
3 credits  
Offered Fall Semester
Introduction to modern Japanese: pronunciation, grammar, conversation, and the elements of the writing system. Closed to native speakers.

JPN 102. **Elementary Japanese II**
3 credits  
Offered Spring Semester
Continuation of JPN 101. Introduction to modern Japanese: pronunciation, grammar, conversation, and the elements of the writing system. Closed to native speakers. Prerequisite: JPN 101. Closed to native speakers.

JPN 201. **Intermediate Japanese I**
3 credits  
Offered Fall Semester
Continuation of JPN 102. Grammar, composition and readings in modern Japanese, which will introduce students to aspects of Japanese customs, history and culture. Closed to native speakers. Prerequisite: JAP 102, and CLOSED TO NATIVE SPEAKERS.
JPN 202. Intermediate Japanese II  
3 credits  
Offered Spring Semester  
Continuation of JPN 201. Grammar, dialogues, and readings, designed to integrate listening, comprehension, speaking, reading and writing skills. Discussion of the Japanese culture, history, and customs. Closed to native speakers. Prerequisite: JPN 201. Closed to native speakers.

Judaic Studies  
JUS 231. Jewish Civilization: Society, Culture, and Religion  
3 credits  
Offered By Announcement only  
Introduction to Jewish civilization from Abraham to present.

JUS 310. Development of Jewish Intellectual Roots  
3 credits  
Offered By Announcement only  
Contributions by Jewish intellectuals from diversified fields in the establishment of Jewish roots. Prerequisite: JUS 231.

JUS 311. Ethics in Jewish Life  
3 credits  
Offered By Announcement only  
Jewish ethics as a foundation for personal conduct and for social justice. Moral issues and their relationships to ancient and contemporary Jewish teachings. Prerequisite: JUS 231 or junior standing.

JUS 360. Hollywood and Popular Culture: The American Jewish Experience  
3 credits  
Offered By Announcement only  
The image of the Jew and the Jewish experience in American Cinema. Prerequisite: JUH 231 or HIS 102 and permission of instructor.

JUS 375. Religion and Democracy in Israel  
3 credits  
Offered By Announcement only  
Israel’s evolution as a nation and a society by focusing on how religion impacts ethnicity, culture, and democracy. Prerequisite: Three credits in REL and/or permission of instructor.

JUS 401. Studies in Judaica  
1-3 credits  
Offered By Announcement only  
Designed to enable students interested in some phase of Judaic Studies to study extensively in that field of interest. Prerequisite: JUS 231 or permission of instructor.

JUS 410. Special Topics  
1-3 credits  
Offered By Announcement only  
Prerequisite: JUS 231 or permission of instructor.

JUS 411. Special Topics  
1-3 credits  
Offered By Announcement only  
Prerequisite: JUS 231 or permission of instructor.

JUS 421. Internship in Judaic Studies  
1-3 credits  
Offered Fall and Spring Semesters  
Prescribed study and supervised work with practitioners in Judaic services. Prerequisite: JUS 231 and three other credits in Judaic Studies.

JUS 498. Senior Thesis  
3 credits  
Partial requirement for Departmental Honors in Judaic Studies. Thesis to be a documented essay in any area of Judaic Studies written under the direction of a member of the faculty. Prerequisite: Senior status, certification by Director of Judaic Studies, and permission of the thesis director.
JUS 499. Senior Thesis
3 credits
Partial requirement for Departmental Honors in Judaic Studies. Thesis to be a documented essay in any area of Judaic Studies written under the direction of a member of the faculty. Prerequisite: Senior status, certification by Director of Judaic Studies, and permission of the thesis director.

Judaic Studies - Humanities

JUH 231. Jewish Civilization: Society, Culture, and Religion
3 credits
Offered By Announcement only
Introduction to Jewish civilization from Abraham to present.

Latin

LAT 101. Elementary Latin I
3 credits
Offered Fall Semester
Elementary vocabulary, grammar and reading.

LAT 102. Elementary Latin II
3 credits
Offered Spring Semester
Continuation of LAT 101. Prerequisite: LAT 101.

LAT 201. Intermediate Latin
3 credits
Offered Fall Semester
Translation and grammatical analysis of selected texts from Latin authors. Prerequisite: LAT 101 and 102.

LAT 311. Introduction to Latin Prose: Cicero
3 credits
Advanced translation and grammatical analysis of selected texts from Latin authors. Prerequisite: LAT 201 or permission of the instructor.

LAT 321. Introduction to Latin Poetry: Virgil
3 credits
Readings from Virgil’s Eclogues, Georgics, and the Aeneid. Prerequisite: LAT 201 or permission of the instructor.

LAT 411. Catullus and Horace
3 credits
Readings from the lyric poetry of Catullus and Horace. Prerequisite: LAT 201 or permission of the instructor.

LAT 421. Roman Epic
3 credits
Studies from Roman epic poetry of Lucretius and Virgil to Lucan and Statius. Prerequisite: LAT 201 or permission of the instructor.

LAT 431. Roman Historians
3 credits
Readings from Sallust, Livy, and Tacitus. Prerequisite: LAT 201 or permission of the instructor.

Latin American Studies

LAS 301. Introduction to Latin American Studies
3 credits
Offered By Announcement only
Latin American area studies: methods and politics. Prerequisite: Any one of the following: INS 101, POL 212, HIS 251, 252, any 300-level course in POR or SPA (with a Latin American focus).
LAS 302. **Topics in Latin American Studies**
3 credits
Offered By Announcement only
Topics vary, Interdisciplinary focus may be thematic (e.g.: revolutions, new social movements, women’s rights, Latin Americanism, testimonio etc.) or regional/national (e.g.: Andean Studies, Southern Cone Studies, Caribbean Studies, Mexican Studies, etc.). Prerequisite: Any one of the following: INS 101, POL 212, HIS 251, 252, any 300-level course in POR or SPA (with a Latin American focus).

LAS 494. **Independent Study in Latin American Studies**
1-3 credits
Offered Fall and Spring Semesters
Independent Study leading to a thesis, original piece of research, or creative project on a Latin American subject. Prerequisite: Two courses in Latin American Studies as listed in the Bulletin or permission of instructor.

LAS 501. **Interdisciplinarity in Latin American Studies**
3 credits
Offered Fall and Spring Semesters
Interdisciplinary methods and politics of Latin American area studies. Prerequisite: Graduate status, or, for undergraduates: LAS 301 and six more credits in LAS or LAS-approved courses at or above the 300-level.

LAS 502. **Interdisciplinary Research Methods in Latin American Studies**
3 credits
Interdisciplinary research methods and skills in Latin American Studies. Prerequisite: Graduate status, or, for undergraduates: LAS 301 and six more credits in LAS or LAS-approved courses at or above the 300-level.

LAS 503. **Program Seminar in Latin American Studies**
3 credits
Content of course will vary by semester. Prerequisite: Graduate status, or, for undergraduates: LAS 301 and six more credits in LAS or LAS-approved courses at or above the 300-level.

LAS 505. **Internship in Latin American Studies**
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
On-site experience in business, governmental organization, or non-profit organization dealing with Latin America. Prerequisite: Declared major or minor in Latin American Studies; six credits in LAS or LAS-approved courses at or above the 300-level, and permission of LAS director.

**Liberal Studies**

**MLS 595. Special Topics**
3 credits
Offered Fall and Spring Semesters

**MLS 596. Special Topics**
3 credits

**MLS 597. Special Topics**
3 credits

**Marine Science**

**MSC 101. Survey of Oceanography**
3 credits
Offered Fall and Spring Semesters and First Summer Session
Introduction to the oceans and their significance to mankind, encompassing geological, physical, chemical, and biological processes; man’s role in and on the sea, including fisheries, pollution, and ocean management. Not for major or minor.
MSC 102. **Introduction to Weather and Climate**
3 credits  
Offered Spring Semester
The structure, physics, dynamics and thermodynamics of the atmosphere. Weather, weather forecasting, climate and climate change.

MSC 103. **Survey of Modern Meteorology**
3 credits  
Offered Fall Semester
Dynamics and thermodynamics of the atmosphere as they relate to contemporary issues in meteorology. Overview of numerical weather prediction techniques and new technologies for monitoring weather and climate. Open to majors or minors with permission of instructor. Prerequisite: MTH 108.

MSC 104. **Current Issues in Atmospheric Chemistry**
3 credits  
Offered By Announcement only
Topics include: basic composition and chemistry of the atmosphere; chemical processes involved in regional air pollution and acid rain; health effects of air pollution; global change in the composition and climate of the atmosphere; stratospheric ozone, and global warming. The treatment will only utilize basic pre-calculus mathematics and high-school level chemistry. Prerequisite: Pre-calculus math, high school chemistry or permission from instructor.

MSC 105. **Introduction to Aquaculture**
1 credit
The laboratory explores the basic tools and techniques of aquaculture; selection of species, water quality, life cycles and growth dynamics. Practical projects and data presentation required.

MSC 111. **Introduction to Marine Science**
3 credits  
Offered Fall Semester
Geological, physical, chemical and biological processes of the world’s oceans. The role of the oceans in global dynamics and man’s role in and on the sea, including fisheries, pollution and ocean management. This course replaces MSC 115 and MSC 116. Enrollment limited to Marine Science/Marine Affairs majors. Lecture and discussion, 3 hours. Field trips.

MSC 115. **Marine Environments of South Florida**
2 credits  
Offered By Announcement only
A field and lecture study of selected marine environments around South Florida, with emphasis on the interaction between organisms and the geological substrate. Field trips. Fee required. Prerequisite: Summer Scholars Program.

MSC 118. **Current Weather Topics**
1 credit  
Offered Spring Semester
Weather-and Climate-related phenomena such as hurricanes, severe storms, global warming, and acid rain. (Notes and analysis materials provided)

MSC 120. **Topics in Broadcast Meteorology**
1 credit
Broadcast Meteorology, including the production of weather briefings and weather news for TV, radio and print media. Prerequisite: MSC 103 and 118. Corequisite: MSC 243.

MSC 201. **Introduction to Research Diving Laboratory**
2 credits  
Offered Fall Semester
Skills required for using SCUBA as a tool for research. Introduction to biological, geological, archaeological and physical oceanography methods for underwater data collection. Prerequisite: Recreational SCUBA certification, ability to pass a diving physical examination and swimming test. MSC 101 or 111.
MSC 215. **Chemical Oceanography**  
3 credits  
Offered Spring Semester  
An introduction to the chemistry of the oceans. Descriptive chemical oceanography of the components of ocean waters (metals, gases, organic compounds and nutrients). Biogeochemical cycles in oceanic systems. Prerequisite: CHM 111 and 112. Corequisite: MSC 216.

MSC 216. **Chemical Oceanography Laboratory**  
1 credit  
Offered Spring Semester  
Chemical and physical methods in chemical oceanography. Analytical and instrumental techniques used to determine density, salinity, chlorinity, dissolved oxygen, nutrients and components of the carbonate system. Corequisite: MSC 215.

MSC 220. **Climate and Global Change**  
3 credits  
The Earth’s climate system and the role of natural and anthropogenic processes in shaping climate change. Prerequisite: MSC 103, or GSC 110, or GEG 120.

MSC 230. **Introduction to Marine Biology**  
3 credits  
Offered Fall Semester  
The sea as an environment. Marine life, its special problems and adaptations. Emphasis on Caribbean organisms. Lecture, 3 hours. Identical to BIL 230. Prerequisite: One year of biology and chemistry with laboratories.

MSC 232. **Introduction to Marine Biology Laboratory**  
1 credit  
Offered Fall Semester  

MSC 243. **Weather Forecasting**  
2 credits  
Offered Fall Semester  
Application of physical principles to weather forecasting. Use and interpretation of computer-generated forecast guidance products of the U.S. Weather Service. Prerequisite: MSC 103; MTH 108.

MSC 301. **Introduction to Physical Oceanography**  
3 credits  
Offered Spring Semester  
Application of the laws of physics to the study of the properties and circulation of the world’s oceans and atmosphere.

MSC 303. **Meteorological Instrumentation**  
3 credits  
Offered Spring Semester  
Techniques for measuring meteorological variables at the ground and in the free atmosphere. (Selected readings) Prerequisite: MSC 103; PHY 101 or 205.

MSC 305. **Atmospheric Thermodynamics**  
3 credits  
Offered Fall Semester  
Equation of State; water vapor and moist air thermodynamics; phase changes and latent heat; buoyancy and atmospheric convection; thermodynamic diagrams. Prerequisite: MTH 310 and PHY 206.

MSC 310. **Living Resources of the Ocean**  
3 credits  
Offered Spring Semester  
Marine fish and shellfish of major commercial and recreational value: biology, techniques of harvesting, and resource management. Prerequisite: MSC 230.

MSC 313. **Coastal Law**  
3 credits  
Offered Fall Semester  
Basic doctrines and public policy related to the use and regulation of the United States coastal zone and seabed. Prerequisite: Junior standing.
MSC 314. Ocean Law  
3 credits  
Offered Spring Semester  
The principles of international ocean law regarding ocean management; ocean delimitation and issues of environmental ocean regulation within international legal framework. Prerequisite: Junior standing.

MSC 321. Scientific Programming in the Atmospheric Sciences  
3 credits  
An introduction to scientific programming in a linux environment using the FORTRAN 90/95 language with specific applications to Meteorology. Prerequisite: (MSC 103 or CSC 120), MTH 112, and MTH 210.

MSC 325. Biological Oceanographic Techniques  
3 credits  
Offered Spring Semester  
Field sampling for plankton biomass and productivity; benthic biomass, and of selected physical parameters. Applications of molecular techniques and remote sensing to oceanographic problems. Prerequisite: MSC 230.

MSC 340. Ocean Policy  
3 credits  
Offered Spring Semester  
Analysis of ocean policy issues in US fisheries, marine conservation and marine protected areas, marine pollution, coastal management and regulation of offshore oil and gas activities. Prerequisite: MSC 111 or permission of instructor.

MSC 350. Survey of Marine Mammals  
3 credits  
Offered Fall Semester  
The evolution and ecology of the cetaceans, pinnipeds, manatees, and allies: Natural history, zoogeography, physiology, husbandry, and biomedical aspects. Prerequisite: BIL 150, MSC 230.

MSC 371. Readings in Marine Science  
1-2 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Library research with faculty supervision. Bibliography to be submitted in preparation for laboratory and/or field research project.

MSC 405. Atmospheric Dynamics I  
3 credits  
Offered Spring Semester  
Derivation and scaling of the equations of atmospheric motion; hydrostatic and geostrophic balance; circulation and vorticity. Prerequisite: MSC 305. Prerequisite or corequisite: MTH 513.

MSC 406. Atmospheric Dynamics II  
3 credits  
Offered Fall Semester  
Baroclinic and barotropic instability; boundary layer dynamics; mathematical principles of numerical weather prediction; maintenance of the general circulation. Prerequisite: MSC 405. Prerequisite or corequisite: MTH 520.

MSC 407. Weather Analysis  
4 credits  
Offered Spring Semester  
Three-dimensional analysis of synoptic-scale weather systems; application of the fundamental laws of atmospheric dynamics to observed weather patterns; practical questions of worldwide data exchange and display. Prerequisite: MSC 305.

MSC 409. Physical Meteorology  
3 credits  
Offered Spring Semester  
Atmospheric radiation; absorption and scattering principles of remote sensing of the atmosphere; cloud microphysics; nucleation, coalescence, ice crystal growth, atmospheric electricity and lightning. Prerequisite: MSC 305.
MSC 410. Marine Conservation Science
3 credits  Offered By Announcement only
Nature of marine biodiversity, what threatens it, and what can be done to recover the biological integrity of estuaries, coastal seas, and oceans. Topics include: distinctive aspects of marine populations and ecosystems; threats to marine biological diversity, singly and in combination; place-based management of marine ecosystems; and the human dimensions of marine conservation. Prerequisite: MSC 230.

MSC 411. Projects in Marine Science
1-3 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual, independent research projects with faculty supervision. A formal written report is required. Prerequisite: MSC 371, and permission of the coordinator during the semester preceding registration.

MSC 412. Advanced Meteorological Instrumentation
1 credit  Offered Fall and Spring Semesters and First and Second Summer Sessions
Includes lectures and labs involving field experience during a one-week cruise on the Royal Caribbean Explorer of the Seas. Prerequisite: MSC 303, PHY 205.

MSC 415. Coral Reef Science and Management
3 credits
The interdisciplinary nature of coral reef science and management: biological, environmental, ecological and socioeconomic aspects of coral reef science, coral reef management problems and approaches at local to global scales, and the implications of climate change for coral reef science and management. Prerequisite: MSC 230.

MSC 416. Environmental Analysis
3 credits  Offered By Announcement only
A laboratory course using the Environmental Protection Agency's methods of sampling, sample preparation, and analysis for priority pollutants; methods of ultra-micro chemical analysis; Quality Assurance and Quality Control. Prerequisite: CHM 203.

MSC 490. Special Studies in Marine Science
1-3 credits
Interdisciplinary capstone course in Marine Science. Content of course will vary by semester. Content in any semester will be expressed in parentheses following "Special Studies" in the class schedule. Prerequisite: Junior or senior standing and permission of instructor.

MSC 491. Special Studies in Marine Science
1-3 credits
Interdisciplinary capstone course in Marine Science. Content of course will vary by semester. Content in any semester will be expressed in parentheses following "Special Studies" in the class schedule. Prerequisite: Junior or senior standing and permission of instructor.

Mathematics

MTH 099. Intermediate Algebra
3 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Real number operations, polynomials, factoring, rational numbers and rational expressions. Prerequisite: Extreme deficiency in algebra. Cannot be used to fulfill the 120 credits required for graduation.
MTH 101. Algebra for College Students
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Algebraic operations and properties of the real numbers; linear and quadratic equations and inequalities; polynomials and factoring; rational expressions; radical expressions; graphs of lines; systems of linear equations. Prerequisite: Adequate achievement on mathematics placement test. Not open to students with credit in MTH 105 or 107. Not for major or minor.

MTH 103. Finite Mathematics
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Statements, sets, partitions of sets, permutations, combinations probability, relations and functions, introduction to linear programming, matrices. Prerequisite: MTH 101 or adequate achievement on Mathematics Placement Test. Not for major or minor.

MTH 104. Geometry for Educators
3 credits  
Offered By Announcement only
Origins of geometry; topics from Euclidean, coordinate, and transformational geometry. Includes laboratory component. Only for pre-certification students in the School of Education who are not mathematics or science majors. Prerequisite: MTH 101 or adequate achievement on mathematics placement test.

MTH 105. Algebra and Trigonometry
5 credits  
Offered Fall and Spring Semesters
An intensive course in algebra and trigonometry as covered in MTH 107-108, but without analytic geometry. Prerequisite: MTH 101 or adequate achievement on mathematics placement test. Not open to students with credit in MTH 107 or 108. Not for major or minor.

MTH 107. Precalculus Mathematics I
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Algebraic operations; equations and inequalities; complex numbers; functions and their graphs; polynomial, exponential, and logarithmic functions; systems of equations. Prerequisite: Adequate achievement on mathematics placement test. Not open to students with credit in MTH 105. Not for major or minor.

MTH 108. Precalculus Mathematics II
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Rational functions; analytic geometry; trigonometric functions, identities, and equations. Prerequisite: At least C- in MTH 107 or adequate achievement on mathematics placement test. Not open to students with credit in MTH 105. Not for major or minor.

MTH 109. Introductory Calculus
3 credits  
Offered Fall and Spring Semesters
A one semester survey of the fundamental principles of calculus: functions, limits, derivatives, definite integrals, applications. Prerequisite: MTH 107 or adequate achievement on mathematics placement test. Not for major or minor. Not for B.S. students.

MTH 110. Analytic Geometry and Calculus I
5 credits  
Offered Fall and Spring Semesters
Introduction to plane analytic geometry, and the subject matter MTH 111. Prerequisite: At least a C- in MTH 105 or adequate achievement on mathematics placement test and high school trigonometry. Not open to students with credit in MTH 111 or 131.
MTH 111. Calculus I  
4 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

Limits and continuity, derivatives and applications, the definite integral and applications. Prerequisite: At least C- in MTH 108 or adequate achievement on mathematics placement test together with completion of high school trigonometry and analytic geometry. Not open to students with credit in MTH 110 or 131.

MTH 112. Calculus II  
4 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

Transcendental functions, methods of integration, L'Hopital’s Rule and improper integrals, infinite series, polar coordinates, and introduction to differential equations. Prerequisite: MTH 110 or 111. Not open to students with credit in MTH 132.

MTH 131. Calculus I  
4 credits  
Offered Fall Semester

The theory of limits, the derivative and the definite integral, techniques and applications. The sequence MTH 131-132 is more conceptually oriented than MTH 111-112. Prerequisite: At least a B in MTH 108 or adequate achievement on placement test and high school trigonometry and analytic geometry. Not open to students with credit in MTH 110 or 111.

MTH 132. Calculus II  
4 credits  
Offered Fall and Spring Semesters

Continuation of MTH 131. Additional topics on the derivative and definite integral, improper integrals, infinite series, and introduction to differential equations. Prerequisite: MTH 131. Not open to students with credit in MTH 112.

MTH 210. Vectors and Matrices  
3 credits  
Offered Fall and Spring Semesters and First Summer Session

Two and three dimensional vectors, inner products, vector products, matrix algebra, linear transformations, determinants, quadratic and bilinear forms. Prerequisite or corequisite: MTH 112 or 132.

MTH 211. Calculus III  
3 credits  
Offered Fall and Spring Semesters and First Summer Session

Matrix algebra, vectors in space, partial differentiation, multiple integration. Prerequisite: MTH 112. Not open to students with credit in MTH 312.

MTH 224. Introduction to Probability and Statistics  
3 credits  
Offered Fall and Spring Semesters and First Summer Session

Probability distributions, random variables, expectation and variance, point estimation, interval estimation, testing of hypothesis, analysis of variance. Prerequisite: One semester of calculus.

MTH 220. Introduction to Abstract Mathematics  
3 credits  
Offered Fall and Spring Semesters

Fundamentals of set theory, logic and methods of mathematical proof. Prerequisite or corequisite: MTH 112 or 132.

MTH 240. Discrete Mathematics I  
3 credits  
Offered Fall and Spring Semesters

Mathematical methods of Computer Science and Computer Engineering. Mathematical reasoning, sets, relations, functions, Boolean algebra, combinatorics, graphs. Prerequisite: MTH 111.
MTH 310. Multivariable Calculus
3 credits Offered Fall and Spring Semesters and First Summer Session
Equations of curves, surfaces, solids; vector differential calculus; integration of scalar valued functions. Applications. Prerequisite: MTH 210 and (112 or 132). Not open to students with credit in MTH 533.

MTH 311. Ordinary Differential Equations
3 credits Offered Fall and Spring Semesters and Second Summer Session
Linear differential equations, simultaneous equations, solutions in series, numerical solutions. Prerequisite: MTH 112 or 132.

MTH 312. Vector Analysis
3 credits Offered Fall and Spring Semesters
Vector algebra, partial differentiation, multiple integration, scalar and vector fields, line and surface integrals. Prerequisite: MTH 112. Not open to students with credit in MTH 211.

MTH 320. Introduction to Numerical Analysis
3 credits Offered Spring Semester
Interpolation, quadrature, numerical solution of algebraic and transcendental equations, matrix inversion. Prerequisite: MTH 210 or 211; knowledge of a structured programming language.

MTH 471. Directed Readings
1-3 credits Offered By Announcement only
Topics selected from algebra, geometry, analysis, topology. Prerequisite: Permission of department chairman.

MTH 472. Directed Readings
1-3 credits Offered By Announcement only
Topics selected from algebra, geometry, analysis, topology. Prerequisite: Permission of department chairman.

MTH 502. History of Mathematics
3 credits Offered Fall Semester
The development of mathematics from its earliest beginnings through the first half of the twentieth century. Numeral systems, geometry, algebra, analysis and set theory. Prerequisite: Two courses in mathematics at the 200 level or above.

MTH 504. Foundations of Geometry
3 credits Offered Fall Semester
Axiom systems and models of Euclidean and Non-Euclidean geometry. Prerequisite: MTH 230 or 309.

MTH 505. Theory of Numbers
3 credits Offered Spring Semester
Divisibility, primes; congruences, quadratic residues and reciprocity; Diophantine equations. Applications to cryptography. Prerequisite: MTH 210 or 504.

MTH 506. Logic
3 credits Offered By Announcement only
Propositional and first-order logic: completeness. Computational logic: Robinson’s resolution. Formalized theories: arithmetic, Gödel’s incompleteness theorem, Tarski’s theorem on undefinability of truth. Prerequisite: MTH 230 or 309 or permission of the instructor.

MTH 508. Survey of Modern Algebra
3 credits Offered Spring Semester
Algebraic systems, equivalence classes, groups, rings, fields, unique factorization domains. Prerequisite: MTH 210 and 230. Not open to students with credit in MTH 509 or 561.
### MTH 509. Discrete Mathematics II  
**3 credits**  
*Offered By Announcement only*

Groups and combinatorics; applications of group theory to computer design and error correcting codes; Semigroups and applications to finite state machines; rings and fields; applications of Boolean algebra to computer design. Prerequisite: MTH 210, 309.

### MTH 510. Linear Algebra  
**3 credits**

Abstract vector spaces, bases and dimensions, linear maps, eigenvalues and eigenvectors, inner product spaces, operators, spectral theorems, canonical forms. Prerequisite: MTH 210; transition course in logical reasoning such as MTH 230 or 309 recommended but not required.

### MTH 512. Elementary Complex Analysis  
**3 credits**  
*Offered Spring Semester*

Complex variables; conformal mapping, contour integration. Prerequisite: MTH 211 or 310.

### MTH 513. Partial Differential Equations I  
**3 credits**  
*Offered Fall Semester*

Derivation, well posedness, and qualitative properties of initial value and boundary value problems for the heat, wave and Laplace equations. Energy methods, causality, maximum principles, heat kernels, Fourier series, and potential theory. Prerequisite: MTH 210, 311 and either MTH 310 or 312.

### MTH 514. Partial Differential Equations II  
**3 credits**  
*Offered Spring Semester*

Continuation of MTH 513. Approximations of solutions, distributions and integral transform methods, spectral theory and scattering. Applications to physical problems. Nonlinear equations and phenomena. Prerequisite: MTH 513 or permission of the instructor.

### MTH 515. Ordinary Differential Equations  
**3 credits**  
*Offered Fall Semester*

Linear systems, equilibria and periodic solutions, stability analysis, bifurcation, phase plane analysis, boundary value problems, applications to engineering and physics. Prerequisite: MTH 311 and either MTH 211 or 310.

### MTH 516. Dynamics and Bifurcations  
**3 credits**  
*Offered Spring Semester*

Bifurcation of equilibria and periodic solutions, global theory of planar systems, planar maps, nonlinear vibrations, forced oscillations, chaotic solutions, Hamiltonian systems, applications to engineering and physics. Prerequisite: MTH 515 or permission of the instructor.

### MTH 517. Data Structures and Algorithm Analysis  
**3 credits**  
*Offered By Announcement only*

Data abstraction, formal specification, trees, B-trees, balanced binary trees, graphs, searching and sorting. Algorithm analysis. Memory management. Prerequisite: MTH 112, 220, and 309.

### MTH 520. Numerical Analysis I  
**3 credits**  
*Offered By Announcement only*

Numerical linear algebra including the algebraic eigenvalue problem. Prerequisite: MTH 320 or permission of department chairman.

### MTH 521. Numerical Analysis II  
**3 credits**  
*Offered By Announcement only*

Numerical solution of ordinary and partial differential equations. Prerequisite: MTH 320 or 520 or permission of department chairman.
MTH 524. Introduction to Probability Theory  
3 credits  
Offered Fall Semester  
Probability spaces, random variables, expectation, limit theorems. Prerequisite: MTH 310 or permission of department chairman.

MTH 525. Introduction to Mathematical Statistics  
3 credits  
Offered Spring Semester  
Probability distributions, theory of sampling and hypothesis testing. Prerequisite: MTH 524.

MTH 527. Theory of Automata  
3 credits  
Offered By Announcement only  
Finite-state automata, context-free grammars, pushdown automata, Turing machines and computability. Prerequisite: MTH 309 or 508.

MTH 528. Combinatorics  
3 credits  
Offered By Announcement only  
Permutations and combinations, generating functions, enumerative analysis. Prerequisite: One of the following: MTH 508, 509 or 561.

MTH 531. Topology I  
3 credits  
Offered Fall Semester  
Set theory, topological spaces, compactness, connectedness, separation properties, quotient spaces, Tychonoff Theorem, compactification, Urysohn Lemma and Tietze Extension Theorem, function spaces. Prerequisite: Permission of department chair.

MTH 532. Topology II  
3 credits  
Offered Spring Semester  
Differential and topological manifolds, classical groups and associated manifolds, tangent and tensor bundles, vector fields, differential forms, transversality, Sard’s theorem, Stokes’ Theorem. Prerequisite: MTH 210 and 531.

MTH 533. Introduction to Real Analysis I  
3 credits  
Offered Fall Semester  
Numerical sequences and series; continuity; differentiation; integration; sequences and series of functions; Fourier series; functions of several variables; implicit and inverse function theorems. Prerequisite: MTH 211 (or 310) and 230.

MTH 534. Introduction to Real Analysis II  
3 credits  
Offered Spring Semester  
Continuation of MTH 533. Prerequisite: MTH 533.

MTH 540. Algorithm Design and Analysis  
3 credits  
Offered By Announcement only  
Design techniques include divide-and-conquer, greedy method, dynamic programming, backtracking. Time and space complexity. Sorting, searching, combinatorial and graph algorithms. Prerequisite: MTH 517.

MTH 542. Statistical Analysis  
3 credits  
Offered By Announcement only  
Statistical inference about one or two populations from interval, ordinal and categorical data; analysis of variance; simple and multiple linear regression; designing research studies. Prerequisite: MTH 224, 310 (or 211 or 312).

MTH 551. Introduction to Differential Geometry  
3 credits  
Offered By Announcement only  
Geometry of curves and surfaces in Euclidean space. Local space curve theory, intrinsic and extrinsic curvature of surfaces, geodesics, parallelism, and differential forms. Prerequisite: MTH 210 and one of MTH 211, 310, 312, or permission of instructor.
MTH 561. Abstract Algebra I  
3 credits  
Groups; rings; linear algebra; modules. Prerequisite: MTH 210 and permission of department chairman.  

Offered Fall Semester

MTH 562. Abstract Algebra II  
3 credits  
Continuation of MTH 561. Prerequisite: MTH 561.  

Offered Spring Semester

MTH 571. Directed Readings in Mathematics  
1- 3 credits  
Readings in special topics. Prerequisite: Graduate standing; permission of department chair.

MTH 572. Directed Readings in Mathematics  
1- 3 credits  
Readings in special topics. Prerequisite: Graduate standing; permission of department chair.

MTH 591. Topics in Mathematics  
1- 3 credits  

Offered By Announcement only

MTH 592. Topics in Mathematics  
1- 3 credits  

Offered By Announcement only

MTH 593. Topics in Mathematics  
1- 3 credits  

Offered By Announcement only

MTH 594. Topics in Mathematics  
1- 3 credits  

Offered By Announcement only

Microbiology and Immunology

MIC 301. Introduction to Microbiology and Immunology  
4 credits  
Basic principles of microbiology and immunology, including laboratory exercises. Course is required for Microbiology/Immunology majors; recommended for Biology and Chemistry majors and premedical students. Prerequisite: CHM 111; BIL 150/151.

Offered Spring Semester

MIC 302. Introduction to Microbiology and Immunology Honors Seminar  
1 credit  
Special topics in Microbiology/Immunology requiring a term paper and/or an oral presentation. Corequisite: MIC 301 Honors.

Offered Spring Semester

MIC 320. Introduction to Microbiology and Immunology for Nurses  
3 credits  
Course covers the basic principles of microbiology and immunology. Prerequisite: CHM 103, BIL 150. Course cannot be used for MIC major or minor credit. Course is open to nursing students. Other students may take with departmental approval.

MIC 321. Immunobiology  
3 credits  
Mechanisms underlying the cooperation between T-cells, B-cells, and antigens leading to humoral and cell mediated responses. The significance of immune cells and their products pertaining to autoimmunity, transplantation, and the surveillance of neoplastic cells is covered. Lecture, 3 hours. Prerequisite: MIC 301. BIL 250 is recommended.  

Offered Spring Semester

MIC 322. **Medical Parasitology**  
*3 credits*  
Offered Fall Semester  
Course discusses the biochemistry, physiology, pathogenicity, immunology, and mechanism of drug action and resistance of medically important parasitic protozoa, trematodes, nematodes, and cestodes. Prerequisite: MIC 301.

MIC 323. **Principles of Microbial Pathogenesis**  
*3 credits*  
Offered Fall Semester  
Course analyzes host-microbe relationships at the molecular and cellular levels with an emphasis on microbial virulence determinants and host cell defense responses. Prerequisite: MIC 301.

MIC 421. **Molecular Immunobiology**  
*4 credits*  
Offered By Announcement only  
Techniques of Molecular Immunology. Prerequisite: MIC 321.

MIC 434. **Microbial Genetics and Molecular Immunology**  
*3 credits*  
Offered Fall Semester  
Course analyzes DNA replication, mutation, repair, recombination, jumping genes (transposons), infective hereditary mechanisms, gene regulation, protein synthesis, recombinant DNA technology, modern methods, and application of genetic engineering. Origin of antibody diversity, organization, and expression of antibody genes is included. Prerequisite: MIC 301.

MIC 436. **Fundamental and Medical Virology**  
*3 credits*  
Offered Spring Semester  
The viruses as biological entities and etiological agents of disease. Virus-cell and virus-host interactions are also discussed. Lecture, 2 hours. Prerequisite: MIC 434.

MIC 441. **Microbiology and Immunology Colloquium**  
*1 credit*  
Offered Fall and Spring Semesters  
Faculty presentations of recent advances in research. Course meets one hour per week. Prerequisite: 17 credits in Microbiology and Immunology.

MIC 451. **Special Projects in Immunobiology**  
*2-4 credits*  
Offered Fall and Spring Semesters  
Laboratory research problems in majors areas of immunobiology including literature search, experiment design, data gathering, and evaluation of results. Prerequisite: Major in Microbiology/Immunology, 17 credits in Microbiology and Immunology as well as, a minimum GPA of 3.0 within major and overall and permission of program Director.

MIC 452. **Special Projects in Parasitology**  
*2-4 credits*  
Offered Fall and Spring Semesters  
Laboratory research problems in majors areas of parasitology including literature search, experiment design, data gathering, and evaluation of results. Prerequisite: Major in Microbiology/Immunology, 17 credits in Microbiology and Immunology as well as, a minimum GPA of 3.0 within major and overall and permission of program Director.

MIC 453. **Special Projects in Pathogenic Bacteriology**  
*2-4 credits*  
Offered Fall and Spring Semesters  
Laboratory research problems in majors areas of pathogenic bacteriology including literature search, experiment design, data gathering, and evaluation of results. Prerequisite: Major in Microbiology/Immunology, 17 credits in Microbiology and Immunology as well as, a minimum GPA of 3.0 within major and overall and permission of program Director.
MIC 454. Special Projects in Microbial Genetics
2-4 credits
Laboratory research problems in majors areas of microbial genetics including literature search, experiment design, data gathering, and evaluation of results. Prerequisite: Major in Microbiology/Immunology, 17 credits in Microbiology and Immunology as well as, a minimum GPA of 3.0 within major and overall and permission of program Director.

MIC 455. Special Projects in Immunogenetics
2-4 credits
Laboratory research problems in majors areas of immunogenetics including literature search, experiment design, data gathering, and evaluation of results. Prerequisite: Major in Microbiology/Immunology, 17 credits in Microbiology and Immunology as well as, a minimum GPA of 3.0 within major and overall and permission of program Director.

MIC 456. Special Projects in Virology
2-4 credits
Laboratory research problems in majors areas of virology including literature search, experiment design, data gathering, and evaluation of results. Prerequisite: Major in Microbiology/Immunology, 17 credits in Microbiology and Immunology as well as, a minimum GPA of 3.0 within major and overall and permission of program Director.

MIC 501. Medical Microbiology
5 credits
Course discusses the nature of microbial agents of infectious disease as well. as relationship of virulence to host resistance and fundamental immunologic concepts. Microbial physiology and genetics, the structure, design, and mechanism of action on antimicrobials . are also. Prerequisite: Permission of Department Chairman.

MIC 523. Molecular and Microbial Pathogenesis
5 credits
Factors implicated in bacterial pathogenesis and pathogenic “strategies”. Lectures and interactive discussions concerning molecular mechanisms of viral transcription, translation, and replication are included. Emphasis is placed on DNA and RNA tumor viruses. Prerequisite: Permission of instructor or IBS 601.

Military Science

MSL 101. Basic Military Science
2 credits
Introduction to Army organizations, military customs and courtesies, basic stationary and marching drills, basic map reading, land navigation, drowproofing, rappelling, river crossing techniques, physical fitness training, and practical exercises in field discipline. Requires outdoor leadership laboratory and at least one weekend field training exercise.

MSL 102. Basic Military Science
2 credits
Introduction to basic leadership principles and traits, army command and staff officer duties, awards, decorations, individual military tactics, field discipline, patrolling techniques, radio telephone procedures, rappelling and river crossing. Requires outdoor leadership laboratory and at least one weekend field training exercise.
**MSL 201. Basic Military Science**  
2 credits  
*Offered Fall Semester*  
Instruction to squad and platoon marching drills, development of physical fitness training programs, conduct on military training and inspections, leadership techniques, advanced map reading, rappelling and river crossing techniques. Requires outdoor leadership laboratory and at least one weekend field training exercise. Prerequisite: Permission of instructor.

**MSL 202. Basic Military Science**  
2 credits  
*Offered Spring Semester*  
Continued instruction in drill and ceremonies, radio/telephone procedures, nuclear, biological, and chemical warfare, practical land navigation, orienteering, and introduction to combat troop leading procedures. Requires outdoor leadership laboratory and at least one weekend field training exercise. Prerequisite: Permission of instructor.

**MSL 301. Basic Military Science**  
3 credits  
*Offered Fall Semester*  
Classroom and field experience in leading squads and platoons in both garrison and combat environments. Basic rifle marksmanship and live fire of the M16A1 rifle. Practical exercises in combat troop leading procedures. Advanced physical fitness training to include endurance runs and tactical road marches. Prerequisite: Permission of Department.

**MSL 302. Advanced Military Science**  
3 credits  
*Offered Spring Semester*  
Classroom instruction and field experience in combat troop leading procedures for offensive, defensive and patrolling missions. Advanced written and practical land navigation exercises. M16A1 rifle qualification. Company level drill and ceremonies to include manual of arms. Classroom and practical exercises on requests for artillery and mortar fires. Practical experience with training underclassmen in first aid and individual tactics. Prerequisite: Permission of Department.

**MSL 401. Advanced Military Science**  
3 credits  
*Offered Fall Semester*  
Instruction instills an uncompromising commitment to the Army Ethic, enhances thought processes and decision-making skills, and relates officer behavior to cadet leadership roles. Students are primarily responsible for the command and control of the cadet battalion for training purposes. Student’s role is principally one of officer leader at the platoon (30 or more underclassmen) and higher levels and cadet instructor/evaluator. Prerequisite: Permission of Department.

**MSL 402. Advanced Military Science**  
3 credits  
*Offered Spring Semester*  
Capstone course in the preparation for a commission as a second lieutenant. The training is intended to solidify the commitment to officership, reinforce individual competencies, and afford maximum practical officer leader experiences through responsible leadership positions within the cadet battalion command and staff. Prerequisite: Permission of Department.

**MSL 440. Studies in Military History**  
1-3 credits  
Supervised readings and independent study in military history. Prerequisite: Permission of Department.

**MSL 441. Studies in Military History**  
1-3 credits  
Supervised readings and independent study in military history. Prerequisite: Permission of Department.
MSL 499. Independent Studies in U.S. Military History  
3 credits  
Supervised readings and independent study in United States Military History. Writing requirements. Prerequisite: Departmental approval required.

Philosophy

PHI 101. Introduction to Philosophy  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Problems concerning knowledge, mind, freedom, religion, and morality. Reading and discussion of primary sources.

PHI 110. Critical Thinking  
3 credits  
Offered Fall and Spring Semesters  
Principles of sound reasoning; the construction and evaluation of arguments in everyday contexts and the assessment of evidence.

PHI 115. Social and Ethical Issues in Computing  
3 credits  
History, social context and methods and tools of analysis. Professional and ethical responsibilities. Intellectual property. Privacy and civil liberties.

PHI 130. Contemporary Moral Issues  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
An examination of the philosophical problems which arise in connection with such moral and social issues as abortion, war, suicide, civil disobedience, racial discrimination, the death penalty, and the right to privacy.

PHI 195. Special Topics  
1- 4 credits  
Not offered. Transfer credit only.  
Special Topics taken at other institutions with no direct equivalents.

PHI 196. Special Topics  
1- 4 credits  
Not offered. Transfer credit only.  
Special Topics taken at other institutions with no direct equivalents.

PHI 197. Special Topics  
1- 4 credits  
Not offered. Transfer credit only.  
Special Topics taken at other institutions with no direct equivalents.

PHI 210. Symbolic Logic  
3 credits  
Offered Fall Semester and First Summer Session  
Introduction to symbolic logic and its methods.

PHI 271. Ancient Philosophy  
3 credits  
Offered Fall Semester  
Ancient Greek, Hellenistic, Roman, and early Christian (Patristic) philosophy with emphasis on its contribution to Western culture. Prerequisite: Three credits in Philosophy or sophomore standing.

PHI 272. Modern Philosophy  
3 credits  
Offered Spring Semester  
The Renaissance through Kant. Prerequisite: Three credits in Philosophy or sophomore standing.

PHI 295. Special Topics  
1- 4 credits  
Not offered. Transfer credit only.  
Special Topics taken at other institutions with no direct equivalents.

PHI 296. Special Topics  
1- 4 credits  
Not offered. Transfer credit only.  
Special Topics taken at other institutions with no direct equivalents.
PHI 297. Special Topics
1-4 credits
Not offered. Transfer credit only.
Special Topics taken at other institutions with no direct equivalents.

PHI 330. Ethics
3 credits
Offered Fall and Spring Semesters
The main ethical systems and ethical concepts, an analysis of important ethical readings, and an application of ethical concepts to the individual and to society. Prerequisite: Three credits in Philosophy or permission of instructor.

PHI 331. Social and Political Philosophy
3 credits
Offered By Announcement only
Relations between morality and politics, the sources and the limits of political obligation, the function of the state, the nature of law, civil disobedience and revolution. Prerequisite: Three credits in Philosophy.

PHI 332. Philosophy of Law
3 credits
Offered By Announcement only
An examination of basic philosophical issues concerning the nature and function of law, with particular attention to the legal system of the United States. Prerequisite: Three credits in Philosophy.

PHI 334. Biomedical Ethics
3 credits
Offered By Announcement only
Fundamental issues including: the allocation of medical resources, behavior control, definition of death, experimentation with human subjects, euthanasia, and abortion. Prerequisite: Three credits in Philosophy.

PHI 335. Professional Ethics
3 credits
Offered By Announcement only
Moral issues in business, engineering, law, and medicine. Development of moral principles to guide those in professional roles. Prerequisite: Three credits in Philosophy or permission of instructor.

PHI 340. Theory of Knowledge
3 credits
Offered By Announcement only
Analysis of the nature, sources and structure of knowledge. Possible topics include perception, skepticism, reason, truth, justification, and certainty. Prerequisite: PHI 110 or 210.

PHI 341. Philosophy of Language
3 credits
Offered By Announcement only
Theories of meaning, reference, predication, nature of signs and symbols, types and functions of discourse. Prerequisite: Three credits in Philosophy.

PHI 343. Philosophy of Science
3 credits
Offered By Announcement only
Scientific theories and their relation to evidence; experimentation and its logic; explanation, the rationality of science and the growth of scientific knowledge. Prerequisite: PHI 110 or 210.

PHI 344. Philosophy of Mind
3 credits
Offered By Announcement only
The nature of mind and mental acts, events, and states and their relations to physical states of the brain and body and to behavior. Prerequisite: Three credits in Philosophy.

PHI 345. Metaphysics
3 credits
Offered By Announcement only
The basic structure and kinds of constituents of the world. Prerequisite: Three credits in Philosophy or junior standing.
PHI 351. Philosophy of Religion
3 credits
Offered By Announcement only
The nature of and grounds for religious beliefs; traditional arguments for and against the existence of God; God’s attributes; reason vs. faith. Prerequisite: Three credits in Philosophy.

PHI 352. Aesthetics
3 credits
Offered By Announcement only
The philosophy of art, such as defining ‘art’, adjudicating among competing judgments or interpretations of works of art, and understanding the metaphysical status of art objects. Prerequisite: Three credits in Philosophy or permission of instructor.

PHI 373. Nineteenth Century Philosophy
3 credits
Offered By Announcement only
Fichte, Schelling, Hegel, Schopenhauer, Kierkegaard, Marx, Comte, Mill, Spencer, and Nietzsche. Prerequisite: Three credits in Philosophy.

PHI 374. Twentieth Century Philosophy
3 credits
Offered By Announcement only
Philosophy and philosophers in the twentieth century. Prerequisite: Three credits in Philosophy.

PHI 381. Existentialism
3 credits
Offered By Announcement only
Existentialist philosophy as seen in the works of such authors as Kierkegaard, Nietzsche, Heidegger, Sartre, Camus, and Dostoevsky. Prerequisite: Three credits in Philosophy.

PHI 391. Special Studies
3 credits
Offered By Announcement only
Study of selected problems, philosophers, or movements. May be repeated for credit. Prerequisite: Three credits in Philosophy.

PHI 392. Special Studies
3 credits
Offered By Announcement only
Study of selected problems, philosophers, or movements. May be repeated for credit. Prerequisite: Three credits in Philosophy.

PHI 395. Special Topics
1-4 credits
Not offered. Transfer credit only.
Special Topics taken at other institutions with no direct equivalents.

PHI 396. Special Topics
1-4 credits
Not offered. Transfer credit only.
Special Topics taken at other institutions with no direct equivalents.

PHI 397. Special Topics
1-4 credits
Not offered. Transfer credit only.
Special Topics taken at other institutions with no direct equivalents.

PHI 494. Independent Study in Philosophy
3 credits
Offered By Announcement only
Independent research conducted under the guidance of a faculty member. May be repeated for credit. Prerequisite: Six credits in Philosophy and permission of instructor.

PHI 495. Senior Honors Thesis
3 credits
Offered By Announcement only
Directed reading and a substantial and scholarly paper. Prerequisite: Senior standing and enrollment in the departmental Honors Program.
PHI 496. **Senior Honors Thesis**  
3 credits  
Offered By Announcement only  
Prerequisite: PHI 495.

PHI 510. **Formal Logic**  
3 credits  
Offered Spring Semester  
First and second-order quantification theory; metalogic. Prerequisite: Three courses at the 200 level or above, including PHI 210.

PHI 530. **Ethical Theory**  
3 credits  
Offered By Announcement only  
G. E. Moore to the present. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 330.

PHI 533. **Political Philosophy**  
3 credits  
Offered By Announcement only  
A survey of some central issues and developments in political philosophy. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 330.

PHI 540. **Epistemology**  
3 credits  
Offered By Announcement only  
A survey of the basic topics and questions in epistemology: knowledge acquisition and justification, perception, fallibilism, and skepticism. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 340, 343.

PHI 541. **Mind and Language**  
3 credits  
Offered By Announcement only  
Philosophical problems about signs, linguistic and mental representations, intentionality, action, and consciousness. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 341, 344, 374.

PHI 543. **Induction, Probability, and Scientific Method**  
3 credits  
Offered By Announcement only  
Foundations of inductive reasoning and role of experiment in science. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 340, 343.

PHI 545. **Metaphysics**  
3 credits  
Offered By Announcement only  
A selection of topics dealing with the main problems of metaphysics: existence, modality, universals, identity and persistence through time, causation, the self and physicalism. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 341, 344, 345.

PHI 555. **Philosophy of Education**  
3 credits  
Problems concerning the nature and aims of education. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 330, 331, 340, 344.

PHI 560. **History of Logic**  
3 credits  
Aristotle, the Stoics, the Scholastics, Leibniz, Boole, DeMorgan, Peirce, Frege, and Russell and Whitehead. Prerequisite: Three courses at the 200 level or above, including PHI 210.

PHI 562. **History of Ethics**  
3 credits  
Offered By Announcement only  
A selection of ethical theories from Aristotle to Rawls. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 330.
PHI 570. Presocratics and Plato  
3 credits  
Offered By Announcement only  
Fragments from the Presocratics and the dialogues of Plato. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 271.

PHI 571. Aristotle and Hellenistic Philosophy  
3 credits  
Offered By Announcement only  
A survey of central philosophical topics in Aristotle and Hellenistic Philosophers (Epicureans, Stoics, and Skeptics). Prerequisite: Three courses at the 200 level or above, including PHI 210 and 271.

PHI 572. Medieval Philosophy  
3 credits  
Offered By Announcement only  
The patristic period through the scholasticism of the late middle ages. Prerequisite: Three courses at the 200 level or above, including PHI 271, 272.

PHI 573. Early Modern Philosophy  
3 credits  
Offered By Announcement only  
An examination of early modern philosophy from Hobbes and Descartes to Hume. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 272.

PHI 575. Kant  
3 credits  
Offered By Announcement only  
An examination of selected issues in Kant’s theoretical or practical philosophy. Prerequisite: Three Courses at the 200 level or above, including PHI 210 and 272.

PHI 581. Pragmatism  
3 credits  
Offered By Announcement only  
Peirce, James, Dewey, and others. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 340, 345.

PHI 582. History of Analytic Philosophy  
3 credits  
Offered By Announcement only  
The development of analytic philosophy from its beginnings in the work of Frege and Russell through logical positivism to contemporary philosophy. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 341, 344, 345, 374.

PHI 583. The Phenomenological Tradition  
3 credits  
Offered By Announcement only  
An examination of the phenomenological movement (Edmund Husserl, Martin Heidegger, Maurice Merleau-Ponty, and others) and of its impact on contemporary thought. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 272, 344, 381.

PHI 591. Special Topics  
3 credits  
Offered By Announcement only  
A selected philosopher or philosophical problem. May be repeated for credit. Prerequisite: Six credits in Philosophy and junior standing.

PHI 592. Special Topics  
3 credits  
Offered By Announcement only  
A selected philosopher or philosophical problem. May be repeated for credit. Prerequisite: Six credits in Philosophy and junior standing.

PHI 594. Independent Study in Philosophy  
1-3 credits  
Offered By Announcement only  
Directed reading on a topic or philosopher. May be repeated for credit. Prerequisite: Six credits in Philosophy and junior standing.
Physical Science

PSC 101. Physical Science
3 credits
Offered Fall and Spring Semesters
An interdisciplinary course to provide the non-science major with an understanding of some of the methods, ideas and accomplishments of Physics, Astronomy, Chemistry, Geology, and their role in the development of civilization. Prerequisite: Not for major or minor.

Physics

PHY 101. College Physics I
4 credits
Offered Fall and Spring Semesters and First Summer Session
Elementary mechanics, thermal phenomena, fluids, waves. Courses 101-102-106-108 provide a ten credit 'physics with lab' sequence for premedical students and others. Prerequisite: MTH 108 or 105.

PHY 102. College Physics II
4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Electromagnetism, optics, and modern physics. Prerequisite: PHY 101.

PHY 103. General Physics
3 credits
Offered Spring Semester
Mechanics, waves, electromagnetism. Prerequisite: Architecture major.

PHY 106. College Physics Laboratory I
1 credit
Offered Fall and Spring Semesters and First Summer Session
Laboratory course to accompany PHY 101. Prerequisite or corequisite: PHY 101.

PHY 108. College Physics Laboratory II
1 credit
Offered Fall and Spring Semesters and First and Second Summer Sessions
Laboratory course to accompany PHY 102. Prerequisite or corequisite: PHY 102.

PHY 110. Descriptive Astronomy
3 credits
Offered Fall and Spring Semesters
For students not majoring in Mathematics or a Physical Science. brief non-technical treatment of the universe and its contents. Mathematical requirements are minimal with emphasis on our present knowledge about energy and matter in space. Prerequisite: Not for major or minor.

PHY 160. Physics of the Arts
3 credits
Offered Spring Semester
Newtonian mechanics, energy, wave motion, atoms, and electricity. Applications to music, art and communications.

PHY 195. Studies in Physics
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions but having no direct equivalents here.

PHY 196. Studies in Physics
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions but having no direct equivalents here.

PHY 197. Studies in Physics
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions but having no direct equivalents here.

PHY 198. Studies in Physics
1-5 credits
Not offered. Transfer credit only.
Special topics taken at other institutions but having no direct equivalents here.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 199</td>
<td>Studies in Physics</td>
<td>1-5</td>
<td>Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.</td>
</tr>
<tr>
<td>PHY 205</td>
<td>University Physics I</td>
<td>3</td>
<td>Offered Fall and Spring Semesters and First Summer Session Mechanics through gravity and harmonic motion, intended for science and engineering students. Corequisite: MTH 110 or 131, with a “B” in MTH 105 or 108 or placement into calculus by MTH placement exam. Otherwise, prerequisite: MTH 110, 111, or 131.</td>
</tr>
<tr>
<td>PHY 206</td>
<td>University Physics II</td>
<td>3</td>
<td>Offered Fall and Spring Semesters and Second Summer Session Fluids, waves, optics, thermal phenomena . . . Prerequisite: PHY 205. Prerequisite or corequisite: MTH 112 or 132.</td>
</tr>
<tr>
<td>PHY 207</td>
<td>University Physics III</td>
<td>3</td>
<td>Offered Fall and Spring Semesters and First Summer Session Electromagnetism through Maxwell’s equations. Prerequisite: PHY 205; MTH 112 or 132.</td>
</tr>
<tr>
<td>PHY 208</td>
<td>University Physics II Lab</td>
<td>1</td>
<td>Offered Fall and Spring Semesters and Second Summer Session Laboratory to accompany PHY 206. Prerequisite or corequisite: PHY 206.</td>
</tr>
<tr>
<td>PHY 209</td>
<td>University Physics III Lab</td>
<td>1</td>
<td>Offered Fall and Spring Semesters and First Summer Session Lab to accompany PHY 207. Prerequisite or corequisite: PHY 207.</td>
</tr>
<tr>
<td>PHY 210</td>
<td>Honors University Physics II-III</td>
<td>5-6</td>
<td>Offered Fall and Spring Semesters Fluids, waves, optics, thermal phenomena, electromagnetism. Combines PHY 206 and 207. Prerequisite: PHY 205, MTH 112 or 132, and written permission.</td>
</tr>
<tr>
<td>PHY 295</td>
<td>Studies in Physics</td>
<td>1-5</td>
<td>Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.</td>
</tr>
<tr>
<td>PHY 296</td>
<td>Studies in Physics</td>
<td>1-5</td>
<td>Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.</td>
</tr>
<tr>
<td>PHY 297</td>
<td>Studies in Physics</td>
<td>1-5</td>
<td>Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.</td>
</tr>
<tr>
<td>PHY 298</td>
<td>Studies in Physics</td>
<td>1-5</td>
<td>Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.</td>
</tr>
<tr>
<td>PHY 299</td>
<td>Studies in Physics</td>
<td>1-5</td>
<td>Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.</td>
</tr>
<tr>
<td>PHY 315</td>
<td>Mathematical Tools for Physics</td>
<td>3</td>
<td>How to use mathematics. Series, complex algebra, vector analysis, differential equations, etc. Prerequisite: PHY 207, MTH 310. Prerequisite or corequisite: MTH 311.</td>
</tr>
</tbody>
</table>
PHY 316. Physics of the Solar System
3 credits
A mathematical treatment of the structure and composition of the solar system. The physical nature of the sun, planets, satellites, comets, and meteors. Occasional observation sessions will be scheduled. Prerequisite: PHY 206, 207.

PHY 317. Physics of Stellar Systems
3 credits
Normal and peculiar stars: their structure and evolution. Galactic structure and some cosmology. Occasional observation sessions will be scheduled. Prerequisite: PHY 206, 207.

PHY 321. Thermodynamics and Kinetic Theory
3 credits
An intermediate course in thermal phenomena, from both macroscopic and microscopic points of view. Prerequisite: PHY 206 and MTH 310 or 312.

PHY 340. Classical Mechanics I
3 credits
Includes harmonic motion, orbit theory, coupled oscillations, rigid body motions. Prerequisite: PHY 206, 207. Prerequisite or corequisite: MTH 311.

PHY 350. Intermediate Electricity and Magnetism
3 credits
Includes the integral and differential forms of Maxwell’s equations, circuit theory, and boundary value problems. Prerequisite: PHY 206, 207, MTH 310 or 312. Prerequisite or corequisite: MTH 311.

PHY 351. Intermediate Electricity and Magnetism II
3 credits
A continuation of PHY 350. Includes further application of Maxwell’s equations with emphasis on radiation theory. Prerequisite: PHY 350.

PHY 360. Introduction to Modern Physics
3 credits
Emphasis on the experimental foundations of modern physics. Relativity, quantization, atomic structure, radiation, nuclei. Prerequisite: PHY 206. Prerequisite or corequisite: PHY 207.

PHY 362. Modern Physics Honors Seminar
1 credit
Special Topics to accompany PHY 360. Corequisite: PHY 360.

PHY 395. Studies in Physics
1-5 credits
Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.

PHY 396. Studies in Physics
1-5 credits
Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.

PHY 397. Studies in Physics
1-5 credits
Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.

PHY 398. Studies in Physics
1-5 credits
Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.

PHY 399. Studies in Physics
1-5 credits
Not offered. Transfer credit only. Special topics taken at other institutions but having no direct equivalents here.
PHY 401. **Senior Thesis**  
3 credits  
Prerequisite: PHY 340, 350, 360.  
Offered By Announcement only

PHY 402. **Senior Thesis**  
3 credits  
Prerequisite: PHY 340, 350, 360.  
Offered By Announcement only

PHY 500. **Research**  
1- 3 credits  
Offered By Announcement only

Project course introducing methods of research, individual investigation of current problems.

PHY 505. **Advanced Laboratory**  
1- 2 credits  
Offered Fall Semester

Advanced experiments such as properties of the electron, optical spectra, electrical measurements, radioactive decay, absorption, etc. Prerequisite: PHY 208. Prerequisite or corequisite: PHY 360.

PHY 506. **Advanced Laboratory**  
1- 2 credits  
Offered Spring Semester

Advanced experiments such as properties of the electron, optical spectra, electrical measurements, radioactive decay, absorption, etc. Prerequisite: PHY 208. Prerequisite or corequisite: PHY 360.

PHY 515. **Mathematical Techniques in Physics**  
3 credits  
Offered Spring Semester

Complex variables and applications. Infinite series and their uses, particularly in differential equations. Multiple integrals and Fourier series. Prerequisite: PHY 206, 207; MTH 311, and 310 or 312.

PHY 516. **Readings in Physics**  
1- 3 credits  
Offered Fall and Spring Semesters

Prerequisite: Permission of department chairman.

PHY 517. **Readings in Physics**  
1- 3 credits  
Offered Spring Semester

Prerequisite: Permission of department chairman.

PHY 518. **Readings in Physics**  
1- 3 credits  
Offered By Announcement only

Prerequisite: Permission of department chairman.

PHY 520. **Solid State Physics**  
3 credits  
Offered By Announcement only

Crystal structure, quantum theory of the electronic structure of solids, mechanical, electric, magnetic and optical properties of solids. Prerequisite: PHY 560.

PHY 530. **Plasma Physics I**  
3 credits  
Offered By Announcement only

Kinetic theory of plasmas, adiabatic motion of charged particles magnetofluid dynamics, transport properties of plasmas in electromagnetic fields. Prerequisite: PHY 340, 351, 360.

PHY 540. **Classical Mechanics II**  
3 credits  
Offered Fall Semester

Lagrangian formulation, rigid body dynamics. Topics selected from fluid dynamics, non-linear oscillations, normal modes, phase plane analysis. Prerequisite: PHY 340.
PHY 552. **Optical Physics**  
*3 credits*  
Offered By Announcement only  
Geometric optics, interference and diffraction, polarized light, optical pumping, coherence phenomena, applications to modern physical research. Prerequisite: PHY 351, 360.

PHY 560. **Quantum Mechanics and Modern Physics I**  
*3 credits*  
Offered Fall Semester  
Introductory theory with applications to simple systems. Perturbation theory and atomic structure. Prerequisite: PHY 350.

PHY 561. **Quantum Mechanics and Modern Physics II**  
*3 credits*  
Offered Spring Semester  
Applications of quantum mechanics to atomic and molecular spectroscopy, quantum statistical mechanics, and nuclear physics. Prerequisite: PHY 560.

**Portuguese**

POR 101. **Elementary Portuguese I**  
*3 credits*  
Offered By Announcement only  
Drill in pronunciation, fundamental grammatical principles, simple reading and translation, oral and written exercises. Normally, not open to students who have completed two years of Portuguese. Closed to native speakers.

POR 102. **Elementary Portuguese II**  
*3 credits*  
Continuation of POR 101. Closed to native speakers. Prerequisite: POR 101. CLOSED TO NATIVE SPEAKERS.

POR 105. **Accelerated Elementary Portuguese**  
*3 credits*  
Offered Fall and Spring Semesters  
Intensive study of material covered in 101 and 102. Specifically intended for students who have completed three or more than years of high school Spanish or beginning Spanish at another university. Also intended for heritage speakers of Romance Languages other than Portuguese, or students with at least two years of college study of Spanish, Italian, or French. (Note: CLOSED TO NATIVE SPEAKERS). Prerequisite: Two or more years of college study of Spanish, French, Italian, or Latin. Also open to heritage speakers of Romance Languages other than Portuguese.

POR 211. **Intermediate Portuguese I**  
*3 credits*  
Offered Fall and Spring Semesters  
Integrated grammar review. Diverse selection of readings: stories, plays, essays, interviews. Practice in speaking and in writing. Class conducted in Portuguese. Not open to native speakers. Prerequisite: POR 102 or 4 years high school Portuguese, or permission of instructor, and CLOSED TO NATIVE SPEAKERS.

POR 212. **Intermediate Portuguese II**  
*3 credits*  
Offered Fall and Spring Semesters  
Intensive preparation for 300-level work through various genres (portraits, descriptions, short stories, film reviews, magazines, a novel). Workshop format, the course also develops conversational skills. Students complete a number of written projects (including an analytic paper). Class conducted in Portuguese. Closed to native speakers. Prerequisite: POR 211 or AP-4 (IB-5), and CLOSED TO NATIVE SPEAKERS.
POR 301. Introduction to Literary Genres
3 credits
Offered By Announcement only
Selected materials from various genres of Luso-Afro-Brazilian literatures. Further development of critical writing and reading skills for non-native and heritage speakers. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: POR 212, or equivalent, or heritage speakers not formally educated in Portuguese.

POR 310. Brazilian Women Writers in Translation
3 credits
Offered By Announcement only
Selected contemporary Brazilian women writers. Conducted in English. Emphasis on representations of nationality, race, class, ethnicity, gender, and sexuality. May be used to fulfill the humanities literature requirement; writing credit. Prerequisite: ENG 106, or equivalent; one 200-level course in Humanities or Social Sciences; or permission of instructor.

POR 353. Brazilian Poetry
3 credits
Offered By Announcement only
Brazilian poetry from colonial times to the present. Emphasis on major figures. Taught in Portuguese. Humanities literature credit; writing credit. Prerequisite: POR 212 or equivalent.

POR 354. The Modern Brazilian Novel
3 credits
Offered By Announcement only
The Brazilian novel since 1865. Emphasis on major works. Conducted in Portuguese. POR minors must complete all written assignments in Portuguese. Others may opt to write in English, Portuguese, or Spanish. Fulfills humanities literature requirement; writing credit. Prerequisite: POR 212 or equivalent.

POR 363. Contemporary Lusophone Film
3 credits
Offered By Announcement only
Portuguese, Brazilian, and Lusophone African cinema from the 1950s to the present. POR minors must complete all written assignments in Portuguese; Others may opt to write in English, Portuguese, or Spanish. Conducted in Portuguese. Fulfills Humanities literature requirement; writing credit. Prerequisite: POR 212 or equivalent.

POR 364. The Brazilian Short Story
3 credits
Offered By Announcement only
The Brazilian short story since 1890. Conducted in Portuguese. POR minors must complete all written assignments in Portuguese. Others may opt to write in English, Portuguese, or Spanish. Fulfills Humanities literature requirement; writing credit. Prerequisite: POR 212 or equivalent.

POR 391. Directed Readings
1-3 credits
Offered By Announcement only
Individual work on a topic not covered in the regular curriculum. May be repeated on a different topic. Prerequisite: Permission of instructor.

POR 392. Directed Readings
1-3 credits
Offered By Announcement only
Individual work on a topic not covered in the regular curriculum. May be repeated on a different topic. Prerequisite: Permission of instructor.

POR 393. Directed Readings
1-3 credits
Offered By Announcement only
Individual work on a topic not covered in the regular curriculum. May be repeated on a different topic. Prerequisite: Permission of instructor.
POR 395. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

POR 396. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

POR 397. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

POR 398. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

POR 399. Transfer Credits
1-3 credits
Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

POR 591. Directed Readings in Portuguese
1-3 credits
Offered By Announcement only
Prerequisite: Permission of the instructor.

POR 592. Directed Readings in Portuguese
1-3 credits
Offered By Announcement only
Prerequisite: Permission of the instructor.

POR 593. Directed Readings in Portuguese
1-3 credits
Offered By Announcement only
Prerequisite: Permission of the instructor.

Psychology

PSY 110. Introduction to Psychology
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
A survey of modern scientific psychology. Topics include learning, memory, perception, cognition, personality, motivation, emotion, development, abnormal psychology, and social psychology. Participation in a small number of experiments is required to ensure that students become acquainted first hand with the experimental laboratory methods used in Psychology. Students may choose to satisfy this requirement by writing a small number of methodology papers instead.

PSY 120. Orientation to the Study of Psychology II
1 credit
Offered Spring Semester
Critical discussion of research reports in psychology. Prerequisite: PSY 110. Only for Psychology and Psychobiology majors with fewer than nine Psychology credits.

PSY 201. Social Psychology: Psychological Perspective
3 credits
Offered Fall and Spring Semesters
The major theories, methods and research findings in social psychology. Attitude formation and change, person perception, interpersonal attraction, aggression, group structure, leadership, conformity and mass phenomena. Emphasizes the individual as the basic unit of analysis (compare SOC 302). Prerequisite: PSY 110.
PSY 202. Introduction to Psychobiology  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Behavior viewed from a biological perspective. Survey of biological factors subsuming sensation, perception, sleep, emotions, motivation, learning, memory, and development. Prerequisite: PSY 110.

PSY 203. Child and Adolescent Development  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Survey of significant aspects of growth and development throughout the lifespan. Emphasis placed on childhood and adolescence. Prerequisite: PSY 110.

PSY 204. Introductory Biobehavioral Statistics  
4 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Application of descriptive and inferential statistics to behavioral data. Principles and methods of summarizing data. Correlation and regression. Basic concepts of probability, hypothesis testing, and decision making. Tests of significance, confidence intervals, and analysis of variance. Examples and problems from biology, education, medicine, nursing, psychology, sociology. Prerequisite: MTH 101 or 105 or scores on the Mathematics Placement Test sufficient for admission to a calculus course.

PSY 207. Introduction to Cognition  
3 credits  
Offered By Announcement only
Survey of theory and research on human information processing and cognitive processes. Prerequisite: PSY 110.

PSY 209. Introduction to Personality  
3 credits  
Offered Fall and Spring Semesters
A survey of the area of Personality, including the relation of Personality to General Psychology, history of theory and research in the field, definition, assessment, and research findings in major substantive areas. Prerequisite: PSY 110. Not for students with credit in PSY 416.

PSY 215. Stress Management  
3 credits  
Offered First Summer Session
Causes and symptoms of stress. Theory and practice of stress management. Discussion of relaxation techniques, meditation, biofeedback, exercise, diet, cognitive restructuring, assertiveness training, time management, and social engineering (Summer session only). Prerequisite: PSY 110 or permission of instructor.

PSY 261. Industrial and Organizational Psychology  
3 credits  
Offered Fall and Spring Semesters
Applications of psychology in business, industry, and to organizational effectiveness in general. Supervisory, leadership, morale, personnel selection, training, human factors engineering, and consumer psychology. Prerequisite: PSY 110 for Psychology majors. Junior or senior standing for non-majors.

PSY 281. Special Topics and Psychology  
1-3 credits  
Offered By Announcement only
Prerequisite: PSY 110.

PSY 295. Studies in Psychology  
1-5 credits  
Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

PSY 296. Studies in Psychology  
1-5 credits  
Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.
PSY 297. Studies in Psychology
1-5 credits Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.

PSY 301. Psychology of Gender
3 credits Offered Fall and Spring Semesters and Second Summer Session
Psychological theories and research related to understanding issues of gender across the lifespan. Prerequisite: Six credits in psychology.

PSY 305. Psychology of Drugs and Behavior
3 credits Offered Spring Semester
The psychological and physiological effects of drugs. Includes psychosocial aspects of drug use and the treatment and prevention of abuse. An introduction to psychopharmacology. Prerequisite: PSY 202; or BIL 150 and six credits in Psychology.

PSY 316. Experimental Psychology
4 credits Offered Fall and Spring Semesters
Selected laboratory experiments and demonstrations, lectures, collateral readings in methods and results of psychological experimentation. Prerequisite: PSY 110 and 204.

PSY 332. Tests and Measurements
3 credits Offered Spring Semester and First Summer Session
Theory and principles of construction, use, evaluation, and interpretation of psychological tests and testing procedures. Prerequisite: PSY 110 and 204.

PSY 333. Attitudes and Persuasion
3 credits Offered By Announcement only
An analysis of the major theories and research findings relating to attitude formation and change, including a review of widely used persuasion techniques. Prerequisite: Six credits in Psychology.

PSY 340. The Psychology of Thinking and Learning in Children
3 credits Offered Fall and Spring Semesters
Development of perception, thought, and language processes throughout the lifespan with an emphasis on early and middle childhood. Prerequisite: PSY 203.

PSY 341. Psychology of Social and Emotional Development
3 credits Offered Fall and Spring Semesters
Social and emotional growth; topics include family and peer relationships, sex roles, self-control, and moral development. Prerequisite: PSY 203.

PSY 342. Psychology of Adulthood and Aging
3 credits Offered Spring Semester
Major developments during the middle and later years of adulthood including changes in family and peer relationships, cognitive changes, physical changes, psychological aspects of death and dying. Prerequisite: PSY 203.

PSY 343. Psychology of Language Development
3 credits Offered By Announcement only
Developmental sequences in the acquisition of language; the scientific endeavor to understand language learning. Prerequisite: PSY 203.

PSY 344. Psychology of Infancy
3 credits Offered Fall Semester
Perceptual, motor, cognitive and social development during the first two years of life. Specialized research methods and assessment procedures. Prerequisite: PSY 203.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Prerequisite Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 352</td>
<td>Abnormal Psychology</td>
<td>3</td>
<td>Fall and Spring Semesters and First and Second Summer Sessions</td>
<td>Diagnostic formulations of the clinical syndromes; theories of psychopathological states. Prerequisite: Six credits in Psychology.</td>
</tr>
<tr>
<td>PSY 365</td>
<td>Practicum</td>
<td>1-3</td>
<td>Fall and Spring Semesters and First and Second Summer Sessions</td>
<td>Individual or small group activities and discussions regarding general principles of psychology; learn by doing; field experiences, library research, or teaching assistance. PSY 365 does not count for major or minor. Prerequisite: Six credits in Psychology, junior standing, and permission of Chairman.</td>
</tr>
<tr>
<td>PSY 367</td>
<td>Introduction to Research Projects</td>
<td>1-3</td>
<td>Fall and Spring Semesters and First and Second Summer Sessions</td>
<td>Students assist on a research project in psychology under supervision of a faculty member. Activities include library research, data collection and management, and attendance at research team meetings. Prerequisite: Six credits in Psychology preferably including 204. Students must obtain faculty sponsorship, in writing, prior to registration.</td>
</tr>
<tr>
<td>PSY 368</td>
<td>Introduction to Research Projects</td>
<td>1-3</td>
<td>Fall and Spring Semesters and First and Second Summer Sessions</td>
<td>Students assist on a research project in psychology under supervision of a faculty member. Activities include library research, data collection and management, and attendance at research team meetings. Prerequisite: Six credits in Psychology preferably including 204. Students must obtain faculty sponsorship, in writing, prior to registration.</td>
</tr>
<tr>
<td>PSY 381</td>
<td>Special Topics in Psychology</td>
<td>1-3</td>
<td>By Announcement only</td>
<td>Prerequisite: Six credits in Psychology.</td>
</tr>
<tr>
<td>PSY 395</td>
<td>Studies in Psychology</td>
<td>1-5</td>
<td>Not offered. Transfer credit only.</td>
<td>Special topics taken at other institutions with no direct equivalents.</td>
</tr>
<tr>
<td>PSY 396</td>
<td>Studies in Psychology</td>
<td>1-5</td>
<td>Not offered. Transfer credit only.</td>
<td>Special topics taken at other institutions with no direct equivalents.</td>
</tr>
<tr>
<td>PSY 402</td>
<td>Psychobiology</td>
<td>3</td>
<td>Fall and Spring Semesters</td>
<td>Basic neuroanatomy, neurophysiology, and neurochemistry followed by an introduction to the physiological bases of sensation, motor systems, motivation, emotion, learning and memory. Prerequisite: Nine credits in Psychology including PSY 202; or nine credits in Psychology and BIL 150.</td>
</tr>
<tr>
<td>PSY 403</td>
<td>Neuroscience Laboratory</td>
<td>4</td>
<td>Spring Semester</td>
<td>Research methods and laboratory experiments in contemporary Neuroscience, from individual cells to behavior. Scientific report writing and computer applications in experimental design and analysis. Lecture/Lab. Prerequisite: PSY 316. Prerequisite or corequisite: PSY 402 or BIL 268.</td>
</tr>
<tr>
<td>PSY 414</td>
<td>Motivation</td>
<td>3</td>
<td>Fall and Spring Semesters</td>
<td>Experimental evidence relating to theories of motivation. Prerequisite: Nine credits in Psychology.</td>
</tr>
</tbody>
</table>
PSY 416. **Personality Theory**  
3 credits  
Offered Spring Semester and First Summer Session  
The role of structure, development, dynamics, individual differences, assessments, and deviations. Prerequisite: Nine credits in Psychology.

PSY 417. **Emotion**  
3 credits  
Offered Fall and Spring Semesters  
Theory and research concerning the development, arousal, and expression of emotional reaction. Prerequisite: Nine credits in Psychology.

PSY 418. **Experimental Personality and Social Psychology**  
4 credits  
Offered Fall Semester  
Readings, laboratory experiments, and demonstrations relevant to behavioral and biomedical sciences. Experimental design, methodology, implementation, analysis, and interpretation of research with scientific report writing and computer applications. Prerequisite: PSY 316 and either 201, 203, or 209.

PSY 420. **Health and Medical Psychology**  
3 credits  
Offered Spring Semester  
The psychosomatic and biopsychosocial models of illness. Prerequisite: Nine credits in Psychology including 202, or permission of instructor.

PSY 440. **Abnormal Child Psychology**  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Factors that interfere with normal development, including mental retardation, learning disabilities, emotional disturbances, and delinquency. Prerequisite: Junior standing and nine credits in Psychology including PSY 203.

PSY 441. **Psychology of the Mentally Retarded**  
3 credits  
Offered Fall Semester  
The etiological, social, and psychological aspects of mental retardation. Prerequisite: Nine credits in Psychology including PSY 203.

PSY 444. **Intermediate Psychological Statistics**  
3 credits  
Offered Spring Semester  
Statistical reasoning and methods. Prerequisite: Nine credits in psychology including PSY 204.

PSY 450. **Psychology of Religion**  
3 credits  
Contemporary psychological theory and research on religious belief, experience, and behavior. Topics include the biological bases of religion, religious development, and the links of religion to health and well-being. Prerequisite: PSY 110, REL 101, and three additional credits in Psychology or Religious Studies.

PSY 475. **Social Interaction Processes**  
3 credits  
Offered By Announcement only  
An in-depth analysis of variables leading to, and processes involved in, human social interactions ranging from superficial encounters to intimate relationships. Prerequisite: Nine credits in Psychology, including PSY 201.

PSY 481. **Special Topics in Psychology**  
1-3 credits  
Offered By Announcement only  
Prerequisite: Nine credits in Psychology.

PSY 495. **Studies in Psychology**  
1-5 credits  
Not offered. Transfer credit only.  
Special topics taken at other institutions with no direct equivalents.
PSY 496. Studies in Psychology
1-5 credits
Not offered. Transfer credit only. Special topics taken at other institutions with no direct equivalents.

PSY 498. Senior Honors in Psychology I
3 credits
Offered Fall and Spring Semesters
Independent research project. Prerequisite: 18 credits in Psychology and eligibility for Honors in Psychology.

PSY 499. Senior Honors in Psychology II
3 credits
Offered Fall and Spring Semesters
Independent research project. Prerequisite: 18 credits in Psychology and eligibility for Honors in Psychology.

PSY 501. History and Systems of Psychology
3 credits
Offered By Announcement only
Development of psychology as a science. Prerequisite: 12 credits in Psychology.

PSY 502. Culture, Values, Religiosity, and Mental Illness
3 credits
Cultural differences in the manifestation, course, and outcome of serious mental disorders; the relationship between chronic mental disorders and ethnicity, religious values, family cohesion, attributions of control, and world view; cultural differences in societies' reactions to and treatment of mentally ill patients. Prerequisite: PSY 110; 316, 352.

PSY 590. Special Topics
3 credits
Offered By Announcement only
Prerequisite: Nine credits in Psychology.

Religious Studies

REL 101. Introduction to Religion
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
An overview of religious perspectives concerning ultimate reality, humankind, and the world, with special attention to major Asian and Abrahamic religions.

REL 111. Introduction to the Hebrew Bible (Old Testament)
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The history and literature of ancient Israel and early Judaism.

REL 119. Transfer Credits
1-4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious Literature or Texts subject area).

REL 121. Introduction to the New Testament
3 credits
Offered Fall and Spring Semesters
The history and literature of the early Christian movement.

REL 131. Religion in American Life
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The history of religion in the U.S. from the pre-colonial period to the present. Includes study of the religion of Native Americans, African Americans, Asian Americans, women, Protestants, Catholics, Jews, and cults.

REL 139. Transfer Credits
1-4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious or Historical Traditions subject area).
REL 151. Religion and Moral Choices
3 credits
Offered Fall and Spring Semesters
Religious responses to dilemmas raised by issues such as capital punishment, biotechnology, abortion, euthanasia, and war.

REL 159. Transfer Credits
1- 4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious Issues or Problems subject area).

REL 171. Introduction to Islam
3 credits
Offered By Announcement only
History of Islam, the Qur’an, and the systematization of Islamic law. Emergence of the theological schools, the mystical and philosophical traditions, and the spread of Islamic civilization.

REL 219. Transfer Credits
1- 4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious Literature or Texts subject area).

REL 231. Jewish Civilization: Society, Culture and Religion
3 credits
Offered Fall and Spring Semesters
Introduction to Jewish Civilization from Abraham to present.

REL 232. History of Christianity
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
A survey of the historical development of Christianity from the first century to the present, focusing on the major theological and institutional issues considered in their social and cultural contexts.

REL 239. Transfer Credits
1- 4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious or Historical Traditions subject area).

REL 252. Religion and Human Sexuality
3 credits
Offered Fall Semester
The relationship between religious concepts and sexual values as the religious traditions of the United States confront contemporary sexual ethics and behavior.

REL 259. Transfer Credits
1- 4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious Issues or Problems subject area).

REL 301. Ancient Greece
3 credits
Greek civilization from the Late Bronze Age to the end of Greek independence at the battle of Chaeronea in 338 B.C.E. Prerequisite: Junior standing or permission of instructor.

REL 302. The Hellenistic Age
3 credits
Conquests of Alexander the Great and the spread of Greek culture in the Near East under Alexander’s successors until the death of Cleopatra in 31 B.C.E. Prerequisite: Junior standing or permission of instructor.
REL 303. The Roman Republic  
3 credits  
Roman civilization from the establishment of the Republic until the Battle of Actium in 31 B.C.E. Prerequisite: Junior standing or permission of instructor.

REL 304. The Roman Empire  
3 credits  
Roman civilization from the reign of Augustus in 27 B.C.E. to the Fall of Rome in 476 C.E. Prerequisite: Junior standing or permission of instructor.

REL 305. The Ancient Near East: Religion and Culture  
3 credits  
Offered Spring Semester  
Historical and cultural forces in the major religions of the ancient Near East, from 3000 to 300 B.C.E. Cultural achievements such as the Epic of Gilgamesh, the pyramids and the Bible. Prerequisite: Three credits in Religious Studies or junior standing.

REL 306. Religion and Culture in Ancient Egypt  
3 credits  
A survey of religion and culture in Ancient Egypt from pre-dynastic times to the Roman era. Prerequisite: Three credits in REL, HIS 221, or permission of instructor.

REL 307. Religion and Culture in Pre-Islamic Arabia  
3 credits  
A survey of religion and culture in Arabia from prehistory to the coming of Islam. Prerequisite: Three credits in REL, HIS 221, or permission of instructor.

REL 311. Prophecy and Prophetic Literature in the Hebrew Bible  
3 credits  
Offered Fall and Spring Semesters  
Prophecy in ancient Israel and Judah and the prophetic literature of the Hebrew Bible in relation to its ancient near-eastern historical, religious, and social context. Prerequisite: Three credits in Religious Studies.

REL 312. The Five Books of Moses  
3 credits  
Offered Fall and Spring Semesters  
The first five books of the Hebrew Bible (Genesis, Exodus, Leviticus, Numbers, Deuteronomy) in relation to their ancient Near Eastern historical, cultural, and religious context. Prerequisite: Three credits in Religious Studies.

REL 315. Jewish Mysticism  
3 credits  
Offered Fall and Spring Semesters  
A survey of the major ideas and texts dealing with Jewish Mysticism (Kabbalah, Hassidism). Prerequisite: REL 101 or junior standing.

REL 319. Transfer Credits  
1- 4 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents (Religious Literature or Texts subject area).

REL 321. Jesus and the Gospels  
3 credits  
Offered Fall and Spring Semesters  
An examination of the Jesus tradition, focusing on the formative period of the first two centuries. Special emphasis on the four New Testament Gospels, with a survey of the treatment of Jesus in other documents, both Christian and non-Christian.
REL 322. St. Paul: His Letters and Controversies  
3 credits  
Offered Fall and Spring Semesters  
The heritage, writings, and legacy of the apostle Paul. Careful analysis of the 
Pauline corpus (especially Romans), with particular attention given to the radically 
different interpretations of Paul in both ancient and modern thought. Prerequisite: 
Three credits in Religious Studies.

REL 325. Jesus in Myth and History  
3 credits  
Offered Fall and Spring Semesters  
Changing concepts of Jesus in Western culture, as they emerge in literature, art, 
and films.  Prerequisite: Three credits in Religious Studies.

REL 331. Religions of Asia  
3 credits  
Offered By Announcement only  
The major religions of South and East Asia including Hinduism, Buddhism, 
Confucianism, Taoism, and Shinto. Prerequisite: Three credits in Religious Studies 
or junior standing or permission of instructor.

REL 332. Judaism, Christianity, and Islam  
3 credits  
Offered By Announcement only  
Completes the study of world religions begun in REL 331, but emphasizes the 
religions of the West. Religions studied: Zoroastrianism, Sikhism, Judaism, 
Christianity, and Islam. May be taken without having had REL 331. Prerequisite: 
Three credits in Religious Studies or junior standing or permission of instructor.

REL 334. The American Jewish Experience: Hollywood and Popular 
Culture  
3 credits  
Offered Spring Semester  
Analysis and interpretation of the image of the Jew and the Jewish experience in 
American cinema, with emphasis on how the experience and attitudes of 
Americans in general and the American Jewish community in particular have been 
reflected on the screen from the pre-World War II period until the present and on 
the tension between maintaining an ethnic identity and assimilating.

REL 336. The American Encounter with Asian Religions  
3 credits  
Offered By Announcement only  
A study of inter-cultural interaction and inter-religious encounter focusing on the 
history of American responses to Asian religions from 1784 to the present. 
Prerequisite: REL 101 or junior standing.

REL 338. Latin American and U.S. Latino/a Religion  
3 credits  
The roots of Latino/a religion in Indigenous, African, and Spanish culture and 
religiosity. Issues of race, identity, politics, and culture will feature prominently 
throughout the course. Prerequisite: Three credits in Religious Studies or 
permission of instructor.

REL 339. Transfer Credits  
1- 4 credits  
Not offered. Transfer credit only.  
Courses taken at other institutions with no direct equivalents (Religious or 
Historical Traditions subject area).

REL 341. Modern Religious Thought I  
3 credits  
Offered Fall and Spring Semesters  
The main currents and major figures in Western religious thought from the 
beginnings of the Enlightenment to the middle of the nineteenth century. 
Prerequisite: Three credits in Religious Studies or junior standing.

REL 342. Modern Religious Thought II  
3 credits  
Offered Fall and Spring Semesters  
Western religious thought from the middle of the nineteenth century to the 
present. Prerequisite: Three credits in Religious Studies or junior standing.
REL 343. Catholic Life and Thought
3 credits
Offered Fall and Spring Semesters
Prerequisite: Three credits in Religious Studies or permission of instructor.

REL 345. Religion and Gender
3 credits
Offered Fall and Spring Semesters
The influence of Western religion on the status and role of women. Prerequisite: Three credits in Religious Studies or junior standing or permission of instructor.

REL 348. Reformation Europe
3 credits
Offered By Announcement only
The religious, political, cultural, social, and economic forces that produced a schism in 16th-century Western Christendom. Note: May be taken for credit in only one department as REL 348 or HIS 328. Prerequisite: Three credits in Religious Studies.

REL 350. Current Issues in Religion
3 credits
Offered Fall and Spring Semesters
Individual study and group discussion of the relevance of religion to contemporary issues such as race conflict, women’s rights, intermarriage, refugees, media, prejudice, and counter culture groups.

REL 351. Religious Issues in Death and Dying
3 credits
Offered Fall Semester
Major religious perspectives on the experience of death and the nature of the dying process. Prerequisite: Junior standing.

REL 352. Religion and Science
3 credits
Offered By Announcement only
The religious and ethical issues created by modern science and technology. Prerequisite: Six credits in Religious Studies, or permission of instructor.

REL 353. Religion and American Politics
3 credits
Offered Fall and Spring Semesters
Religious and ethical issues at debate in the American political scene. Prerequisite: Three credits in Religious Studies.

REL 354. Religion and the Problem of Evil
3 credits
Offered By Announcement only
Major religious perspectives on the origin and nature of evil and human suffering. Prerequisite: Junior standing.

REL 355. Religion and Its Interpreters
3 credits
Offered By Announcement only
Nineteenth and twentieth century Western interpretations of religion including anthropological, sociological psychological, theological, literary, and feminist approaches. Prerequisite: REL 101 or junior standing.

REL 356. Myth and Religion
3 credits
How humans use language to form and communicate conceptions of reality, focusing on the highly elusive concept “myth”; special attention to the concept’s usefulness for thinking about religion. Prerequisite: Six credits in Religious Studies or Philosophy; or APY 204; or by permission of instructor.

REL 359. Transfer Credits
1-4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious Issues or Problems subject area).
REL 360. Religion and Bioethics  
3 credits  
Offered Fall and Spring Semesters  
The implications of religious thought for contemporary problems of biomedical ethics. Prerequisite: Junior standing.

REL 370. Islam in Modern Times  
3 credits  
Offered By Announcement only  
Islam’s encounter with the west, the impact of modernization on the Muslim World, and the rise of Islamic Fundamentalism. Islam in America and the Afro-American Islamic movements will also be discussed. Prerequisite: Three credits in Religious Studies.

REL 375. Religion and Democracy in Israel  
3 credits  
Israel’s evolution as a nation and a society by focusing on the impact of religion on ethnicity, culture, and democracy. Prerequisite: Three credits of REL and/or permission of instructor.

REL 380. Archaeology of Palestine from Prehistory to Islam  
3 credits  
Offered By Announcement only  
A survey and analysis of the major archaeological excavations and surveys of Palestine. Prerequisite: Three credits in REL, HIS 221, or permission of instructor.

REL 401. Supervised Reading in Religious Literature or Texts  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Independent study to enable students to read extensively in an area of personal interest in religious literature or texts. Prerequisite: Permission of instructor.

REL 402. Supervised Reading in Religious or Historical Traditions  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Independent study to enable students to read extensively in an area of personal interest in religious or historical traditions. Prerequisite: Permission of instructor.

REL 403. Supervised Reading in Religious Issues or Problems  
1-3 credits  
Offered Spring Semester  
Independent study to enable students to read extensively in an area of personal interest in religious issues or problems. Prerequisite: Permission of instructor.

REL 404. Special Topics in Religious Literature or Texts  
3 credits  
Prerequisite: Permission of instructor.

REL 405. Special Topics in Religious or Historical Traditions  
3 credits  
Prerequisite: Permission of instructor.

REL 406. Special Topics in Religious Issues or Problems  
3 credits  
Prerequisite: Permission of instructor.

REL 407. Special Projects in Religious Literature or Texts  
3 credits  
Prerequisite: Permission of instructor.

REL 408. Special Projects in Religious or Historical Traditions  
3 credits  
Prerequisite: Permission of instructor.

REL 409. Special Projects in Religious Issues or Problems  
3 credits  
Prerequisite: Permission of instructor.
REL 419. Transfer Credits
1- 4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious Literature or Texts subject area).

REL 439. Transfer Credits
1- 4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious or Historical Traditions subject area).

REL 450. Psychology of Religion
3 credits
Offered By Announcement only
Contemporary psychological theory and research on religious belief, experience, and behavior. Topics include the biological bases of religion, religious development, and the links of religion to health and well-being. Prerequisite: Nine credits in Religious Studies. PSY 110, REL 101, and three additional credits in Psychology or Religious Studies.

REL 459. Transfer Credits
1- 4 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents (Religious Issues or Problems subject area).

REL 491. Sr. Honors Thesis
3 credits
Offered By Announcement only
Prerequisite: Senior standing and enrollment in the departmental honors program.

REL 492. Sr. Honors Thesis II
3 credits
Prerequisite: Senior standing and enrollment in the departmental honors program.

REL 499. Senior Seminar
3 credits
Offered By Announcement only
An examination of central issues and texts in the academic study of religion, with special focus on the rise of the discipline, its axioms, and its several schools of interpretation. Prerequisite: Religious Studies majors only.

REL 501. Supervised Reading in Religious Literature or Texts
1- 3 credits
Independent study to enable students to read extensively in an area of personal interest in religious literature or texts. Prerequisite: Permission of instructor.

REL 502. Supervised Reading in Religious or Historical Traditions
1- 3 credits
Independent study to enable students to read extensively in an area of personal interest in religious or historical traditions. Prerequisite: Permission of instructor.

REL 503. Supervised Reading in Religious Issues or Problems
1- 3 credits
Independent study to enable students to read extensively in an area of personal interest in religious issues or problems. Prerequisite: Permission of instructor.

REL 505. Seminar in Ancient Studies
3 credits
Various topics in Greek and Roman Studies. Prerequisite: Junior standing or permission of instructor.
REL 510. Seminar in Hebrew Bible and Ancient Judaism  
3 credits  
Selected topics in Hebrew Bible and Ancient Judaism. Prerequisite: Junior standing and six credits in Religious Studies; permission of the instructor.

REL 520. Seminar in New Testament and Early Christianity  
3 credits  
Selected topics in New Testament and Early Christianity. Prerequisite: Junior standing and six credits in Religious Studies; permission of instructor.

REL 530. Seminar in Religious or Historical Traditions  
1-3 credits  
Selected topics in religious or historical traditions. Prerequisite: Junior standing and six credits in Religious Studies; permission of instructor.

REL 550. Seminar in Religious Ethics  
3 credits  
Selected issues in religious ethics and their social implications. Prerequisite: Six credits in Religious Studies and junior standing.

REL 560. Seminar in Contemporary Religious Issues  
1-3 credits  
Selected topics in contemporary religious issues. Prerequisite: Junior standing and six credits in Religious Studies; permission of instructor.

Sociology

SOC 101. Introduction to Sociology  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Organization of human society, processes of change, and society’s influence on individual behavior.

SOC 103. Social Problems  
3 credits  
Offered By Announcement only  
Causes, scope, and possible solutions of social problems in American society.

SOC 210. Introduction to Social Research  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Purposes, methods, and techniques of social investigation. Prerequisite: SOC 101.

SOC 211. Quantitative Methods for Sociologists  
3 credits  
Offered Fall and Spring Semesters  
Data analytic techniques to analyze sociological topics. Emphasis is on basic graphic displays, measures of center and variation, chi-square, ANOVA, correlations, and regression. Prerequisite: Major in Sociology or Criminology, MTH 101, SOC 210 or permission of instructor.

SOC 212. Quantitative Methods Lab  
1 credit  
Statistical lab associated with SOC 211 introduces the use of computer statistical packages for analyzing quantitative data. Corequisite: SOC 211.

SOC 270. Deviant Behavior  
3 credits  
Offered By Announcement only  
General deviance concepts, theories of deviance and non-criminal deviance. Prerequisite: SOC 101.
SOC 271. Criminal Justice
3 credits
Offered By Announcement only
A survey of the criminal justice system in the United States with an emphasis on the interrelationships between law enforcement, the courts, and corrections. Prerequisite: SOC 101.

SOC 291. Special Topics
3 credits
Prerequisite: Three credits in Sociology.

SOC 292. Special Topics
3 credits
Prerequisite: Three credits in Sociology.

SOC 293. Special Topics
3 credits
Prerequisite: Three credits in Sociology.

SOC 301. Social Organization
3 credits
Offered By Announcement only
Roles, organization, personality and values as components of formal and informal groups. Prerequisite: SOC 101.

SOC 302. Social Psychology: Sociological Perspective
3 credits
Offered By Announcement only
The influence of human groups and social processes on individual behavior, and personality. Prerequisite: SOC 101 or PSY 110.

SOC 303. Social Inequalities
3 credits
Offered By Announcement only
Social ranking by class, status, and power. Stratification by age, sex or minority group membership. Prerequisite: SOC 101.

SOC 304. Dynamics of Poverty in the United States
3 credits
Examines trends in the incidence and causes of major types of poverty among the urban underclass, the homeless, migrant laborers, the working poor. Also explores policy-related solutions. Prerequisite: SOC 101.

SOC 332. Collective Behavior
3 credits
Offered By Announcement only
Classical theories, issues, and research on fads, fashions, riots, crowd behavior, social movements and other forms of collective behavior. Prerequisite: SOC 101.

SOC 335. Sociology of Gays and Lesbians
3 credits
Gender, race, age, class and cultural differences in the experiences of gay individuals and communities, using both social movements and lifespan perspectives. Prerequisite: Six credits in Sociology.

SOC 340. Sociology of Religion
3 credits
Social foundations of religion, growth and change within religious institutions and relationships of religion to other institutions. Prerequisite: SOC 101.

SOC 341. Social and Cultural Change
3 credits
Offered By Announcement only
Survey of major theories of change; analysis of the processes and mechanisms of change. Contemporary transitions in the underdeveloped regions of the world. Prerequisite: SOC 101.
**SOC 342. Contemporary Latin American Societies**  
3 credits  
Offered By Announcement only  
Social characteristics of Latin American societies and their comparison with North American society. Prerequisite: SOC 101.

**SOC 345. Population and Society**  
3 credits  
Offered By Announcement only  
Demographic analysis of fertility, mortality, sex-age structure, migration, urbanization and population control. Prerequisite: SOC 101.

**SOC 350. Sociology of the Family**  
3 credits  
Offered By Announcement only  
Examines definitions, history and larger social structures in which family relations are embedded. Prerequisite: SOC 101.

**SOC 351. Business and Society**  
3 credits  
Offered By Announcement only  
This course explores the influence of business objectives, values, and ethics on American culture, moral standards, and societal institutions. Prerequisite: SOC 101.

**SOC 352. Sport and Society**  
3 credits  
Offered By Announcement only  
Sport as an expression of, and shaper of U.S. society; cross cultural and historical comparisons; specialization, player rights, violence, and the "winning" psychology. Prerequisite: SOC 101.

**SOC 359. The Sociology of Human Sexuality**  
3 credits  
Offered By Announcement only  
A socio-historical survey of sexual attitudes and behavior in the western world, with emphasis on social factors; premarital sex, extra-marital sex, prostitution, homosexuality, and venereal disease. Prerequisite: Six credits in Psychology and/or Sociology.

**SOC 365. Criminology Internship**  
6 credits  
Offered Fall and Spring Semesters  
Prescribed study and supervised work in a selected criminal justice or social service agency. Prerequisite: Six credits: SOC 101 and 271 or 371.

**SOC 368. Violence in America**  
3 credits  
Offered By Announcement only  
Violence in historical, international and situational contexts, including the major explanations of violence, and factors associated with violent crime. Prerequisite: SOC 101.

**SOC 370. Juvenile Delinquency**  
3 credits  
Offered Fall and Spring Semesters  
The extent and nature of juvenile delinquency. The juvenile justice system, correctional institutions for delinquents, community treatment and prevention programs. Prerequisite: SOC 101.

**SOC 371. Criminology**  
3 credits  
Offered Fall and Spring Semesters  
Social, cultural and individual factors in the etiology of crime; the consequences of criminal behavior. Prerequisite: SOC 101.

**SOC 372. Criminology: Police and Community**  
3 credits  
Offered Spring Semester  
The police in U.S. society. Interaction with groups and institutions. Prerequisite: SOC 101.
SOC 373. Criminology: Courts and Society
3 credits
Offered By Announcement only
The courts and judicial functions in U.S. society. Prerequisite: SOC 101.

SOC 374. Criminology: Corrections
3 credits
Offered By Announcement only
Corrections in the U.S. society; philosophies of rehabilitation, punishment, and incapacitation. Prerequisite: SOC 101.

SOC 375. Sociology of Mental Health and Illness
3 credits
Offered By Announcement only
An introduction to sociological theories and research regarding the definition, experience, and treatment of mental illness. Prerequisite: SOC 101.

SOC 376. Sociology of Alcohol Abuse
3 credits
Offered By Announcement only
Epidemiology and etiology of alcohol abuse; treatment and prevention, social policies. Prerequisite: SOC 101.

SOC 377. Sociology of Drug Abuse
3 credits
Offered By Announcement only
The epidemiology and etiology of drug abuse, treatment and prevention, societal reaction. Prerequisite: SOC 101.

SOC 378. Criminology: Law and Society
3 credits
Offered By Announcement only
Function of law in a complex social structure. Prerequisite: SOC 101.

SOC 380. Sociology of Gender
3 credits
Offered By Announcement only
Social and historical construction of gender. Discussion of gender and various social institutions and categories. Prerequisite: SOC 101.

SOC 381. Aging in Society
3 credits
Offered By Announcement only
Basis for understanding the social aspects of aging, diversity in the lives of older adults (e.g., family, health, work and retirement, wealth and poverty, death and dying), and public policy that affects us all. Prerequisite: SOC 101.

SOC 382. The U.S. Jewish Community
3 credits
Offered By Announcement only
An application of minority group analysis to the U.S. Jewish community. Prerequisite: SOC 101.

SOC 383. Sociology of Education
3 credits
Course focuses on the institution of education. Assesses its structure, processes, and interaction patterns within it. Also examines its impact on socioeconomic inequality along race, class, and gender lines. Prerequisite: SOC 101.

SOC 384. Medical Sociology
3 credits
Offered By Announcement only
Sociological aspects of health care, patient behavior, medical institutions. Prerequisite: SOC 101.

SOC 385. U. S. Latinos
3 credits
Sociological perspectives are employed in the examination of the historical, social, economic, and cultural experiences of Latino/as in the United States. Prerequisite: SOC 101.
SOC 386. U. S. Immigration
3 credits
The major sociological debates in the field of immigration with an emphasis on recent immigrants to the U.S. Prerequisite: SOC 101.

SOC 387. Race and Ethnic Relations
3 credits
The influence of racial distinctions on individual and social behavior. Prerequisite: SOC 101.

SOC 389. Social Psychology of Health and Illness
3 credits
Social and psychological factors affecting susceptibility to illness, illness behavior, and patient-practitioner relationship; impact of illness of family. Prerequisite: Three credits in Sociology and three credits in Psychology.

SOC 390. Directed Studies
1- 3 credits
Individually supervised readings or research on special topics offered by arrangement with instructor. Prerequisite: SOC 101.

SOC 470. Theories of Deviant Behavior
3 credits
Social, cultural, and individual factors involved in the etiology of deviance and crime. Strain and control theories, learning theory, conflict and interaction theories. Prerequisite: Nine credits in Sociology including SOC 101, 371.

SOC 487. Race, Ethnicity, and Criminal Justice
3 credits
Discussion of race and ethnicity, crime and justice. Examination and evaluation of theory, research and the justice system. Prerequisite: Six credits in Sociology.

SOC 488. Gender and Crime
3 credits
Examination of gender, power, and crime, including feminist theories and the criminal justice system. Prerequisite: Six credits in Sociology.

SOC 490. Directed Studies in Sociology
1- 3 credits
Supervised independent study on special topics. Arrangement with individual faculty. Prerequisite: SOC 101, junior/senior standing, overall GPA 2.75 or higher, and permission of instructor.

SOC 491. Special Topics
3 credits
Prerequisite: Six credits in Sociology.

SOC 492. Special Topics
3 credits
Prerequisite: Six credits in Sociology.

SOC 493. Special Topics
3 credits
Prerequisite: Six credits in Sociology.

SOC 498. Senior Honors Thesis in Sociology or Criminology I
3- 6 credits
Independent research project. Prerequisite: 18 credits in Sociology/Criminology including SOC 210 and 211.
SOC 499. Senior Honors Thesis in Sociology or Criminology II  
3-6 credits  
Independent research project. Prerequisite: 18 credits in Sociology/Criminology including SOC 210 and 211.

SOC 501. Sociological Theory  
3 credits  
Offered Fall and Spring Semesters  
Classical sociological concepts and theory from the eighteenth century to the present. Prerequisite: Nine credits in Sociology and senior standing.

SOC 502. Sociology of Science  
3 credits  
Offered By Announcement only  
Culture of science, sociology of knowledge, various positions on the nature of knowledge, causality, and the relationship between theory and social research. Prerequisite: Graduate standing or permission of instructor.

SOC 511. Sociological Statistics  
3 credits  
Offered By Announcement only  
Probability theory, descriptive statistics and tests of independence. Prerequisite: Graduate status or permission of instructor.

SOC 530. Advanced Social Psychology: Sociological Perspective  
3 credits  
Offered By Announcement only  
Major theoretical perspectives in sociological social psychology including symbolic interaction and role theory, social structure and personality, psychoanalytic, and ethnomethodology. Selected research is reviewed. Prerequisite: Nine credits in Sociology or graduate standing.

SOC 550. Theories of Family Structure  
3 credits  
Offered By Announcement only  
Prerequisite: Nine credits in Sociology.

SOC 570. Theories of Criminology  
3 credits  
Offered By Announcement only  
Review and critique of central criminological theories. Evaluation of these theories in view of recent criminological research.

SOC 591. Special Topics  
3 credits  
Offered By Announcement only  
The content of this course will vary by semester. In any given semester its content will be expressed in parentheses following the title “Special Topics” in the printed class schedule. Prerequisite: Senior standing.

SOC 592. Special Topics  
3 credits  
Offered By Announcement only  
The content of this course will vary by semester. In any given semester its content will be expressed in parentheses following the title “Special Topics” in the printed class schedule. Prerequisite: Senior standing.

Spanish  
SPA 101. Elementary Spanish I  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Pronunciation, grammatical principles, oral and written drill designed to develop the foundation for the basic language skills of listening, speaking, reading, and writing. Intended for students with no previous language experience. Not open to students who have completed more than two years of high school Spanish. Class conducted in Spanish. Closed to native speakers.
SPA 102. **Elementary Spanish II**  
**3 credits**  
Offered **Fall and Spring Semesters and First and Second Summer Sessions**  
Continuation of SPA 101. Conducted in Spanish. Prerequisite: SPA 101 or equivalent, closed to native speakers.

SPA 105. **Accelerated Elementary Spanish**  
**3 credits**  
Offered **Fall and Spring Semesters**  
A review of pronunciation and an intensive study of all the grammar material covered in 101 and 102. Specifically intended for students who have completed more than two years of high school Spanish but lack the background to enter SPA211. Not open to native speakers. Class is conducted in Spanish. Prerequisite: Three or more years of high school Spanish or the equivalent. Closed to native speakers.

SPA 143. **Basic Spanish for Heritage Learners**  
**3 credits**  
Offered **Fall and Spring Semesters**  
Designed for students with little or no prior instruction in Spanish who, because of family background or social experience, can understand some casual spoken Spanish and have a passive knowledge of the language, but do not speak the language themselves. Focus on developing basic speaking, reading, and writing abilities.

SPA 211. **Intermediate Spanish I**  
**3 credits**  
Offered **Fall and Spring Semesters and First and Second Summer Sessions**  
Integrated grammar review. Diverse selection of readings: stories, plays, essays, interviews. Practice in speaking and in writing. Class conducted in Spanish. Not open to Native speakers. Prerequisite: Either SPA 102, 105 (formerly 103), 111-112, a strong high school background (4 years; good program; good grades), or AP-3 (IB-4). Closed to native speakers.

SPA 212. **Intermediate Spanish II**  
**3 credits**  
Offered **Fall and Spring Semesters**  
Intensive preparation for 300-level work through use of various genres (portraits, descriptions, short stories, film review, magazines, a novel). Workshop format, conversational skills, written projects (including an analytic paper). Course conducted in SPANISH. Students who receive less than a B in SPA 211 are recommended to take SPA 242 prior to or concurrently with SPA 212. Prerequisite: SPA 211 or AP-4 (IB-5). Closed to native speakers.

SPA 242. **Intermediate Conversation and Grammar Review**  
**3 credits**  
Offered **Fall and Spring Semesters**  
Reinforcement of oral and grammar skills. Contemporary social and cultural themes. Conducted in Spanish. Recommended to be taken prior to or concurrently with SPA 212 by students earning less than a B in SPA 211. May be taken concurrently with any 300 level course. Prerequisite: SPA 211 or equivalent. Closed to native speakers.

SPA 243. **Intermediate Spanish for Heritage Learners**  
**3 credits**  
Offered **Fall and Spring Semesters**  
Designed for students with some prior instruction in Spanish who, because of family background or social experience, can understand casual spoken Spanish and have some functional communication abilities in the language. Focus on developing basic speaking, reading, and writing abilities. Prerequisite: SPA 143 or two years of high school Spanish.
SPA 301. Introduction to Literary Genres
3 credits
Offered Fall and Spring Semesters
Selected material from various genres and periods of Spanish and Latin American literature. Further development of critical writing skills for non-native speakers. Closed to native speakers. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: SPA 212 or equivalent and Closed to native speakers.

SPA 302. Spanish Culture and Civilization
3 credits
Offered By Announcement only
Historical survey of the arts, science, letters, and political and social institutions. Writing Credit. Prerequisite: SPA 343, or 301, or equivalent.

SPA 303. Latin American Culture and Civilization
3 credits
Offered By Announcement only
Historical survey of the arts, letters, science, and political and social institutions. Writing Credit. Prerequisite: SPA 343, or 301, or equivalent.

SPA 321. Introduction to Literary Themes
3 credits
Offered Fall and Spring Semesters
The study of literature through thematic readings. Writing credit. May be repeated for credit if topics vary. Prerequisite: SPA 343, or 301 or equivalent.

SPA 322. Topics in Spanish Culture
3 credits
Offered By Announcement only
Cultural issues in the Spanish-speaking world. Topics include film, journalism, religion, language in society, popular and mass culture, visual arts, immigration, slavery, mestizaje. Writing credit. Prerequisite: SPA 343; SPA 302 or 303 recommended. May be repeated for credit if topics vary.

SPA 343. Introduction to Literary Genres for Native/Heritage Speakers
3 credits
Offered Fall and Spring Semesters
Basic tools for literary analysis and critical writing skills through the analysis of selected materials from various genres and periods of Spanish and Spanish American literature. Special attention to problems of oral and written expression unique to native/heritage speakers. Writing credit. Prerequisite: SPA 243 or equivalent; native/heritage speakers only.

SPA 353. Introduction to Colonial Through 19th Century Latin American Literature
3 credits
Offered By Announcement only
Latin American Literature from colonial times through the end of the nineteenth century. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: SPA 343, or 301, or equivalent.

SPA 354. Introduction to 20th Century Latin American Literature
3 credits
Offered By Announcement only
Latin American literature of the twentieth century. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: SPA 343, or 301, or equivalent.

SPA 363. Introduction to Medieval through 17th Century Spanish Literature
3 credits
Offered By Announcement only
Spanish peninsular literature from the earliest literary forms through the seventeenth century. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: SPA 343, or 301, or equivalent.
SPA 364. Introduction to 18th, 19th and 20th Century Spanish Literature
3 credits  Offered By Announcement only
Spanish peninsular literature from the eighteenth through the twentieth centuries. May be used to fulfill the humanities literature requirement. Writing credit. Prerequisite: SPA 343, or 301, or equivalent.

SPA 395. Transfer credits
1- 3 credits  Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

SPA 396. Transfer credits
1- 3 credits  Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

SPA 397. Transfer credits
1- 3 credits  Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

SPA 398. Transfer credits
1- 3 credits  Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

SPA 399. Transfer credits
1- 3 credits  Not offered. Transfer credit only.
Awarded for course work at another institution for which UM has no direct equivalent.

SPA 401. Introduction to Hispanic Linguistics
3 credits  Offered By Announcement only
Survey of Hispanic linguistics, including phonetics, phonology, syntax, morphology, pragmatics, discourse analysis, sociolinguistics and Spanish as a second/foreign language. Prerequisite: SPA 212 or equivalent.

SPA 432. Business and Diplomatic Spanish
3 credits  Offered By Announcement only
Commercial vocabulary, economic, technical, and diplomatic terminology in Spanish. Composition based on models of business correspondence directed to Spanish-speaking countries or firms. Prerequisite: SPA 301, or 343, or equivalent.

SPA 433. Spanish for Health Care Professions
3 credits  Offered By Announcement only
Medical vocabulary, technical and practical terminology in Spanish. Composition based on models of the documents, letters, medical history cases required in health care professions. Prerequisite: SPA 301, or 343, or equivalent.

SPA 440. Phonetics
3 credits  Offered By Announcement only
Spanish pronunciation based on phonetics. Exercises in diction and phonetic transcription. Attention to individual difficulties. Conducted in Spanish. Prerequisite: SPA 301 or 343 or permission of instructor.

SPA 442. Stylistics and Composition
3 credits  Offered By Announcement only
Analysis of grammar and style. Discussion of readings. Intensive writing. Prerequisite: Two 300-level courses or permission of the instructor.
SPA 444. Introduction to Translation  
3 credits  
Offered By Announcement only  
Problems in translation: Spanish to English; English to Spanish. Prerequisite: Two courses on the 300-level or permission of the instructor, native or near native bi-lingual ability.

SPA 521. Topics in Hispanic Literature  
3 credits  
Offered By Announcement only  
May be repeated for credit if topic is different. Prerequisite: Three courses at the 300-level.

SPA 522. Topics in Hispanic Cultures  
3 credits  
Offered By Announcement only  
May be repeated for credit if topic is different. Prerequisite: Three courses at the 300-level.

SPA 553. Studies in Colonial Literature  
3 credits  
Offered By Announcement only  
Major writers, chroniclers, and poets of the colonial period. Topics vary; may be taken more than once, if topic is different. Prerequisite: SPA 353, and two other courses at the 300-level; or permission of instructor.

SPA 555. Studies in 19th Century Latin American Literature  
3 credits  
Offered By Announcement only  
Topics vary: major trends in theater, poetry, and the novel; may be taken more than once, if topic is different. Prerequisite: SPA 353 or 354, and two other courses at the 300-level; or permission of instructor.

SPA 561. Studies in Spanish Medieval Literature  
3 credits  
Offered By Announcement only  
Cultural and literary trends of the Middle Ages. Topics vary; may be taken more than once if topic is different. Prerequisite: SPA 363, and two other courses at the 300-level; or permission of instructor.

SPA 563. Studies in the Golden Age  
3 credits  
Offered By Announcement only  
Cultural and literary movements of the 16th and 17th centuries. Topics vary: theater, poetry, prose; may be taken more than once if topic is different. Prerequisite: SPA 363, and two other courses at the 300-level; or permission of instructor.

SPA 565. Studies in 18th and 19th Century Spanish Literature  
3 credits  
Offered By Announcement only  
Principal works, schools, and movements of the 18th and 19th centuries. Topics vary; may be taken more than once if topic is different. Prerequisite: SPA 364, and two other courses at the 300-level; or permission of instructor.

SPA 566. Studies in 20th and 21st Century Spanish Literature  
3 credits  
Offered By Announcement only  
Major writers and trends from 1898 to the present. Topics vary: theater, poetry, fiction, essay; may be taken more than once, if topic is different. Prerequisite: SPA 364, and two other courses at the 300-level; or permission of instructor.

SPA 571. Women in Spanish and Latin American Literature  
3 credits  
Offered By Announcement only  
Women writers and representations of women. Topics vary; may be taken more than once, if topic is different. Prerequisite: Three courses at the 300-level; or permission of instructor.
SPA 573. **Problems in Cultural Analysis**

3 credits  
Offered By Announcement only

Studies in Spanish and Latin American contemporary civilization, including literature, aesthetics, the media, etc. Prerequisite: Two courses at the 300-level. SPA 302, 303, or 322 recommended. May be repeated for credit if topics are different.

SPA 591. **Directed Readings**

1-3 credits  
Offered By Announcement only

Prerequisite: One 500-level course and the permission of the instructor.

SPA 592. **Directed Readings**

1-3 credits  
Offered By Announcement only

Prerequisite: One 500-level course and the permission of the instructor.

SPA 593. **Directed Readings**

1-3 credits  
Offered By Announcement only

Prerequisite: One 500-level course and the permission of the instructor.

SPA 594. **Senior Honors Thesis I**

3 credits  
Directed research for honors thesis. Prerequisite: Must have completed at least nine credits at the 300-level or above towards Spanish major, must meet eligibility for honors in Spanish.

SPA 595. **Senior Honors Thesis II**

3 credits  
Directed writing of honors thesis. Prerequisite: SPA 594.

**Theatre Arts**

THA 101. **Introduction to Theatre**

3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

Intro survey course in theatre and the relationship of theatre to the contemporary world. Attendance at Ring Theatre productions is required.

THA 105. **Introduction to Acting**

3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

Basic tools of acting craft including analysis, physical action and reacting in the moment.

THA 111. **Acting I-A**

2 credits  
Offered Fall Semester

Introduction to the elements of drama and theatre, and to the basic tools of acting craft. Prerequisite: Open to Freshman BFA/BM Musical Theatre majors only.

THA 112. **Acting I-B**

2 credits  
Offered Spring Semester

Continued work on basic tools of craft including script analysis. Prerequisite: THA 111.

THA 113. **Movement I-A**

2 credits  
Offered Fall Semester

Basic movement for the actor (self-use training): physical awareness and correct habits, mind/body connections, muscle tension release, body alignment, coordination, balance, flexibility and strength. Prerequisite: Open only to Freshman BFA/BM Musical Theatre majors.
THA 114. Movement I-B
2 credits  
Offered Spring Semester
Advanced movement for the actor; study physical/emotional choices for characters through physical centers, develop process for character’s physical development through observations, explore spatial awareness, rhythm, kinesthetic body, and sensory awareness. Prerequisite: THA 113.

THA 116. Dance I-A
2 credits  
Offered Fall Semester
Beginning tap, jazz, and ballet dance for Musical Theatre with strong focus on style, terminology and technique. Prerequisite: Open only to BFA/BM Musical Theatre majors.

THA 117. Dance I-B
2 credits  
Offered Spring Semester

THA 120. Freshman Studio I
1- 2 credits  
Offered Fall Semester
First year theatre laboratory with strong focus on ensemble, rehearsal, and performance skills. Prerequisite: Open only to Freshman BFA\BM Musical Theatre majors.

THA 121. Freshman Studio II
1- 2 credits  
Offered Spring Semester
A continuation of THA 120. Prerequisite: THA 120.

THA 140. Introduction to Dance
1- 3 credits  
Beginning dance skills and stylistic elements of theatrical forms of dance (repeatable.)

THA 141. Introduction to Scene Design/Stagecraft I (Lecture)
2 credits  
Offered Fall Semester
Introduction to scene design and construction. Corequisite: THA 143.

THA 142. Introduction to Costume Design/Stagecraft II (Lecture)
2 credits  
Offered Spring Semester
Introduction to stage lighting and costume design. Corequisite: THA 144.

THA 143. Introduction to Theatre Crafts I (Lab)
1 credit  
Offered Fall Semester
Practical applications of THA 141. Corequisite: THA 141.

THA 144. Introduction to Theatre Crafts II (Lab)
1 credit  
Offered Spring Semester
Practical applications of THA 142. Corequisite: THA 142.

THA 194. Singing for Actors
1- 2 credits  
Offered By Announcement only
Fundamentals of singing to include breath control, tone production, articulation. An ensemble approach to exploring and gain self-confidence in the skill of singing for the American musical stage. Prerequisite: Open only to freshmen B.F.A. Performance majors.

THA 195. Singing for Actors
1- 2 credits  
Offered By Announcement only
Continuation of THA 194. Effective interpretation and performing of solo vocal music material. Prerequisite: THA 194. Open only to freshmen BFA Performance majors.
THA 196. Singing for the Stage I-A
1- 2 credits
Offered Fall Semester
Fundamentals of breath control, tone production, articulation, and music reading. An ensemble approach to help students explore and gain self-confidence in the skill of singing for the American musical stage. Prerequisite: Open only to Freshman BFA/BM Musical Theatre majors.

THA 197. Singing for the Stage I-B
1- 2 credits
Offered Spring Semester
Continuation of THA 196, with emphasis on effectively interpreting and performing solo vocal music material. Prerequisite: THA 196.

THA 198. Voice and Speech I-A
2 credits
Offered Fall Semester
Fundamentals of relaxation and breathing, alignment, tone production, support, resonance, focus, and a thought-to-breath/vocalization connection. Prerequisite: Open only to Freshman BFA/BM Musical Theatre majors.

THA 199. Voice and Speech I-B
2 credits
Offered Spring Semester
Skills needed for shaping the sound for communication. Fundamentals in articulation through release, isolations, exercises, and phonetics. Prerequisite: THA 198.

THA 211. Acting II-A
2 credits
Offered Fall Semester
Intensive scene study for sophomore conservatory actors. Basic tools of craft developed through use of contemporary plays, script analysis, and rehearsal techniques. Prerequisite: THA 112.

THA 212. Acting II-B
2 credits
Offered Spring Semester
A continuation of THA 211. Prerequisite: THA 211.

THA 216. Dance II-A
1 credit
Offered Fall Semester
Intermediate Musical Theatre dance to strengthen the actor’s dance technique through various dance styles found in the musical theatre repertoire. Prerequisite: THA 117. Corequisite: BFA/BM Musical Theatre majors.

THA 217. Dance II-B
2 credits
Offered Spring Semester

THA 240. Introduction to Dance II
1- 3 credits
Continuation of THA 140 (repeatable.) Prerequisite: THA 140/DAN 140.

THA 241. Advance Theatre Crafts I
3 credits
Offered Fall Semester
Training in Technical Direction, Master Electrician, Costume Construction and Scene Painting. Prerequisite: THA 141 and 142.

THA 242. Advanced Theatre Crafts II
3 credits
Offered Spring Semester
Continuation of THA 241. Prerequisite: THA 241.

THA 243. Drawing for the Theatre
3 credits
Offered Fall Semester
Sketching and mechanical drawing techniques used for costume, lighting and scenic design. Figure drawing, perspective story boarding.
THA 244. **Drawing for the Theatre II**  
3 credits  
Continuation of THA 243. Prerequisite: THA 243.  
*Offered Spring Semester*

THA 251. **Intermediate Acting I**  
3 credits  
Basic tools of the actor's craft are developed through script work, scene study, and improvisational techniques. Prerequisite: THA 105.  
*Offered Fall Semester*

THA 252. **Intermediate Acting II**  
3 credits  
A continuation of THA 251 including monologue work. Prerequisite: THA 251.  
*Offered Spring Semester*

THA 253. **Voice for the Stage**  
3 credits  
Fundamentals in voice and speech skills developed through vocal warm-ups, alignment, relaxation, breathing, tone production, resonance, sound focus, and articulation. Prerequisite: THA 105.  
*Offered Fall Semester*

THA 254. **Movement for Actors**  
3 credits  
Physical range and control, physicalization and condition of character, and stage violence. Prerequisite: THA 251.  
*Offered Spring Semester*

THA 294. **Singing for Actors II-A**  
2 credits  
Development of musical theatre singing technique for BFA performance majors. Skills to be developed include proper breathing, tone, articulation, lyric interpretation, and physical presentation. Prerequisite: THA 194 and 195.  
*Offered By Announcement only*

THA 295. **Singing for Actors II-B**  
2 credits  
Development of musical theatre singing technique for BFA performance majors. Skills to be developed include proper breathing, tone, articulation, lyric interpretation and physical presentation. Prerequisite: THA 194, 195 and 294.  
*Offered By Announcement only*

THA 296. **Singing for the Stage II-A**  
1 credit  
Instruction in auditioning methods and materials for American musical theatre. Prerequisite: THA 197.  
*Offered Fall Semester*

THA 297. **Singing for the Stage II-B**  
1 credit  
Instruction in preparing vocal material for musical scenes drawn from American musical theatre. Prerequisite: THA 296.  
*Offered Spring Semester*

THA 298. **Voice and Speech II-A**  
1 credit  
Improvement of individual voice and speech skills: examination of habitual speaking patterns, removing regionalisms, and obtaining skills for articulation. Prerequisite: THA 199.  
*Offered Fall Semester*

THA 299. **Voice and Speech II-B**  
2 credits  
Application of voice and speech skills to text and language usage. May include: poetry, prose, contemporary drama, or the works of Miller, O'Neill, Ibsen, Stringberg, Brecht, Genet, or Beckett. Prerequisite: THA 298.  
*Offered Spring Semester*
THA 311. Acting III-A
2 credits
A scene study class focusing on plays with elevated language, with an emphasis on Shakespeare. May include Restoration and Greek drama as well. Prerequisite: THA 212.

THA 312. Acting III-B
2 credits
A continuation of THA 311 with focus on high style and Comedy of Manners. May include Shaw, Wilde, and Coward. Prerequisite: THA 311.

THA 313. Movement II-A
1 credit
Period Movement: special movement requirements and techniques for four different periods of history - 16th, 17th, 18th and 19th centuries, including manners, etiquette, social mores, history and costume. Prerequisite: THA 114.

THA 314. Movement II-B
1 credit
Fundamentals of mask work through the study of a “personal clown”; the character mask and/or an in-depth study of Commedia dell’Arte masks and character types. Prerequisite: THA 313.

THA 316. Dance III-A
2 credits
Advanced Musical Theatre Dance that incorporates high technical proficiency for expression, character development and plot narrative associated with original Broadway choreography. Prerequisite: THA 217. Corequisite: BFA/BM Musical Theatre majors.

THA 317. Dance III-B
2 credits

THA 341. Sound for the Theatre
3 credits
A basic sound design class to develop an ear for music and sound. Prerequisite: THA 141 and 142.

THA 342. Introduction to Scenic Design
3 credits
Analyzing, planning and designing stage scenery, executing color rendering and stage models. Prerequisite: THA 243.

THA 343. Introduction to Costume Design
3 credits
Techniques for analyzing, planning, and designing stage costumes. Prerequisite: THA 142, 244 or permission of instructor.

THA 344. Introduction to Lighting Design
3 credits
Basic lighting design and technology involving lighting instruments and control boards to develop an eye for theatre lighting. Prerequisite: THA 142, 244, or permission of the instructor.

THA 347. Make-Up
3 credits
A lecture-laboratory course in make-up for the stage, television and motion picture. Prerequisite: THA 141.
THA 348. Advanced Make-up  
3 credits  
Offered By Announcement only  
A continuation of THA 347. Prerequisite: THA 347.

THA 351. Auditioning and Preparing for the Profession  
3 credits  
Offered Fall Semester  
How to succeed in the theatre profession. Students will prepare audition pieces and learn resume preparation, headshots, interviewing, and other aspects of searching for and obtaining work. Prerequisite: THA 251; 252; Not for BFA Students.

THA 352. Singing for the Musical Theater  
3 credits  
Offered By Announcement only  
The process of acting and singing a song for a musical play or review. Focus includes song selection, technical and acting mechanics, and how to deliver the song. Prerequisite: THA 251; permission of the instructor.

THA 364. Introduction to Producing and Managing Theatre  
3 credits  
Producing trends on Broadway, the Road, and Regional Theatre. The basics of producing, managing, and marketing a play from securing the performance rights to closing night. Prerequisite: THA 101 or 141 or permission of instructor.

THA 365. Principles of Stage Management  
3 credits  
Offered Fall Semester  
The art and craft of Stage Management from pre-production through post-production. Prerequisite: Permission of instructor.

THA 366. Theatre Management Practicum  
3 credits  
Offered Fall Semester  
Study of theatrical subscription campaign, box office operations marketing campaign and house management. Will relate to both the Ring Theatre and the Brockway Theatre. Prerequisite: THA 266.

THA 367. Theatre Management Practicum  
3 credits  
Offered Spring Semester  
Practical experience and knowledge by working on the annual season ticket campaign and house management at the Jerry Herman Ring Theatre. Prerequisite: THA 364 and permission of instructor.

THA 375. Introduction to Playwrighting  
3 credits  
Offered By Announcement only  
Understanding of the basic principles involved in play construction. Prerequisite: Permission of instructor.

THA 381. Play Analysis I  
3 credits  
Offered By Announcement only  
Play structure from the viewpoints of the actor, director, designer, and audience. Understanding the play and making production choices. Prerequisite: Six credits in Theatre Arts.

THA 382. Play Analysis II  
3 credits  
Offered Spring Semester  
A continuation of THA 381. Emphasis on non-realistic theatre. Prerequisite: THA 381.

THA 385. History of Decor  
3 credits  
Offered Fall Semester  
A History of Interior Decor and Furniture. To provide a research background for Theatrical Design. Classical Greece through the present. Prerequisite: THA 141 and 142 or permission of instructor.
THA 386. History of Fashion
3 credits Offered Spring Semester
A history of clothing and other visual elements that provide a research background for theatrical design, classical Greece through present. Prerequisite: THA 141 and 142 or permission of instructor.

THA 396. Singing for the Stage III-A
1- 2 credits Offered Fall Semester
Instruction and coaching of advanced vocal and audition material drawn from American musical theatre. Prerequisite: THA 297.

THA 397. Singing for the Stage III-B
1 credit Offered Spring Semester
Vocal techniques for plays that require singing, but are non-musicals such as certain Shakespearean, Restoration, and Contemporary plays by Brecht, Weiss, or Coward. Prerequisite: THA 396.

THA 398. Voice and Speech III-A
1 credit Offered Fall Semester
Application of voice and speech to verse texts - particularly that of Shakespeare and Ancient Greece. Prerequisite: THA 299.

THA 399. Voice and Speech III-B
1 credit Offered Spring Semester

THA 401. Internship
3 credits Offered Fall and Spring Semesters
Prescribed work and study at a theatre, opera, or dance company as it pertains to the major’s concentration of study. Collateral reports, readings, conferences with faculty supervisor. Prerequisite: Open to B.F.A. candidates only.

THA 402. Internship
3 credits Offered Fall and Spring Semesters
Continuation of THA 401. Prerequisite: Open to B.F.A. candidates only.

THA 403. Internship
3 credits Offered Fall and Spring Semesters
Continuation of THA 402. Prerequisite: Open to B.F.A. candidates only.

THA 404. Internship
3 credits Offered Fall and Spring Semesters
Continuation of THA 403. Prerequisite: Open to B.F.A. candidates only.

THA 405. Production Thesis
3 credits Offered By Announcement only
Prerequisite: Open to B.F.A. candidates only.

THA 410. Independent Study
1- 3 credits Offered By Announcement only
Individualized instruction on special topics. Prerequisite: Permission of instructor.

THA 411. Acting IV-A
2 credits Offered Fall Semester
Scene study focusing on early modern European playwrights that may include Ibsen, Chekhov, Strindberg, and others. Prerequisite: THA 312 or permission of instructor.
THA 412. Acting IV-B
2 credits  
Offered Spring Semester
Scene study focusing on contemporary playwrights who use elevated language. May include Pinter, Stoppard, Mamet, Anouilh, Churchill, and others. Prerequisite: THA 411 or permission of instructor.

THA 413. Movement III-A
2 credits
Unarmed combat for the stage: basic and advanced techniques including punches, slaps, kicks, rolls and fight choreography. As sanctioned by the Society of American Fight Directors (SAFD). Prerequisite: THA 314 or permission of instructor.

THA 414. Movement III-B
2 credits
Weapons for the stage: basic and advanced techniques of armed combat including rapier, rapier and dagger, broadsword and/or quarterstaff as sanctioned by the Society of American Fight Directors (SAFD). Prerequisite: THA 413 or permission of instructor.

THA 415. Auditioning-I
2 credits  
Offered Fall Semester
A course dedicated to the business of theatre for actors. Students will prepare three to five audition pieces. Covers headshots, resumes, income tax situations, unions, and methods of searching for and obtaining work. Prerequisite: THA 312.

THA 416. Auditioning-II
2 credits  
Offered Spring Semester
Continuation of THA 415. Prerequisite: THA 415.

THA 420. Senior Studio
3 credits  
Offered Spring Semester
Participation in a fully mounted production to be directed, choreographed, acted and designed by faculty or students. Prerequisite: THA 412 and BFA/BM Musical Theatre major with senior status.

THA 431. Musical Theatre Styles I
2-3 credits  
Offered Fall Semester
Creating a character through song and dialogue; transitions from songs into and out of scenes; style and performance unique to musical comedy. Prerequisite: Senior BFA/BM conservatory students or permission of instructor.

THA 432. Musical Theatre Styles II
2-3 credits  
Offered Spring Semester
Continuation of THA 431. Prerequisite: THA 431.

THA 441. Design Studio IA
3 credits  
Offered Fall Semester
Tutorial in costume, scenic or lighting design. Prerequisite: THA 342, 344, 345.

THA 442. Design Studio IB
3 credits  
Offered Spring Semester
Continuation of THA 441. Prerequisite: THA 441.

THA 451. Advanced Acting: Classical Poetic Text
3 credits  
Offered Fall Semester
An introduction to styles focusing on the Greeks, Shakespeare, Restoration and other plays on poetic language. Prerequisite: THA 252 or permission of instructor.
THA 452. Advanced Acting: Contemporary Poetic Text  
3 credits  
Offered Spring Semester  
Acting and scene study focusing on contemporary playwrights who use poetic language. Prerequisite: THA 252 and permission of instructor.

THA 455. Acting for the Camera  
3 credits  
Offered By Announcement only  
Practical and audition aspects of acting in the genres of film and dramatic episodic television (situation comedy, Drama, soap opera, and commercial). Prerequisite: THA 212 or 252.

THA 456. Improvisational Acting  
3 credits  
Offered By Announcement only  
Exploration of the unique skills involved in this form of acting. Prerequisite: THA 212 or 252.

THA 459. Stage Management Practicum  
3 credits  
Offered Fall and Spring Semesters  
Practical experience as a stage manager for a production. Weekly individual meetings with instructor for analysis of performance and evaluation. Prerequisite: THA 365.

THA 461. Play Direction I  
3 credits  
Offered Fall Semester  
The art and craft of stage direction. Prerequisite: THA 141, 142, 105, 152, 312 and 381.

THA 462. Play Direction II  
3 credits  
Offered Spring Semester  
A continuation of THA 461 in which the student directs a one act play. Prerequisite: THA 461. Enrollment limited.

THA 463. Advanced Stage Management I  
3 credits  
Offered By Announcement only  
Detailed work of the theatrical stage manager: union relations, touring, and television work and application of computer technology. Students will serve as a stage manager, a studio show or assistant stage manager of a mainstage production. Prerequisite: THA 365.

THA 464. Advanced Stage Management II  
3 credits  
Offered By Announcement only  
Special problems in stage management in opera, ballet, industrial and cruise ships shows, concerts, and special events. Record keeping and job search techniques. Students will stage a mainstage production. Prerequisite: THA 463.

THA 465. Theatre Management I  
3 credits  
Offered Fall Semester  
How to produce for Broadway and off-Broadway. All aspects of mounting a production: securing a cast, scenery, costume and lighting designers, director and production staff. The Dramatists Guild Option and Limited Partnership. Prerequisite: THA 266 or permission of instructor.

THA 466. Theatre Management II  
3 credits  
Offered Spring Semester  
Examination of the various theatrical unions and the understanding of their respective contracts. Prerequisite: THA 465 or permission of instructor.
THA 467. Theatre Management III
3 credits 
Offered By Announcement only
Producing theatre within the structure of not-for-profit corporations. Structure and organization; legal, tax and financial reporting requirements; the Board of Directors; budgeting and marketing. Prerequisite: THA 266 or permission of instructor.

THA 468. Theatre Management IV
3 credits 
Offered Spring Semester
Fundraising and grant writing for the non-for-profit theatre. Prerequisite: THA 467.

THA 471. Directing the Actor for Film
3 credits 
Offered By Announcement only
The craft of directing actors for work before a camera. Prerequisite: CMP 222 or THA 105 or 151 or permission of instructor.

THA 481. Theatre History I
3 credits 
Offered Fall Semester and First Summer Session
Theatre history from the Greeks through European Renaissance.

THA 482. Theatre History II
3 credits 
Offered By Announcement only
Theatre history from the 17th century to the present. Prerequisite: THA 481.

THA 561. Advanced Directing I
3 credits 
Offered By Announcement only
Continuation of THA 462. Developing a philosophy of theatrical production. Case studies in practical directing problems. The student directs a short play. Prerequisite: THA 462 or permission of instructor.

Women’s And Gender Studies

WGS 201. Introduction to Women’s and Gender Studies
3 credits
Conceptions of masculinity and femininity; gender relations; gender inequalities; the intersections of gender with other categories of identity such as class, race, sexuality, and stages in the life cycle; and the broad impact of gender on society.

WGS 301. Feminist Inquiries
3 credits
A history of feminist thought, central issues in contemporary feminist theory, the emergence of feminist methodologies across a range of disciplines, and the ways in which feminist inquiry transforms our understanding of key issues across the curriculum. Writing Credit. Prerequisite: Junior standing or permission of instructor.

WGS 302. International Perspectives on Gender and Sexuality
3 credits
A comparative study of gender identities, gender relations, and sexualities in different cultures and societies.

WGS 305. Queer Studies
3 credits
Gay, lesbian, bisexual, transgender, transexual, and queer identities; alternative family structures; queer theory; and current debates over the meaning and validity of sexuality as a way of understanding human sexual desire, emotions and behavior. Prerequisite: Junior standing and permission of instructor.
WGS 315. Gender, Race, and Class
3 credits
Conceptions and experience of gender, race, and class in historical and contemporary cultures; the impact of these intersections on individuals and society as a whole.

WGS 320. Comparative Perspectives on Gender and Sexuality
3 credits
A comparative study of gender identities, gender relations, and sexualities in different cultures and societies. Writing Credit. Prerequisite: Junior standing or permission of instructor.

WGS 350. Special Topics in Women’s and Gender Studies
3 credits
Content varies by semester. Prerequisite: Junior standing or permission of instructor.

WGS 405. Gender and Sexuality in Cultural Context
3 credits
How cultural values shape our understanding and experience of gender and sexuality; how those values are produced and policed; and the impact of codes of conduct for gender relations on individuals and society as a whole. Writing Credit. Prerequisite: Three credits in WGS, junior standing or permission of instructor.

WGS 410. Gender, Sex, and the Law
3 credits
Legal institutions and laws in shaping and regulating gender relations and sexual practices; the evolving relationship between legal codes and social values. Writing Credit. Prerequisite: Three credits in WGS, junior standing or permission of instructor.

WGS 420. Interpreting Bodies
3 credits
Perceptions, representations, and regulation of the physical body as a gendered and sexual site, as a source of pleasure, as a means of social validation, and as an object of coercion. Writing Credit. Prerequisite: Three credits in WGS, junior standing or permission of instructor.

WGS 450. Special Topics in Women’s and Gender Studies
3 credits
Content varies by semester. Prerequisite: Three credits in WGS, junior standing or permission of instructor.

WGS 499. Independent Study
1-3 credits
By arrangement with instructor; content varies. Prerequisite: Three credits in WGS, junior standing or permission of instructor.

WGS 501. Senior Research Project
3 credits
A student initiated research project with a faculty member of the student’s choice and approved by the Program director. Writing Credit. Prerequisite: WGS major or minor, and senior status, and WGS 201 and 301.
WGS 505. Senior Thesis
3 credits
Women's and Gender Studies majors with a cumulative GPA of at least 3.5 in WGS courses and an overall GPA of at least 3.0 may earn departmental honors by completing an honors thesis instead of the senior research project. Candidates for departmental honors are responsible for finding a faculty member who is willing to serve as thesis adviser and then must complete a thesis proposal of approximately 400 words which must be approved by the thesis adviser and then the program director. Most students will take this course twice, for a total of six credits. Writing Credit. Prerequisite: WGS major; senior status, and WGS 201 and 301, and approval of program director.
Business Administration
Accounting

ACC 101. Principles of Accounting
3 credits
Course focuses on the use and understanding of basic financial and managerial accounting reports. Coverage of basic accounting assumptions and current issues affecting accounting processes and reporting are included, but detailed accounting procedures are not emphasized. Completion of the course should permit students to understand accounting information and to communicate with professional accountants. Limited to students in the Saturday BBA program, it does not satisfy any accounting requirement needed to sit for the CPA exam in Florida.

ACC 211. Principles of Financial Accounting
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Course explores the role of accounting in providing financial information about an enterprise to decision-makers. Emphasis is placed on understanding financial accounting from a user perspective. Course covers the reporting of financial position including coverage of assets, liabilities, equity accounts, the results of operations, and cash flows. Prerequisite: Sophomore standing.

ACC 212. Managerial Accounting
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Introduction to managerial accounting. Topics include various product costing techniques, analysis of cost behavior patterns, budgeting, and the use of accounting information to solve problems. The course is taught from a managerial perspective. Prerequisite: ACC 211.

ACC 301. Cost Accounting
3 credits
Offered Fall and Spring Semesters and First Summer Session
Topics include basic cost concepts, product costing techniques including job-order and process costing, in-depth studies of techniques and issues surrounding cost allocation methods, basic approaches to solving complex accounting problems, standard cost systems and variance analysis, and variable costing. Additionally, activity-based costing concepts and methodology are introduced. Course is designed to provide students with the necessary skills to perform basic cost accounting. Prerequisite: ACC 212.

ACC 303. Fundamentals of Taxation
3 credits
Offered Fall and Spring Semesters and First Summer Session
Basic concepts of federal income taxation applicable to all taxpayers. The principles of individual income taxation, the tax consequences of property transactions, and an introduction to the impact of income taxes on corporations and partnerships are discussed. Emphasis is placed on study of the basic income tax formula including income exclusions, inclusions, statutory deductions, exemptions, and credits. Prerequisite: ACC 212.

ACC 306. Accounting Systems
3 credits
Offered Fall and Spring Semesters and First Summer Session
Contemporary accounting systems are computer based. Course covers the nature, design, implementation, and controls in computerized systems as well as manual systems. Micro computers are used as a learning tool. Prerequisite: ACC 212.
ACC 311. Intermediate Accounting I  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
The accounting principles which shape the financial reporting practices followed by entities that prepare financial statements in accordance with generally accepted accounting principles are discussed. Course also includes the determination of income components and balance sheet elements with brief coverage of the statement of cash flows. Prerequisite: ACC 212.

ACC 312. Intermediate Accounting II  
3 credits  
Offered Fall and Spring Semesters and Second Summer Session  
A continuation of ACC 311. Course focuses on more complex accounting applications such as leases, postretirement benefits, accounting for income taxes, and other topics. Additionally, the course includes coverage of the statement of cash flows. Prerequisite: ACC 311.

ACC 401. International Business Analysis  
3 credits  
Offered By Announcement only  
Inter-disciplinary course in the international aspects of accounting, finance, marketing, and management. Students work on an integrative case project analyzing the financial, managerial, and marketing issues in the acquisition of a foreign firm by an American firm and produce a marketing plan, pro-forma financial statements, and an organizational plan. Prerequisite: FIN 330 or MKT 360.

ACC 402. Auditing  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Course provides an introduction to the field of auditing. It concentrates on conducting an audit of financial statements in accordance with generally accepted auditing standards. Course covers accounting information systems, audit planning, audit risk and materiality assessments, evaluation of internal control, audit evidence, documentation, and audit reports. Prerequisite: ACC 306 and 312.

ACC 404. Advanced Taxation  
3 credits  
Offered Fall and Spring Semesters and Second Summer Session  
Study of Federal income tax laws and regulations as they affect corporations, partnerships, estates and trusts, their owners, employees, and beneficiaries. Emphasis is placed on tax planning aspects of formation, operation, reorganization, distribution, and liquidation of corporations and partnerships. The US tax administration system and techniques of tax research are explored as they relate to the three phases of a CPA’s tax practice: tax return preparation, tax advice and planning, and tax advocacy. Prerequisite: ACC 303.

ACC 501. Advanced Cost Accounting  
3 credits  
Offered Spring Semester  
The latest developments in cost and managerial accounting are studied. Using case studies, the course focuses on activity based product cost allocation methodology in terms of: (1) basic concepts and rationale, (2) applicability in both manufacturing and service industries, (3) strategic cost analyses, and (4) applicability in total quality management programs. Other topics include cost pools, two stage costing methodologies, and the behavioral aspects of cost systems. Finally, students implement an activity based cost system using commercially developed software. Prerequisite: ACC 301.

ACC 505. Current Issues in Accounting Practice  
3 credits  
Offered Second Summer Session  
Course develops a student’s understanding of the theory and practice of relational database management systems in the accounting view of enterprise-wide databases. With a focus on controls, students build accounting system elements related to main accounting transaction cycles, the revenue cycle, and the purchase cycle. Prerequisite: Permission of instructor.
ACC 506. Internal Auditing  
3 credits  
Offered By Announcement only  
Course explores the unique issues associated with the internal audit function. Additionally, the ethical code applicable to internal auditors is discussed. Prerequisite: ACC 402.

ACC 511. Advanced Accounting  
3 credits  
Offered Spring Semester and Second Summer Sessions  
The primary focus on the course is on business combinations and preparing consolidated financial statements. Additionally, there is coverage of the accounting principles and practices applied to foreign operations and partnerships. Prerequisite: ACC 312.

ACC 522. Advanced Issues in Auditing  
3 credits  
Offered Spring Semester  
Course covers advanced issues which arise in audit practice including audit reporting issues, fraud detection and reporting, attestation engagements, special reporting issues, compilation and review engagements, scope of services issues, and other new issues which have a significant impact on audit practice. Prerequisite: ACC 402.

ACC 523. International Accounting and Taxation  
3 credits  
Offered Fall Semester and First Summer Session  
International Accounting Theory, practices and tax laws, international investment, credit and trade, and the accounting problems involved are discussed.

ACC 524. Accounting for Governmental and Not-for-Profit Entities  
3 credits  
Offered Fall Semester and First Summer Session  
Accounting within the environment of all levels of modern government. Emphasis is placed on governmental program objectives, managerial activities, appropriations, allotments, and funds. Prerequisite: ACC 312.

ACC 525. Trends in Present Day Accounting  
3 credits  
Offered By Announcement only  
Recent developments in accounting thought and advanced accounting theory. The analysis of trends as disclosed by recent releases of the Securities and Exchange Commission, the American Institute of Certified Public Accountants, and the Financial Accounting Standards Board are discussed. Other topics include terminology, current trends in the measurement, presentation of financial data to meet the needs of third parties, and surveys accounting literature. Prerequisite: ACC 312.

ACC 550. Accounting Internship  
2-3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Prerequisite: Permission of Department Chairman.

ACC 599. Directed Readings  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individually supervised research projects in selected fields. Approval of supervising professor as to topic and evaluation of project is required at time of registration. Prerequisite: Senior standing.
Business Law

BSL 212. Introduction to Business Law  
3 credits  
*Offered Fall and Spring Semesters and First Summer Session*

Introduction to law and legal procedure. Topics include contracts (nature and requisites, formation, operations, interpretation, discharge, and remedies) and sales (Uniform Commercial Code, transfer of title, warranties, rights, and remedies of buyer and seller).

BSL 213. Business Organizations and Personal Property  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*


BSL 301. Commercial Paper and Creditors’ Rights  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Brief history of the law merchant. Topics include Article 3 of the Uniform Commercial Code: formal requisites, negotiation, holders in due course, defenses, liabilities, discharge; Article 4 of the Uniform Commercial Code: Bank deposits; Article 9 of the Uniform Commercial Code: secured transactions, bankruptcy, suretyship, and guaranty. Prerequisite: BSL 212 or equivalent.

BSL 305. Legal and Social Aspects of Business Regulation  
3 credits  
*Offered By Announcement only*

An introduction to the legal and ethical issues arising out of business and the regulatory environment. Topics include business ethics and subjects as environmental law, antitrust, securities, administrative process, consumer protection, and employment regulation. Prerequisite: Junior standing.

BSL 313. Coastal Law  
3 credits  
*Offered Fall Semester*

Basic doctrines and public policy related to the use and regulation of the United States coastal zone and seabed. Prerequisite: Junior standing.

BSL 314. Ocean Law  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

The principles of international ocean law regarding ocean management. Topics include ocean delimitation and issues of environmental ocean regulation within international legal framework. Prerequisite: BSL 212 or equivalent.

BSL 333. Legal Aspects of Real Estate Transactions  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Legal principles controlling the acquisition, ownership, financing, and development of real property. Topics include nature and acquisition of rights in real property, theory of estates, co-ownership, fixtures, easements, legal descriptions, evidence of title, title insurance, deeds, mortgages, closing the sales and mortgage transactions, condominiums and cooperatives, brokers, and land use. Prerequisite: BSL 212 or equivalent.
BSL 412. International Business Law  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
International law and organizations, international sales, credits and commercial transactions, U.S. trade law, and the regulation of the international market place are discussed. Prerequisite: BSL 212 or equivalent, and junior standing.

BSL 485. Managing the Legal Factor  
3 credits  
Offered Spring Semester  
This course offers the business manager a frank and analytical view of law and legal practice as they affect business decision-making. It addresses both the issues of cost containment and relationships between counsel and the company with the objective of achieving a more effective management of the legal function in business. Prerequisite: BSL 212 or equivalent and senior standing.

BSL 499. Special Topics  
1- 3 credits  
Offered By Announcement only  
Independent investigation of special subjects. Prerequisite: Permission of Department Chairman.

BSL 550. Business Law Internship  
2- 3 credits  
Offered By Announcement only  
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Prerequisite: Permission of Department Chairman.

BSL 575. Advanced Business Law  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Legal problems encountered by Certified Public Accountants, Finance, Management and Marketing Executives, including agency, commercial paper, bank deposits and collections, secured transactions, suretyship, bankruptcy, partnership, corporations, contracts, anti-trust, insurance, property, wills and estates, SEC law, and accountants’ legal responsibility. Special attention is given to the commercial law segment of the Uniform Public Accountant Examination. Prerequisite: BSL 212 or equivalent and senior standing.

Computer Information Systems

CIS 120. Introduction to Computer Information Systems  
3 credits  
Offered By Announcement only  
An introduction to computers and information processing, with emphasis on application software. The course material includes: spreadsheet design and analysis, as well as the use of spreadsheet tools in facilitating decision making; relational database design and the development of database management tools; basic Internet terminology and Web design; development of team-work, presentation, and communication skills through presentation software; and the use of advanced word processing features to create a more efficient and productive working environment, as well as software application integration.

CIS 316. Microcomputer Business Applications  
3 credits  
Offered By Announcement only  
A continuation of CIS 120, with emphasis on spreadsheet macros, advanced DOS, structured methodology, and command level programming. Students design and implement a relational system in Access. Course cannot be used as a technical elective in the Computer Information Systems major. Prerequisite: CIS 120.
CIS 320. **Introduction to Programming**  
3 credits  
Offered Fall and Spring Semesters  
Course covers the fundamentals of programming logic and structured programming principles including problem solving, algorithm design, and program development using Visual Basic.

CIS 322. **Introduction to C++ Programming**  
3 credits  
Offered Fall and Spring Semesters  
An introduction to the syntax and semantics of the C++ programming language. Topics include editing, compiling and linking C++ source code, data types, operators, precedence rules, flow of control, repetitive calculations, input/output, functions, arrays, structures, and pointers. Prerequisite: CIS 320 or equivalent.

CIS 323. **Object-Oriented Programming in C++**  
3 credits  
Offered Spring Semester  
A second level course in C++ programming using its object-oriented capabilities. Topics include data abstraction, encapsulation, inheritance, overloading, templates, exception handling, data structures, namespaces, virtual functions, stream input-output, Standard Template Library, advanced pointers, and interactive code debugging. Prerequisite: CIS 322.

CIS 324. **Object-Oriented Programming in Java**  
3 credits  
Offered Fall Semester  
The course introduces the fundamental concepts of the JAVA programming language and the techniques of Object-Orientation. Topics include data abstraction, encapsulation, inheritance, polymorphism, Java class library, graphics/GUI, exception handling, multithreading, multimedia, files and streams, Internet applets, application development, integrated development environment, and interactive program debugging. Prerequisite: CIS 322.

CIS 360. **Analysis of Information Systems**  
3 credits  
Offered Fall and Spring Semesters  
Overview of the systems development life cycle (SDLC). Topics include concepts, tools, techniques of systems analysis, data modeling, process modeling, CASE tools, and the role of the system analyst in the organization. Students work in groups to analyze an application system for a business related problem. Prerequisite or corequisite: CIS 320.

CIS 361. **Design of Information Systems**  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Continuation of CIS 360. Topics include concepts, tools, and techniques of systems design, prototyping, file/database design, and physical process modeling. Students work in groups to design an application system for a business related problem. Prerequisite: CIS 360.

CIS 390. **Topics in Computer Information Systems**  
3 credits  
Offered By Announcement only  
Topics in selected areas of specialization.

CIS 391. **Topics in Computer Information Systems**  
3 credits  
Offered By Announcement only  
Topics in selected areas of specialization.

CIS 392. **Topics in Computer Information Systems**  
3 credits  
Offered By Announcement only  
Topics in selected areas of specialization.

CIS 393. **Topics in Computer Information Systems**  
3 credits  
Offered By Announcement only  
Topics in selected areas of specialization.
CIS 394. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 395. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 396. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 397. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 398. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 399. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 410. **Information Systems and Technology**  
3 credits  
Course develops an understanding of the role of information technology within an organizational perspective. The course focuses upon the basic building blocks of information technology architectures and examines the issues facing a Chief Technology Officer in developing systems solutions. Topics include enterprise systems, database, decision support, intelligent systems, the Internet and e-business, as well as the ethical policy issues that affect systems architectures and their use. Prerequisite: School of Business Administration Upper Level Status.  
Offered Fall Semester

CIS 430. **Business Telecommunications**  
3 credits  
This course introduces the subject of voice and computer networks and their use in business applications. Topics include the local and long distance telephone networks, client-server networks, network hardware and software, distributed computing, key issues in network management, and the fundamentals of data communication. Prerequisite: Junior standing.  
Offered Fall and Spring Semesters

CIS 465. **Applied Software Project Development**  
3 credits  
Advanced concepts and techniques in application project development. Topics include project management, project development, testing, implementation, documentation, and maintenance. Students work on a group project to fully understand the skills required in the development of complete production quality applications. Prerequisite: CIS 323 or 324, 361, 430, and 523.  
Offered Fall and Spring Semesters

CIS 490. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 491. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 492. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only
CIS 493. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 494. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 495. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 496. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 497. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 498. **Topics in Computer Information Systems**  
3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 499. **Directed Study in Computer Information Systems**  
1-3 credits  
Individually supervised investigation or research project in selected topics. Offered by special arrangement only. Approval should be obtained prior to day of registration. Prerequisite: Approval of supervising professor and department chairman.  
Offered By Announcement only

CIS 523. **Database Management Systems**  
3 credits  
Course covers the fundamental concepts of database management systems using the Oracle DBMS. Topics include database theory and terminology, logical modeling, normalization, SQL language, database design and implementation, database administration, data security, database transaction/concurrency, and data backup. Prerequisite: CIS 360 or 620.  
Offered Fall and Spring Semesters

CIS 550. **Computer Information Systems Internship**  
1-3 credits  
Student is individually assigned to operating business firm or other organization to gain insight in information technology practice in the area of career interest. Periodic reports and conferences are required. This course can only be taken as “credit only.” Prerequisite: Permission of department chairman.  
Offered Fall and Spring Semesters and First and Second Summer Sessions

CIS 590. **Topics in Computer Information Systems**  
1-3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 591. **Topics in Computer Information Systems**  
1-3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 592. **Topics in Computer Information Systems**  
1-3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only

CIS 593. **Topics in Computer Information Systems**  
1-3 credits  
Topics in selected areas of specialization.  
Offered By Announcement only
CIS 594. **Topics in Computer Information Systems**
1-3 credits
Topics in selected areas of specialization.
Offered By Announcement only

CIS 595. **Topics in Computer Information Systems**
1-3 credits
Topics in selected areas of specialization.
Offered By Announcement only

CIS 596. **Topics in Computer Information Systems**
1-3 credits
Topics in selected areas of specialization.
Offered By Announcement only

CIS 597. **Topics in Computer Information Systems**
1-3 credits
Topics in selected areas of specialization.
Offered By Announcement only

CIS 598. **Topics in Computer Information Systems**
1-3 credits
Topics in selected areas of specialization.
Offered By Announcement only

CIS 599. **Topics in Computer Information Systems**
1-3 credits
Topics in selected areas of specialization.
Offered By Announcement only

**Economics**

ECO 201. **Essentials of Economic Theory**
3 credits
Offered By Announcement only
A study of the economic system providing a broad based survey of basic economic principles, concepts, and tools of conventional economics. Topics include how markets function, how firms maximize profits, and the analysis of macroeconomic factors. Limited to students in Saturday BBA program.

ECO 211. **Economic Principles and Problems**
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Fundamental course devoted to development and application of basic analytical tools and principles required for an understanding of major economic problems and policy alternatives available for their solution. Particular emphasis on microeconomic analysis. Topics include the study of markets under varying conditions of competition, including market deficiencies such as pollution, prices, and resource allocation distribution of income, including poverty problems, the economics of the firm and the government, and international economic relations.

ECO 212. **Economic Principles and Problems**
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Continuation of ECO 211. Course emphasis is placed on macroeconomic analysis. Areas covered include national income and employment analysis, money and banking, economic growth, and comparison of different economic systems, including the problems of developing the less developed world.

ECO 301. **Macro Economic Theory**
3 credits
Offered Fall and Spring Semesters and First Summer Session
Intermediate level analysis of the measurement, determination, and control of aggregate economic activity. Prerequisite: ECO 211 and 212 or permission of instructor.
ECO 302. Micro Economic Theory
3 credits 
*Offered Fall and Spring Semesters and First and Second Summer Sessions*
Intermediate level analysis of the role of price in resource allocation in markets of varying degrees of competition, as well as in the determination of wages, rent, interest, profits, and public policy. Prerequisite: ECO 211 and 212 or permission of instructor.

ECO 307. Public Finance and Fiscal Policy
3 credits 
*Offered By Announcement only*
The role of local, state, and federal government in attaining an efficient allocation of resources and an equitable distribution of income. Emphasis on criteria for the selection and evaluation of public expenditure and tax programs including the problems of coordinating federal, state, and local finance. Special attention is given to current policy issues. Prerequisite: ECO 211, 212, 302.

ECO 311. Labor Economics (I)
3 credits 
*Offered Fall Semester*
Course surveys the structure and functioning of labor markets. Topics include determinants of labor supply and labor demand, economics of wage differentials, economic impact of labor unions, discrimination in labor markets, and the labor market effects of various government policies such as payroll and income taxes, educational subsidies, and minimum wage laws. The central goal of the course is to provide the student with a framework for analyzing diverse issues related to the labor sector of the economy. Prerequisite: ECO 211.

ECO 345. Economics of Natural Resources and the Environment
3 credits 
*Offered Spring Semester*
This course brings together the approaches of natural resource and environmental economics to provide a comprehensive overview of the economics of national, international, and global natural resource problems. A unifying theme throughout is the concept of sustainable development, defined as maximizing the net benefits of economic development while maintaining the services and quality of natural resources over time. Economic reasoning is used to examine the causes and consequences of natural resource problems, as well as measures for dealing with them. Specific topics include cost-benefit analysis, non-market valuation, incentive policy instruments, intertemporal resource management, and international trade and the environment.

ECO 350. The US in the World Economy
3 credits 
*Offered By Announcement only*
Course introduces International Studies students to International Economics. The gains from international trade, “competitiveness” and free trade areas are dealt with in the first part of the class. The final part of the course deals with international macroeconomics. Topics include national income accounting as well as the balance of payments and exchange rates. Prerequisite: ECO 211 and 212.

ECO 351. Economics of Developing Countries
3 credits 
*Offered By Announcement only*
Factors underlying economic development, measures of and goals for development, principles applicable to problems of development, the role of markets and planning in development, social, cultural, and political factors affecting economic development, and comparative rates of progress in different countries. Prerequisite: ECO 211 and 212.

ECO 355. Urban and Regional Economics
3 credits 
*Offered By Announcement only*
Analysis of the location and organization of urban and regional economic activities. Topics include regional income analysis, economic stability, factor mobility, economic growth and development, land use patterns, and special urban and regional problems and policies. Prerequisite: ECO 211 and 212.
ECO 371. Economic Problems of Latin America  
3 credits  
Offered Spring Semester  
An analysis of the historical growth of major Latin American countries, with emphasis on the post World War II period. Topics include industrialization, foreign investment, international trade and regional integration, agrarian reform, inflation, and development strategies and planning within the context of Latin America. Prerequisite: ECO 211 and 212.

ECO 386. Health Economics  
3 credits  
Offered By Announcement only  
The course applies the tools of microeconomic analysis to the health care sector. By examining the actors and issues in this market, students are able to discuss policy issues from an economic perspective. Prerequisite: ECO 211 and 212.

ECO 391. Managerial Economics  
3 credits  
Offered By Announcement only  
Course introduces modern techniques of economic analysis and decision science with particular application to the management of the firm in a global environment. Topics include estimation of demand (regression analysis, exponential smoothing, and moving averages), linear program solving of product mix, cost problems, game-theory in a competitive business environment, decision trees, risk and uncertainty management, and capital budgeting. Other managerial economics tools are applied to the theory of the firm. Prerequisite: ECO 211/212.

ECO 403. Contemporary Issues in Monetary Economics  
3 credits  
Offered Fall Semester  
Analysis of the role of money in economic affairs. Topics include the determinants of the money supply and interest rates, money and prices, money and stability, and growth. Emphasis is placed on current problems and policies. Prerequisite: ECO 211 and 212.

ECO 420. Economic Growth  
3 credits  
Offered By Announcement only  
Course covers selected topics in economic growth. Topics include stylized facts associated with economic growth, the theoretical study of economic growth, and empirical tests of those theories. Course work is supplemented by case studies of individual countries, particularly developing countries. Prerequisite: ECO 301.

ECO 430. Applied Econometrics  
3 credits  
Offered Fall and Spring Semesters  
This course introduces basic econometric techniques for analyzing economic data. The goal is to make students sophisticated consumers and skilled producers of empirical analysis, which will be attained by extensive work on a variety of real-world data like students’ test scores, CEO wages, mortgage applications, cigarette demand, stock market capitalization, inflation, GDP and interest rates. Learning how to use econometric analysis software is an integral part of the course. Prerequisite: Intermediate macroeconomics (ECO 302), calculus (MAS 110 or equivalent) and probability and statistics (MAS 202 or equivalent).

ECO 441. International Trade Theory  
3 credits  
Offered Fall Semester  
Study of the principles of comparative advantage and the gains from international trade. Analysis of tariffs, quotas, and protectionism is included. Prerequisite: ECO 302.

ECO 442. International Monetary Economics  
3 credits  
Offered Spring Semester  
Analysis of models of the exchange rate, the balance of payments, and monetary policy in an open economy. Prerequisite: ECO 211 and 212.
ECO 460. Industrial Organization
3 credits
Offered By Announcement only
This course shows how microeconomic theory can be used to understand the diverse practices encountered in real-world markets between the extreme cases of perfect competition and monopoly. Topics to be covered include strategic pricing behavior, collusion, advertising and information, vertical integration, vertical restraints, regulation and a review of empirical literature. Prerequisite: ECO 302.

ECO 499. Special Topics
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

ECO 507. Taxation and Government Expenditure
3 credits
Offered By Announcement only
The incentive and equity effects of taxation and public expenditures. Efficiency aspects of various tax and expenditure programs and the application of cost-benefit analysis to such areas as health, education, and welfare programs, both domestic and foreign, are discussed. Prerequisite: ECO 302.

ECO 510. Mathematical Economics
3 credits
Offered Fall Semester
Introduction to mathematical techniques commonly employed in economic analysis. Topics include simultaneous linear equation systems, linear algebra, expansions of polynomials, logarithmic and exponential equations, differential calculus, and optimization theory. A substantial part of the course focuses on the comparative static analysis of both macroeconomic and microeconomic problems. Prerequisite: A semester course in calculus. ECO 301 and 302.

ECO 511. Labor Economics (II)
3 credits
Offered Spring Semester
A theoretical and empirical analysis of how labor markets operate. A survey of the literature, problems, and methodology of modern labor economics. Human capital analysis, the wage structure, job search and job-matching models, time-allocation models, the economic impact of labor unions, labor market discrimination, the determinants of labor demand and supply, and the factors affecting government policy relating to the labor sector is also included. Prerequisite: ECO 302.

ECO 512. Mathematical Economics (II)
3 credits
Offered Spring Semester
Economics 512 will be sequential to the introductory Mathematical Economics I (ECO 510). Topics include integral calculus, differential equations, difference equations, Kuhn-Tucker conditions, solutions to general equilibrium systems, optimization under uncertainty, and an introduction to dynamic optimization. Applications of mathematical techniques to economic analysis will be stressed. Prerequisite: ECO 510 or its equivalent.

ECO 520. Econometrics
3 credits
Offered Fall Semester
Statistical methods of estimating and testing mathematical model of economic relationships. Prerequisite: ECO 301 and 302, a course in statistics and permission of instructor.

ECO 521. Graduate Macroeconomic Theory
3 credits
Offered Fall Semester
The primary objective of this course is to introduce the student to the mathematical presentation of the major Classical, Neo-classical, Keynesian, and Neo-Keynesian macroeconomic models. Prerequisite: Intermediate Macroeconomic Theory and permission of instructor.
ECO 532. History of Economic Thought
3 credits
Offered By Announcement only
Historical development of economic doctrines and theory. Topics and individuals discussed include mercantilism, physiocracy, Adam Smith, Thomas Malthus, David Ricardo, J. S. Mill, Karl Marx, marginal analysis, Alfred Marshall, and J. M. Keynes. Special emphasis is placed on the effect of historical insights upon the contemporary core of economic theory. Prerequisite: ECO 301 and 302.

ECO 533. Advanced Microeconomic Theory
3 credits
Offered Fall Semester
An introduction to the mathematical approach to microeconomic theory. Topics include consumer/household behavior, the theory of the firm, resource allocation, welfare economics, and uncertainty theory. Prerequisite: ECO 302, and permission of instructor.

ECO 545. Natural Resources Economics II
3 credits
Offered By Announcement only
This course surveys the economics of natural resource use, and is targeted to upper-division undergraduate and graduate students in economics. Topics include the economics of pollution control, the application of cost/benefit analysis to the marine environment, the economics of non-renewable and renewable resource extraction, and international environmental problems. Prerequisite: ECO 345 or MAF 502.

ECO 586. Economics of Health
3 credits
Offered By Announcement only
A survey of the literature on the health care market. Economic theory is used to analyze public policy alternatives. Prerequisite: ECO 302 or 691, or consent of instructor.

Executive and Special Programs

ESP 500. Review Module
0 credits
Offered Fall Semester
A non-credit review session to provide students with the skills necessary to prepare for the successful completion of the common body of knowledge courses.

ESP 501. Fundamentals of Accounting
3 credits
Offered Spring Semester
The generally accepted principles governing the preparation of financial reports, the use of accounting information systems in collecting financial, and cost data used in investment decisions and controlling an enterprise are discussed. Prerequisite: Limited to students in overseas program.

ESP 510. Introduction to Business Statistics
3 credits
Offered First Summer Session
Data analysis, probability concepts, distributions, sampling, estimation, hypothesis testing, simple and multiple regression, and correlation analysis are discussed. Prerequisite: Limited to students in overseas program.

ESP 521. Introduction to Information Systems
3 credits
Offered By Announcement only
Computer information system concepts, including spreadsheets, data management, and word processing. Prerequisite: Limited to students in overseas program.

ESP 551. Organizational Behavior
3 credits
Offered Spring Semester
Exploration of relevant concepts, research findings and pragmatic implications of the behavioral sciences for the management of complex socio-technical systems. Prerequisite: Limited to students in overseas program.
ESP 560. **Fundamentals of Marketing**  
*3 credits*  
Offered Fall Semester  
Marketing problems experienced by top executives are examined. Fundamental problem-solving concepts are developed. Students consider problems of consumer needs, product planning, promotion, distribution, and pricing. The discovery and application of marketing management skills are developed through the use of cases and a major planning project. Prerequisite: Limited to students in overseas program.

ESP 590. **Macro- and Microeconomics**  
*3 credits*  
Offered First Summer Session  
An economic study of the environment in which the decision-making process takes place in management and the functional areas. Course is structured especially for students without an undergraduate background in economics. Prerequisite: Limited to students in overseas program.

**Finance**

FIN 250. **Personal Finance**  
*3 credits*  
Offered By Announcement only  
Course addresses all of the major personal financial planning problems that individuals and households encounter. It presents a model of the major elements of effective money management. All of the latest financial planning tools and techniques are discussed. (Not for credit for finance majors or minors.)

FIN 300. **Finance for Non-Business Majors**  
*3 credits*  
Offered Fall and Spring Semesters  
Course introduces the non-business student to fundamental concepts in Finance. The perspective is practical rather than theoretical and topics covered help the student to make better financial decisions on a personal level and to decide whether or not to pursue graduate study in business. (NOT FOR CREDIT FOR FINANCE MAJORS.) Prerequisite: Junior standing.

FIN 302. **Fundamentals of Finance**  
*3 credits*  
Offered Fall and Spring Semesters and First Summer Session  
Fundamentals for the study of Finance. Topics include the financial framework of a business entity, taxes, the time value of money, capital market theory, financial risk measures, and capital budgeting. Prerequisite: MAS 201 or equivalent, ECO 211, ACC 211.

FIN 303. **Intermediate Financial Management**  
*3 credits*  
Offered Fall and Spring Semesters and First Summer Session  
Course provides students with the more advanced tools and concepts required for understanding, analyzing, and solving issues and problems in the financial world. Topics include arbitrage and efficient markets, term structure and risk structure of interest rates, cost of capital, capital structure, short term financial management, options, and international parity conditions. Prerequisite: FIN 302.

FIN 320. **Investment and Security Markets**  
*3 credits*  
Offered Fall and Spring Semesters and First Summer Session  
The organization and operation of leading security markets. Principles and problems of investments, types of risk, timing, selection, and institutional factors are discussed. Surveys fundamental, technical, and portfolio analysis techniques are also included. Prerequisite: FIN 302.

FIN 330. **International Finance**  
*3 credits*  
Offered Fall and Spring Semesters and First Summer Session  
Fundamentals for the study of International Finance. Topics include foreign exchange markets and instruments, international debt and equity markets, international investing, and international trade flows. Application to current issues and events is also included. Prerequisite: FIN 302.
FIN 339. Introduction to Finance for Real Estate Development  
3 credits
This course is designed to introduce architects, planners and traditional finance students to the financial analysis typically performed to forecast the expected profitability of proposed real estate projects. Prerequisite: Permission of instructor.

FIN 340. Real Estate Principles  
3 credits
Offered Fall and Spring Semesters
Procedures, practices, and issues involved in the ownership, transfer, financing, and valuing of real property. The impact of title, lines, appraisals, mortgages, contracts, brokerage, and laws governing real estate are also considered. WAIVED FOR STATE LICENSE HOLDERS. Prerequisite: FIN 300 or 302.

FIN 344. Real Estate Investment Analysis  
3 credits
Offered Spring Semester
Techniques of economic and financial analysis and planning for real estate investment. An investigation of current financing methods for profit making and government financed real estate projects. Special emphasis on relationship of planning, financing, and development to avoid and solve urban problems. Prerequisite or corequisite: FIN 340.

FIN 401. International Business Analysis  
3 credits
Offered Spring Semester
Inter-disciplinary course in the international aspects of accounting, finance, marketing, and management. Students work on an integrative case project analyzing the financial, managerial, and marketing issues in the acquisition of a foreign firm by an American firm as well as produce a marketing plan, pro-forma financial statements, and an organizational plan. Prerequisite: FIN 330 or MKT 360, senior standing.

FIN 404. Applications in Corporate Finance  
3 credits
Offered By Announcement only
An analytical examination on the current issues in corporate finance. Primary emphasis on valuation of corporate liabilities, advanced corporate financing, re-financing decisions, incentive and signalling problems, taxes and corporate decision making, and other current issues in corporate finance. Prerequisite: FIN 302, 303, 320.

FIN 405. Analysis with Finance Software  
3 credits
Offered Fall and Spring Semesters and First Summer Session
Designed to provide business students with hands-on experience using financial software to solve real problems encountered by modern business. The course covers myriad computer skills sought by finance employers, including portfolio and asset valuation software, programming languages used to solve special problems, financial spreadsheet analysis, and data collection analysis on financial networks (such as Bloomberg and sites on the Internet). Prerequisite: FIN 302, 303, 320.

FIN 410. Financial Institutions and Markets  
3 credits
Offered Fall and Spring Semesters
A comprehensive overview of the business organizations, markets, and financial instruments that make up the U.S. financial system. Topics include the costs and benefits of financial intermediation, the monetary and regulatory system, and the operating characteristics of and distinctions between depository and contractual financial intermediaries. Prerequisite: FIN 302, 303, 320.
FIN 411. Commercial Bank Management
3 credits
Offered Fall and Spring Semesters
A study of the management decisions facing commercial banking institutions in today's global financial markets. Special emphasis on evaluating the financial condition of an intermediary, the mechanics of controlling interest rate risk, the pricing and scope of the credit-granting decision, and the effect of regulation upon the management of financial institutions. Prerequisite: FIN 302, 303, 320.

FIN 421. Investment Portfolio Management
3 credits
Offered Fall and Spring Semesters
The techniques of institutional and individual portfolio management. The basis of computing investment mix, yield, tax advantages, disadvantages, risk evaluation, and investment selection are discussed. Prerequisite: FIN 302, 303, 320.

FIN 422. Speculative Markets and Derivatives
3 credits
Offered Fall and Spring Semesters
The study of options on stocks, financial futures, commodity futures, and options on futures. Applications of hedging and speculative strategies for risk-averse, profit-maximizing investors are also covered. Prerequisite: FIN 302, 303, 320.

FIN 425. Business and Security Valuation
3 credits
Offered Fall Semester
Applications of corporate finance theory to the problem of valuing public and non-public companies. Mergers, acquisitions, venture capital problems, and the strengths and weaknesses of traditional security valuation methods are addressed in detail. Financial spreadsheet programs and networks are an integral part of the course. Prerequisite: FIN 302, 303, 320.

FIN 431. International Financial Management
3 credits
Offered Fall and Spring Semesters
The financial management and maintenance of international enterprises. Short and long-term capital sources, investment decisions in today's changing foreign exchange conditions, management of accounting, transactions, and competitive exposure coverage are discussed. Taxation impacts and repatriation techniques as well as lectures and cases with emphasis on cases. Prerequisite: FIN 302, 303, 320.

FIN 476. Pure Risk Management
3 credits
Offered Spring Semester
The nature and objectives of corporate and personal risk management. Emphasis is placed on the recognition, evaluation, and treatment of the pure risks to which businesses and individuals are exposed. Prerequisite: FIN 302, 303, 320.

FIN 499. Special Topics in Finance
3 credits
Offered By Announcement only
Prerequisite: FIN 302, 320.

FIN 590. Internship
1 credit
Offered By Announcement only
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Note that FIN 590 is an elective and not for credit towards the major. Prerequisite: FIN 303, 320, and permission of Department Chairman. Requires departmental approval. Note: does not count as credit towards major.

FIN 599. Directed Study
3 credits
Offered By Announcement only
Individually supervised research projects in selected finance topics. Approval of the Chairperson and advisor is required prior to registration. Prerequisite: FIN 302, 320. Requires departmental approval.
Management

MGT 302. Human Resource Management  
3 credits  
Offered Fall and Spring Semesters
Theory and practice of modern personnel management related to the other management functions in the conduct of the enterprise. Attention is focused on the needs of the line executive as well as those intending to pursue a staff career. Prerequisite: Junior standing.

MGT 303. Operations Management  
3 credits  
Offered Fall and Spring Semesters
Problems and methods of planning the efficient utilization of capital, labor, equipment, and materials. Sales forecasting, production planning, production control, scheduling, routing, dispatching, expediting, materials planning, inventory control, capital budgets, and costing are discussed. The application of quantitative techniques in problem solving and decision making are included as well as case problems. Prerequisite: MAS 201.

MGT 304. Organizational Behavior  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
First professional course in management. Concepts of organization, motivation, leadership, dynamics of the group, personality, organizational development strategies, and other behavioral aspects involved in the effective management of an organization are discussed. Prerequisite: Junior standing.

MGT 307. Advanced Organizational Behavior  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Continuation of MGT 304—primarily for, but not limited to, BMO majors. Through case analysis and other relevant exercises, theories are applied to specific situations in organizational settings. Prerequisite: MGT 304.

MGT 308. Training and Development  
3 credits  
Offered Fall and Spring Semesters
An examination of key issues in designing training and development programs. Topics include organizational needs analysis, training design and implementation, evaluation techniques, and understanding of how such programs interact with other human resource functions. Prerequisite: MGT 302 and HRM/BMO major.

MGT 349. International Business  
3 credits  
Offered Fall and Spring Semesters
An introduction to the theory and institutions relevant to the conduct of business internationally. Includes an overview of current business patterns and their historical antecedents; social systems in countries as they affect the conduct of business from one country to another; basic assessment of international activities that fall within functional disciplines; and analysis of alternative ways in which international business may evolve in the future. Prerequisite: Junior standing.

MGT 353. The Organization and Operation of the Small Business  
3 credits  
Offered Fall and Spring Semesters
The opportunities for the organization and operation of the small business. Organization, location, financial planning, records, unit costs, merchandising, credits, and personnel are discussed. Opportunities in various other fields are also considered. Prerequisite: Junior standing & ENT/BMO major.

MGT 359. Comparative Management  
3 credits  
Offered By Announcement only
Analysis of professional management as affected by the cultural environments in which it operates in major industrial nations. The problems of trans cultural managers in multinational structures is examined.
MGT 360. **Effective Leadership**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

This course covers the key theories, models, and frameworks about the effective leadership of people in organizations. A multimedia approach is taken, using readings, films, lecture, discussion, and case analyses. The emphasis is on building a sound grasp of good practice, and on developing the ability to apply such knowledge to everyday leadership situations. Prerequisite: MGT 304 and major in Department of Management (MGT).

MGT 401. **Strategic Management**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

An integrative approach to strategy formulation and implementation, from a domestic and international perspective, is the focus of this core capstone course. All the primary areas of business are emphasized using cases and readings. Course is required of all graduating seniors in Business. Prerequisite: Graduating semester Business seniors only.

MGT 422. **Leading Teams**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

The objectives of this course are to develop interpersonal communication and conflict management skills necessary to work in teams and exercise leadership in teams. Topics include team development, decision making, and managing conflict. Prerequisite: MGT 304.

MGT 428. **Wage and Salary Administration**  
3 credits  
*Offered Fall and Spring Semesters*

Theory techniques and procedures of Job Evaluation and Wage Incentive as a basis for managerial procedures. The development and evaluation of alternative means of determining the relative worth of jobs, and the conversion of data to actual base rates is discussed. The design, evaluation, and administration of wage incentive plans through the application of work measurement time values to jobs involving bonus, piece work, or time-saved provisions is also included. Prerequisite: MGT 302 and HRM/BMO major.

MGT 459. **International and Multinational Management**  
3 credits  
*Offered Fall and Spring Semesters*

Foreign environment for overseas operations with a survey involving economics, political, and social constraints. The effects of overseas investments on foreign economies with emphasis on the emerging managerial structures is included. Prerequisite: Senior standing.

MGT 480. **Organizational Development and Change**  
3 credits  
*Offered Fall and Spring Semesters*

Course is intended for students who are interested in learning about how to manage, plan, and implement large-scale change efforts within organizations. Part of the course is devoted to organizational analysis techniques and the remainder addresses behavioral intervention strategies (including survey feedback, technostructural interventions, and team building). Prerequisite: MGT 302, 304, and HRM/BMO major.

MGT 498. **Selected Topics**  
1-6 credits  
*Offered Fall and Spring Semesters and First Summer Session*

Topics in selected areas of specialization.
MGT 538. Labor-Management Relations  
3 credits  
Offered Spring Semester  
Legal and institutional framework of labor relations both in the United States and globally. Topics include labor law, collective bargaining, contract administration, arbitration, and NLRB regulation. Additional emphasis is placed on dispute resolution, grievance machinery, and other methods of alternative dispute resolution. Prerequisite: Undergraduate: MGT 302 + junior standing. Graduate: MGT 602.

MGT 540. Behavioral Aspects of Productivity  
3 credits  
Offered By Announcement only  
Productivity management impacts organizational strategy, efficiency, quality, and survival. Course examines these varied impacts and discusses the managerial issues related to productivity measurement, organizational values, incentives, gainsharing, motivation, organizational change, gainsharing, motivation, organizational change, and organizational politics. Course is taught from behavioral and systems theory viewpoints, focusing on how behavioral change impacts system productivity. Course is multidisciplinary and supplemented with examples of corporate applications.

MGT 545. Self-Assessment and Career Development  
3 credits  
Offered By Announcement only  
Course provides a framework for individuals facing the complex process of making career decisions. Emphasis is placed on self-assessment to help students better understand their career motivations. Additional topics include job searches, interviewing, analyzing, choosing job offers, managing the first year on the job, developmental relationships such as mentoring, the early career experience, and managing a career over time. Prerequisite: MGT 304 + senior standing.

MGT 550. MGT Internship  
1 credit  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Cannot be used toward major requirements. Prerequisite: Major/specialization in MGT Department, minimum 3.0 GPA, and Department Chair approval prior to registration.

MGT 553. Management Consulting  
3 credits  
Offered Spring Semester  
Students review techniques, methods, and organizational forms of management consultants. Emphasis on small business problems, particularly start-ups, is provided through preparation of consulting reports on written cases, guest speakers, and actual business firms or start-ups. Prerequisite: MGT 353, 554, and ENT major.

MGT 554. Starting New Ventures  
3 credits  
Offered Fall and Spring Semesters  
The basics of starting a business for aspiring entrepreneurs. Topics include sources of capital, market choices, division of the equity pie, choice of distribution channels, choosing an accountant and a legal advisor, preparation of a business plan, and product design. Teams of students develop business plans to start new enterprises. Prerequisite: MGT 353 and ENT major.

MGT 598. Selected Topics  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Topics in selected areas of specialization.
MGT 599. Directed Study  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individually supervised research projects in selected fields. Approval of supervising professor as to topic and evaluation of project required at time of registration. Only open to undergraduate students. Prerequisite: Senior standing and major in the MGT Department.

Management Science

MAS 105. Quantitative Methods in Business I  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
This course provides a background in algebra, linear equations, matrices, quadratic, exponential, and logarithmic functions appropriate for the successful understanding, interpretation, and use of these concepts and their application to business and economics within the Business School curriculum and in career endeavors. The course also provides an introduction to the mathematics of finance, interest rates, discounting of future returns, and linear programming. Prerequisite: High School Algebra.

MAS 110. Quantitative Applications in Business  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Review of algebra emphasizing its application to supply and demand functions, market equilibrium, graphical linear programming, and Gauss-Jordan Elimination. Differential calculus emphasizing its applications to marginal cost and revenue functions, profit maximization, taxation in competitive markets, and elasticity of demand are discussed. The application of integral calculus to total cost and profit of demand, to total cost and profit functions, consumer’s and producer’s surplus, computation of present value, and constrained optimization using partial differentiation are also included. Prerequisite: MAS 105 or SAT Math requirement.

MAS 201. Introduction to Business Statistics  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Data analysis and presentation, descriptive statistical measures, probability, sampling, statistical inference, hypothesis testing, correlation, and simple linear regression are discussed. Utilization of microcomputer statistical packages is also included. Prerequisite: MAS 110.

3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Goodness of fit tests, analysis of variance, simple linear regression, correlation analysis, multiple regression, time series, forecasting, statistical methods of quality, and Bayesian decision analysis are discussed. Utilization of microcomputer statistical packages is also included. Prerequisite: MAS 201.

MAS 251. Statistical and Operational Models for Business  
6 credits  
Offered By Announcement only  
Six topics from statistics and management science are integrated into a cohesive flow including exploratory data analysis, probability and decision theory, inferential analysis, forecasting, mathematical programming, and simulation. This course fulfills requirements of both MAS 201 (Introduction to Business Statistics) and MAS 302 (Operations Management Modeling). Prerequisite: MAS 110
MAS 302. Operations Management Modeling
3 credits
Offered By Announcement only
Formulation and solution of quantitative models for business decisions. Applications to operations, and production management are examined. Topics include decision theory, linear programming, project scheduling, simulation, and inventory management. Selected cases and computer assisted solutions are included. Prerequisite: MAS 110 and 201.

MAS 311. Applied Probability and Statistics
3 credits
Offered By Announcement only
Descriptive statistics, basic probability, distribution theory, point and interval estimation, testing hypotheses, simple linear regression, correlation, and quality control charts are discussed. Examples are drawn from various disciplines. Lecture, 3 hours. Prerequisite or corequisite: MTH 112 or 132.

MAS 312. Statistical Methods and Quality Control
3 credits
Offered By Announcement only
Analysis of variance, multiple regression, and statistical quality control methodology, including reliability are discussed. Prerequisite: MAS/IEN 311 or equivalent.

MAS 441. Deterministic Models in Operations Research
3 credits
Offered Fall Semester
Introduction to deterministic mathematical models with applications to operational problems. Topics include the methodology of operations research, mathematical programming, PERT/CPM, network flow-theory, and dynamic programming. Lecture, 3 hours. Prerequisite: MTH 210.

MAS 442. Stochastic Models in Operations Research
3 credits
Offered Spring Semester
Introduction to probabilistic models and their applications. Topics include inventory theory, stochastic processes (queuing, Markov chains), and computer simulation. Lecture, 3 hours. Prerequisite: MAS 311 or equivalent.

MAS 452. Systems Analysis Methodology and Applications
3 credits
Offered Spring Semester
Solution of problems from the general systems point of view. Case studies are used with emphasis on report writing. The preparation of a project proposal and the conduct of the proposed study are also required. Prerequisite: Senior standing or permission of instructor.

MAS 499. Directed Study
1-3 credits
Offered Fall and Spring Semesters and First Summer Session
Independent investigation of special problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

MAS 540. Quantitative Foundations for Management Science
3 credits
Offered By Announcement only
A review of basic quantitative concepts for management. Topics include: linear and nonlinear functions, systems of equations, linear programs, financial applications, set theory, probability, differentiation, and integration.

MAS 547. Computer Simulation Systems
3 credits
Offered Fall Semester
Computer simulation and development of simulation models; applications of discrete and continuous system simulation languages to systems studies. Lecture, 3 hours. Prerequisite: IEN 124 and MAS 311 or equivalents.
MAS 548. System Dynamics Modeling and Analysis  
3 credits  
Offered Spring Semester 
The course involves building and analyzing simulation models of social, managerial, economic, physical, and biological systems. It focuses on modeling dynamically complex systems, strategic issues and human decision-making; and investigates case studies of successful applications in growth strategy, management of technology, operations, project management, and others. Prerequisite: MTH 110-112 (or 131-132) and MAS 311 or equivalents.

MAS 550. Management Science Internship  
1-3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Prerequisite: Permission of department chairman.

MAS 595. Topics in Management Science  
1-3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Topics in selected areas of specialization.

MAS 596. Topics in Management Science  
1-3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Topics in selected areas of specialization.

Marketing

MKT 301. Marketing Foundations  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Understanding and satisfying consumer needs through product planning, pricing, promotion, and distribution. Students identify and analyze marketing problems. Discovery and application of marketing skills are developed by marketing planning assignments, computer simulation, and case analysis. Prerequisite: Upper-level status.

MKT 302. Marketing Research and Market Analysis  
3 credits  
Offered Fall and Spring Semesters  
Examination of the process, role, and function of marketing research, including research problem formation, research methods and procedures, data acquisition, sampling theory and practice, data analysis, presentation of results, ethical issues, and application for each of the above. Prerequisite: MAS 201 and MKT 301.

MKT 303. Marketing Management  
3 credits  
Offered Fall and Spring Semesters  
Development and implementation of marketing policies; coordination and direction of major marketing activities such as sales force management, advertising, sales promotion, and marketing research; marketing responsibilities of pricing, products, channel selection, budgets, and cost analysis. Prerequisite: MKT 301, FIN 302 and completion of or currently enrolled in MKT 302.

MKT 310. Consumer Behavior and Marketing Strategy  
3 credits  
Offered Fall and Spring Semesters  
The study of behavioral science research findings, principles, and theories, especially those from psychology and sociology, as they relate to the determinants of consumer buying behavior. The case approach is utilized to stimulate the development of creative marketing strategy. Prerequisite: MKT 301.

MKT 320. Retailing  
3 credits  
Offered Fall and Spring Semesters  
Retail store management, location, buying, merchandise control, policies, services, pricing, expenses, profits, training and supervision of retail sales force, and administrative problems are discussed. Prerequisite: MKT 301.
MKT 340. Professional Selling  
3 credits  
Offered Fall and Spring Semesters  
Nature of the professional selling function and its relationship and contribution to the marketing strategy of organizations. Special emphasis is placed on broadly applicable principles and effective personal communication skills during the sales process. Prerequisite: MKT 301 or permission of instructor.

MKT 360. International Marketing  
3 credits  
Offered Fall and Spring Semesters  
The major current factors affecting international marketing. Course is designed to acquaint students with the growing importance of world marketing in the U.S. and the strategic issues involved. Prerequisite: MKT 301.

MKT 386. Advertising Management  
3 credits  
Offered Fall and Spring Semesters  
In this project-based course, students learn about the components involved in researching, planning, creating, and executing an advertising plan developed by an agency. The class gives students a better understanding of how advertising can be effectively used in a marketing strategy. Students also learn how advertising both influences and is influenced by cultural trends. Implications of this to both marketers and society as a whole is discussed. Prerequisite: MKT 302 or permission of the instructor.

MKT 401. International Business Analysis  
3 credits  
Offered Spring Semester  
Inter-disciplinary course in the international aspects of accounting, finance, marketing, and management. Students work on an integrative case project analyzing the financial, managerial, and marketing issues in the acquisition of a foreign firm by an American firm and produce a marketing plan, pro-forma financial statements, and an organizational plan. Prerequisite: FIN 330, MKT 360 and senior standing.

MKT 469. International Marketing Management  
3 credits  
Offered Fall and Spring Semesters  
Analysis by case study of how firms operate multi-nationally. Attendance is mandatory. Prerequisite: MKT 360 or permission of instructor.

MKT 550. Marketing Internship  
1 credit  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student is individually assigned to an operating business firm or other organization to gain insight into management practice in the area of their career interest. The internship cannot be used to satisfy course requirements for marketing majors and periodic reports and conferences are required. Prerequisite: Declared Marketing or IFM major, a minimum of 3.0 GPA and permission of department chairman. May be taken only for credit/no credit.

MKT 551. Marketing Internship  
1 credit  
The student is individually assigned to an operating business firm or other organization to gain insight into management practice in the area of their career interest. The internship cannot be used to satisfy course requirements for marketing majors and periodic reports and conferences are required. Prerequisite: Declared Marketing or IFM major, a minimum of 3.0 GPA and permission of department chairman.

MKT 595. Topics in Marketing  
1- 3 credits  
Offered By Announcement only  
Topics in selected areas of Marketing.
MKT 596. **Topics in Marketing**
1-3 credits
Topics in selected areas of Marketing.
Offered By Announcement only

MKT 597. **Topics in Marketing**
1-3 credits
Topics in selected areas of Marketing.
Offered By Announcement only

MKT 598. **Topics in Marketing**
1-3 credits
Topics in selected areas of Marketing.
Offered By Announcement only

MKT 599. **Directed Study**
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individually supervised readings or research projects. Restricted to students with superior academic records. Approval should be obtained prior to day of registration. Prerequisite: Senior standing and approval of supervising professor and department chairman.

**Political Science**

POL 210. **Scope and Methods of Political Science**
3 credits
This course introduces students to the scientific study of politics. Students will develop an understanding of the scientific method and its application to political science. To do so, this course surveys the methodologies used by researchers to draw descriptive and casual inference about the political world. In addition, students will develop an understanding of research design and learn how to apply scientific principles in a variety of research contexts. Methods introduced include: measurement and conceptualization, ethnography, experimentation, the case study, and survey research. Students will become familiar with basic techniques for performing and interpreting scientific tests. Finally, students will analyze data that require them to apply the concepts taught in the course. A central goal of this course is to provide students the basic skills necessary to make them consumers of political science research enable them to critically read journal articles and texts.

POL 211. **Introduction to American National Government**
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Examination of the principles, structures, and processes of the national government of the United States. Frequent comparisons made with other countries.

POL 212. **Introduction to World Politics**
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Comparative analysis of global political and economic systems; introduction to major theories of governance. Using six empirical cases, explores issues of democracy and authoritarianism, state-market relations, and system transformation. Prerequisite: POL 211.

POL 213. **Government and Society**
3 credits
Offered By Announcement only
Examination of such key issues as the role of business in society, the nature of corporate responsibility, business ethics practices, and the interactive roles of government and business in a global society. Not for major or minor credit. Prerequisite: POL 211.
POL 305. Introduction to Political Theory
3 credits
Survey and analysis of political theories from Plato to the present. Topics include competing ideas on the organization of human communities, morality, and justice. Illumination of traditional political thought with more recent insights and concepts that question previous theories on the nature of the self, the scope of rationality, and social organization. Prerequisite: POL 211 and 212.

POL 306. Positive Political Theory
3 credits
Introduction to positive political theory as a study of politics using quantitative methods such as game theory, laboratory experiments, and computer simulation. The political agents involved in a given interaction are modeled as rational players guided by self-interest whose behavior can be formally explained or predicted.

POL 314. Legislative Processes
3 credits
Offered Spring Semester
Examination and analysis of the United States Congress. Emphasis on internal structure and operations, congressional roles and procedures, party leadership, external influences on congress, and incentives for congressional behavior. Prerequisite: POL 211, 212.

POL 315. American Presidency
3 credits
Offered By Announcement only
Historic development of presidential power; sources of the powers of the modern presidency, institutional decision-making; how and to what degree presidential power should be controlled. Prerequisite: POL 211, 212.

POL 321. Public Policy and Administration
3 credits
Offered Fall and Spring Semesters
Analysis of justification for government policies, and specifically of situations where private sector institutions fail to achieve the socially optimal level of a good or service. Identifies the general type of government policies and which of these policies are appropriate for the various problems. Explores the likelihood that policies will be successful and the way the political process shapes the final choice and implementation of government policies. Prerequisite: POL 211, 212.

POL 322. Environmental Politics and Policy
3 credits
Offered Fall Semester and First Summer Session
Development of, and current issues in, environmental politics and policy. Topics include public policy development, regulation, risk assessment and management, growth environmental planning. Prerequisite: POL 211, 212.

POL 332. Mass Media and Politics
3 credits
Offered By Announcement only
Role of media in American politics. Historical development of the media from newspapers, through radio, to television and new media such as the internet. Changing norms of news media reportage. The growth of political advertising both during and between elections; the effects of these developments on American government and on the public. Prerequisite: POL 211 and 212.

POL 334. Campaigns
3 credits
Offered By Announcement only
Students learn about political campaigns by becoming involved in an active campaign and studying the academic literature about elections and campaigns. Topics are media, campaign organization, voters, issues, political parties, elections, and the five elements of every campaign. Prerequisite: POL 211 and 212.
POL 335. **Local Government**  
*3 credits*  
Offered By Announcement only  
Examination of city and county governments and politics. Focuses on structures, leadership, taxing and spending, the influence of state and federal governments, and “hot-button” issues of importance to South Florida communities. Prerequisite: POL 211 and 212.

POL 336. **Politics of Crime**  
*3 credits*  
Offered By Announcement only  
Exploration of the relationship between crime and politics, drawing on literatures in law, American history and political science, as well as the seminal Supreme Court criminal law decisions of the last half century. Key themes are: the role of party politics in the shaping of our nation’s crime policy; the role of race in criminal law enforcement; and the role of the Supreme Court in fashioning due process safeguards for criminal defendants. Prerequisite: POL 211 and 212.

POL 337. **International Law and Organizations**  
*3 credits*  
Offered By Announcement only  
This course focuses on the interaction of states through various legal regimes. We will consider the role of international law and organizations in politics, and the political implications of both criminal and civil international law from the perspective of the state, the individual, and non-governmental actors. Readings, lectures, class discussions, and examinations will familiarize the students with the parameters and limitations as well as the policy and practice of international law. Prerequisite: POL 211 and 212.

POL 342. **State and Local Government and Politics**  
*3 credits*  
Offered Spring Semester  
State constitutions, political parties, legislatures, executives, court systems, administrative systems and services, financial problems, city and county governments, local-state, federal-state and interstate relations. Special emphasis on governments in Florida. Prerequisite: POL 211 and 212.

POL 343. **Government in Metropolitan Areas**  
*3 credits*  
Offered By Announcement only  
Political and administrative processes of governmental units within metropolitan areas; interrelations of these units and the evolution of metropolitan processes and forms. Prerequisite: POL 211 and 212.

POL 345. **The United States and Asia**  
*3 credits*  
Offered By Announcement only  
Political, economic, and security aspects of America’s relations with the Asian-Pacific area. Trade and alliance relationships. Actions and interactions of Asian states, their alignments with each other; the impact of these alignments on their relationships with the United States and in the global balance of power. Prerequisite: POL 211, 212 or HIS 121 or 122 or permission of instructor.

POL 346. **U.S.-Latin American Relations**  
*3 credits*  
Offered Fall Semester  
Systematic survey of U.S.-Latin American relations highlighting contending paradigms in the study of hemispheric relations. Examines issues in East-West and North-South relations and political economy of Brazil, Mexico, and Argentina. Considers alternative U.S. foreign policies. Prerequisite: POL211, 212.

POL 347. **American Foreign Policy**  
*3 credits*  
Offered By Announcement only  
Examination and analysis of American diplomacy with emphasis on the post-cold war period. Introduces the constitutional framework within which foreign policy is formulated and the evolution of policies in response to changes in the external environment. Prerequisite: POL 211 and 212.
POL 348. United States Relations with the Middle East
3 credits
Evolution of American relations with the Middle East. Analysis of the motivations and calculations, including domestic and external sources of policy-making and implementation. Emphasis on post-World War II period, with particular attention to the current administration. Prerequisite: POL 211, 212.

POL 349. U. S. Defense Policy
3 credits
Offered Spring Semester
Examination of key problems of national security in the post-Cold War environment. Emphasis on the structure and functioning of the US defense establishment and its interactions with its most probable adversaries and allies. Consideration of the constraints on, and options open to, policy planners, and with the institutional elements of the decision making process. Prerequisite: POL 211, 212.

POL 351. Public Opinion
3 credits
Offered Fall Semester
Political functions of public opinion; opinion dynamics in the U.S.A.; quantitative analysis of elements in opinion change; principles of political control via mass media in the U.S.A. Prerequisite: POL 211, 212.

POL 352. Political Parties and Pressure Groups
3 credits
Offered By Announcement only
Analysis of political organizations and electoral processes in the United States: their history, current status, and present trends. Consideration of the organization, control, and finances of political parties and pressure groups, their characteristic practices, and their relationship to political democracy. Prerequisite: POL 211, 212.

POL 372. Introduction to Criminal Justice
3 credits
Offered Spring Semester
The criminal justice process as a means of achieving social control. Current policies, practices and problems of crime control. Prerequisite: POL 211, 212.

POL 373. Constitutional Law I
3 credits
Offered Fall Semester
A study of the development of the principles of American Constitutional Law, with a course focus upon those constitutional principles developed from the original document. Areas of study include judicial review, separation of powers, the Commerce Clause, the Contract Clause, and the Due Process Clauses. Prerequisite: POL 211, 212; recommended prerequisites for those considering electing POL 374 and 377.

POL 374. Constitutional Law II
3 credits
Offered Spring Semester
This course is a continuation of Constitutional LAW I. The curriculum covers the twenty-seven Amendments to the Constitution with a primary focus upon speech, assembly, religion, right to counsel, self-incrimination and unreasonable searches. Prerequisite: POL 212, 212; POL 373 is recommended.

POL 375. Supreme Court Issues
3 credits
Offered Spring Semester
This course identifies approximately sixteen currently pending cases before the U.S. Supreme Court, each selected for their constitutional merit and social significance. Working in pairs, students are taught to advocate the constitutional positions of a fixed number of litigants in modified briefs and in oral argument before an appellate court. Prerequisite: POL 211, 212; recommended prerequisites: POL 373, 374 and 377. Permission of instructor.
POL 376. Discrimination and the Law
3 credits
Offered By Announcement only
This course addresses the history of U.S. governmental and private discrimination to such identifiable groups as gender, race, national origin, age, sexual preference, etc. Prerequisite: POL 211 and 212; prerequisite or corequisite: POL 374.

POL 377. Constitutional Law III
3 credits
Offered Fall Semester
This course continues and concludes the constitutional studies commenced in Constitutional Law I (POL 373) and Constitutional Law II (POL 374). Constitutional Law III focuses upon the case law history and current status of the following Constitutional Doctrines: (a) cruel and unusual punishment, (b) the constitutional rights of privacy, (c) the abortion decisions, (d) voting rights, (e) the Constitutional history of discrimination based upon race, gender, wealth, health, and national origin. Prerequisite: POL 211 and 212; recommended prerequisites: POL 373 and 374.

POL 380. Comparative Political Analysis
3 credits
Offered Fall Semester
An examination of the political and economic development of a selection of countries (Britain, France, Germany, Russia, Japan) over the last three centuries. An introduction to the techniques of comparative political analysis by applying three major social scientific arguments to the question: why some countries develop dictatorships and others develop democracies? Prerequisite: POL 211, 212.

POL 381. European Governments and Politics
3 credits
Offered Spring Semester
Examination of post-war political, socio-economic and constitutional developments in selected European countries, with special emphasis on comparison of the United Kingdom, Germany and France. Focuses on party and electoral systems, systems of political decision-making, political parties, economic structures and strategies, and welfare state politics. Prerequisite: POL 211, 212.

POL 382. Government and Politics of the Federal Republic of Germany
3 credits
Offered By Announcement only
Historical introduction to Germany from 1814 to 1945; analysis of culture, society, political system and economy of the two Germanies; unification and contemporary issues. Germany and European integration. Prerequisite: POL 211, 212.

POL 383. Government and Politics of the United Kingdom
3 credits
Offered By Announcement only
British “constitutionalism,” central governmental institutions, party politics and the “welfare state”. Prerequisite: POL 211, 212.

POL 384. Soviet and Russian Politics
3 credits
Offered Fall Semester
Explores political, economic, and social developments in the Soviet Union and Russia from pre-1917 to the present day; analysis of the dissolution of the USSR, struggles over economic reform in post-Soviet Russia, and historical sources of contemporary problems. Critical examination of different models and interpretations of the Soviet experience. Prerequisite: POL 211 and 212.

POL 385. Politics and Society in Latin America
3 credits
Offered By Announcement only
Introduction to the politics of selected Latin American countries focusing on the roles of nationalism and populism, external dependency, patterns of socioeconomic change, and obstacles to the consolidation of democratic regimes. Prerequisite: POL 211, 212.
POL 387. **Politics of the Middle East**  
3 credits  
*Offered Fall Semester*  
Comparative analysis of the political development of the Middle East in terms of nations and as a region. Particular stress is on the relationships within the region and with other regions of the world. Prerequisite: POL 211 and 212.

POL 388. **Politics of Israel**  
3 credits  
*Offered By Announcement only*  
Comparative analysis of the political development of the state of Israel from the Yishuv period to the current pluralistic society. Particular stress is on the unique status of a predominantly Jewish state in the midst of an Arab-Islamic regional subsystem of political relationships. Prerequisite: POL 211 and 212.

POL 389. **Political History of Eastern Europe**  
3 credits  
Comparative examination of political history of Eastern European countries in the 20th century: from World War I to the present day. The course covers political development of two dozen countries in the region in order to establish general patterns in the evolution of political institutions in each country.

POL 391. **Introduction to International Relations**  
3 credits  
*Offered Fall and Spring Semesters and Second Summer Session*  
Introduction to the theory and practice of international relations. Development of the modern state system; diplomacy and negotiation; balance of power considerations. Evaluation of past and present experiences of international cooperation through various multinational organizations; international law. Introduction to the principles of international political economy; “high” versus “low” and “hard” versus “soft” politics. “North”-“South” divisions. Class discussion of topics of current relevance to the international community. Prerequisite: POL 211, 212.

POL 392. **International Terrorism**  
3 credits  
*Offered Spring Semester*  
Study of phenomenon of low-intensity warfare known as international terrorism in all its variations: state, state-sponsored, state-supported, domestic revolutionary terrorism and counterterrorism. Also examines governmental policies of countering terrorism. Prerequisite: POL 211, 212.

POL 397. **Policy for Urban Systems**  
3 credits  
*Offered By Announcement only*  
Interdisciplinary workshops will treat different policy issues with a view towards developing a theory of deliberate social change. The scenario will include the stance and role of the change agent and the institutional forms involved in changing urban settings. Prerequisite: POL 211, 212.

POL 501. **Budget and Financial Management and Administration**  
3 credits  
Role of the budget in shaping public policy; managing public revenues; budgetary theory, politics, and fiscal management. Examples from state, municipal and federal governments. Prerequisite: Advanced undergraduate or graduate standing and permission of instructor.

POL 510. **Political Analysis**  
3 credits  
Introduction to the tools used to investigate empirical questions relevant to politics, policy and public administration. Students apply statistical concepts to contemporary social phenomena. Examines the impact of minority-majority redistricting, the fairness of the butterfly ballot, and the sources of political realignment. Prerequisite: POL 211 and 212 or graduate standing.
POL 512. **Advanced Political Analysis**  
*3 credits*  
This course teaches students how to do social science research using the applied techniques of statistics and case study analysis while exposing them to research in the leading sub-fields of political science. Students will produce an original paper that evaluates an academic question using empirical social science evidence. Prerequisite: POL 210, 510, 380, or permission of instructor.

POL 513. **Models of Politics**  
*3 credits*  
Hands-on examination of the process by which quantitative and qualitative models are constructed in political science. The course focuses on the creative aspect of model building and diverse forms of theory construction. Prerequisite: POL 211, 212.

POL 520. **Internship**  
*3 credits*  
Offered By Announcement only  
Provides advanced political science majors with an opportunity to participate in a structured, supervised internship. 25-35 page research paper required. Prerequisite: Junior or senior standing; open to political science majors only, with minimum GPA of 3.5 in the major, 3.3 overall; permission of supervising instructor and department chair.

POL 521. **Public Affairs Internship**  
*3 credits*  
Offered Spring Semester  
Opportunity for the advanced student specializing in public administration to participate in an administrative capacity in an agency of state or local government. Periodic conferences with adviser and paper required. Prerequisite: Permission of Department Chairman.

POL 522. **Introduction to Graduate Public Administration**  
*3 credits*  
Offered Fall and Spring Semesters  
Introduction to concepts, issues, problems, theories and process in the field of public administration and/or public management. Prerequisite: Advanced undergraduate or graduate standing and permission of instructor.

POL 523. **Problems in Public and Non-Profit Management**  
*3 credits*  
Offered By Announcement only  
Nature of the power vested in administrative bodies and problems involved in management procedures. Special emphasis on local or non-profit administration. Prerequisite: Advanced undergraduate or graduate standing. Permission of instructor.

POL 525. **Comparative Public Policy and Administration**  
*3 credits*  
Offered By Announcement only  
Comparison and analysis of the organizational and managerial policy problems of developed and developing nations. The administrative process will be considered within the institutional and cultural framework of each nation. Case studies will be used to focus on transition from traditional to modern techniques of public management. Prerequisite: Permission of instructor.

POL 528. **Advanced Seminar on Electoral Behavior**  
*3 credits*  
This seminar examines the opinions that Americans have and how those opinions are expressed through participation in elections. At the end of the semester we will also examine other forms of political participation (e.g., interest groups). Prerequisite: POL 211.
POL 531. Global Environmental Politics
3 credits
Offered By Announcement only
Examination of the environment within the context of economic globalization. Contrasts the international trading regime and those regimes designed to protect the environment, with specific attention to the issues of global warming and bio-diversity. Prerequisite: POL 211 and 212.

POL 533. Courts and Controversy
3 credits
Offered By Announcement only
Course places the students in the role of advocate, justice, or court observer for the purposes of arguing and deciding current or recent Supreme Court cases. Prerequisite: POL 211 and 212. POL 373 and 374 strongly suggested.

POL 534. War Crimes Tribunals
3 credits
Offered By Announcement only
Focus on various legal regimes utilized to prosecute grave human rights violations. The trials are considered in a comparative framework. Trials and tribunals systems studied will include the historical antecedents to Nuremburg, the post WWII trials, single state tribunals including those in South Africa and Argentina, and international structures such as the ICTR, ICTY, and ICC. Will also consider the role of war crimes tribunals in modern wars such as in Iraq and Afghanistan and in response to terrorism, and the political role of these legal regimes as well as the implications of their institutional designs. Readings, lectures, class discussions, and examinations will familiarize the students with the parameters and limitations as well as the policies and practice of war crimes tribunals and human rights law. Prerequisite: POL 211 and 212 or graduate standing.

POL 535. Comparative Legal Systems
3 credits
Offered Fall and Spring Semesters
Considers the institutional and political roles of Courts from a comparative perspective. With a focus on judicial independence and judicial review, will consider the juridical systems of a variety of countries and regions including the US, the EU, Germany, France, Great Britain, Chile, Argentina, Russia, The Asian-Pacific Rim, South Africa, Israel, Central America and the Middle East. Prerequisite: POL 211 and 212 or graduate standing.

3 credits
This seminar will explore the politics and policies of healthcare in the United States. Our examination of the current crisis in cost and coverage will draw on experience from the debates on comprehensive and incremental reform over the past decade. In addition, we will explore the politics and policies of other health and science issues. Students will be expected to attend every class and be actively involved in class discussions. There will be two examinations, one at mid-term and a final based on readings and course discussions.

POL 537. The Law and Politics of Sports
3 credits
Offered By Announcement only
Focuses on the political and policy issues that are endemic in the world of sport. Considers the role of sports in law and politics, and the implications of the politics and policies present in the sports industry from the perspective of the individual, local government, national policymakers, the international community, and non-governmental actors. Readings, lectures, class discussions, and examinations will familiarize the students with the politics, policy and practice of the law of sports. Prerequisite: POL 211 and 212.
POL 540. Problems in American Foreign Policy
3 credits
Offered By Announcement only
Development and analysis of American foreign policies since World War II. Focus on origins of the cold war; U.S. relations with aligned and non-aligned states; the U.S. and the United Nations. Analysis of integrative and doctrinal American policies of strategic security, economic, and information/propaganda. Prerequisite: POL 211 and 212 or graduate standing.

POL 541. Philosophy of Law
3 credits
Offered By Announcement only
Case-based study of jurisprudence designed to illuminate and explain philosophies of law. Examination of theories of free expression; bioethical matters; theories of punishment and legal responsibility; and the placement of religious discourses in liberal systems of law. Special attention to cases involving fundamental rights and liberties; the role of the individual and the state in civil society; and the capacities of individual to be legally competent in contemporary systems of law. Prerequisite: POL 211 and 212 or graduate standing.

POL 542. American Constitutional Development II
3 credits
Offered By Announcement only
This seminar examines the judicial role in protecting civil rights and liberties under the Constitution, with principal attention to the Supreme Court’s interpretation of due process of law, the right of privacy, First Amendment freedoms, and equal protection. Prerequisite: POL 211 and 212.

POL 543. Urban Politics
3 credits
Offered Fall Semester
Examination of sources of political power in urban areas and how they influence the policies pursued in those areas. Analysis of the role of economic power, protest actions, neighborhood groups, and voting to evaluate whether there is a bias in urban politics that systematically favors some groups over other and, if so, how likely it is that the bias can be overcome. Prerequisite: POL 211 and 212 or graduate standing.

POL 544. Chinese Foreign Policy
3 credits
Offered Fall Semester
International relations of the People’s Republic of China, in theory and in practice. Structure and context of foreign policy decision-making; domestic influences on the foreign policy making process. China as a global and regional actor. Prerequisite: POL 211, 212 or HIS 121 or 122 or permission of instructor.

POL 545. Environmental Policymaking
3 credits
Offered Spring Semester
Examination of different ethical approaches to the environment; the federal government’s management of natural resources; selected environmental policies; international environmental policy issues. Topics include federal management of national grazing lands, national forests, and minerals in the public domain. Analyzes environmental policies such as air, water, toxic wastes, energy, and environmentally-related issues in international trade and national security. Prerequisite: POL 211 and 212.

POL 546. Public Policy
3 credits
Offered Fall Semester
Analysis of American federal policy formulation and implementation processes; roles of congress, the executive branch, and the supreme court, interest groups, public opinion, voting, and political parties in the formulation of policy. Addresses economic, social and environmental policies. Considers the causes and consequences of public policy and the extent in which the policy formulation process is democratic. Prerequisite: POL 211 and 212.
POL 547. Congressional Representation
3 credits
Offered Fall Semester
This course examines how and when citizens influence legislators’ behavior. More specifically, we examine how legislators’ floor behavior reflects citizens’ preferences and how these preferences influence the manner in which legislators build electoral coalitions. Prerequisite: POL 211, 212.

POL 548. Civic Participation and Democracy
3 credits
Citizens participate in the governing process by communicating their preferences and pressuring the government to respond. In this course we examine these various mechanisms of “civic participation”, and discuss the meaning and consequences of participatory democracy. The course focuses on the contemporary United States, but we will devote some time to discuss civic participation in other countries as well. Prerequisite: POL 211, 212.

POL 551. Productivity in the Public and Non-Profit Sectors
3 credits
Offered First Summer Session
Definitions and measures of productivity. Evaluation of government programs, and methods of productivity improvement. Prerequisite: POL 211 and 212 or graduate standing.

POL 552. Politics and Group Perspectives
3 credits
Offered By Announcement only
Theory, methods and case studies emphasizing scientific analysis of the relations among group perspectives, communications systems and public policies. Prerequisite: Permission of instructor.

POL 553. The Environmental Movement: Groups, Beliefs and Values
3 credits
Offered Fall Semester
Exploration of the origins and political impact of environmentalism in the United States and, to a lesser extent, in the global context. Impact of democratic participation on environmental politics. Prerequisite: POL 211 and 212 or graduate standing.

POL 554. Social Welfare Policy
3 credits
Offered Spring Semester
Examination of major domestic policy issues in the United States, including poverty, housing, homelessness, education, and crime. Analysis of the different definitions of the underlying problem or different causes of each issue. Particular stress is on how those definitions determine the type of policy solution needed and the conflict in policy recommendations that occur because of the different problem definitions. Prerequisite: POL 211 and 212 or graduate standing.

POL 555. Total Quality Public Service Management: Achieving High Performance Government
3 credits
Offered Fall Semester
Examination of the theory and practice of Total Quality Management (TQM) in the government and non-profit sector. Focuses on budgetary, customer service, employee and process improvements that facilitate increased public and non-profit performance. Special emphasis to TQM’s contribution to improved service delivery. Prerequisite: POL 211 and 212 or graduate standing.

POL 563. Senior Honors Course (I)
3 credits
Offered Fall and Spring Semesters
General reading, preparation of research design and collection of information. Open to senior political science majors in the General Honors Program and to those seniors with a 3.5 average in political science and a 3.3 overall average. Prerequisite: POL 211 and 212.
POL 564. Senior Honors Course (II)  
3 credits  
Continuation of POL 563: writing and defense of the thesis. Open to senior political science majors in the General Honors Program and to those seniors who have 3.5 average in political science and a 3.3 overall average. Prerequisite: POL 211, 212, and 563.

POL 569. Politics, Law and Sexual Identity  
3 credits  
Course will consider sexual politics by looking in depth at several issues including restrictions on marriage, adoption, employment, military service, housing, and intimacy based on sexuality and/or gender identity. For each issue, it will be considered how the debate is constructed by politicians, academics, the media, GLBT activist organizations and law/legal theory. Consider the state and national politics at work within these issues. Also consider the topics from a comparative view as well as address the international implications arising out of that comparative consideration. In general, the goal is to learn about the current state of the politics of sexual identity in the United States and abroad. Moreover, engage frameworks through which politics might be assessed and determine the generalizability of the logics of politics. Prerequisite: POL 211 and 212. POL 373 and 374 recommended.

POL 580. The Politics of Post-Communist Transitions  
3 credits  
Offered By Announcement only  
Examination of the creation, breakdown, and aftermath of communist governments in Eastern Europe and the Soviet Union. Using empirical evidence from four case studies, develops a theoretical framework for understanding cross-national patterns of post-communist development in the context of country-specific experiences. Prerequisite: POL 211 and 212 or graduate standing.

POL 581. Comparative Political Economy of Post-Industrial Democracies  
3 credits  
Offered Fall Semester  
This seminar examines four key turning points in the development of capitalism: the industrial revolution, the aftermath of the depression and world wars, the oil crisis of the 1970’s, and today’s “globalization”. We will compare the relationships between government and the economy in Western Europe, Canada, the U.S., Australia, New Zealand, and Japan in each period, and attempt to evaluate why these countries react similarly or differently to identical changes in world economy. Prerequisite: POL 211, 212.

POL 582. Political Economy of Latin American Development  
3 credits  
Offered By Announcement only  
Overview of the principal theoretical paradigms of the development process in the Latin American context. Comparative analysis of issues such as the role of the state, strategies of industrialization, changes in social structure, basic needs and the trade-offs between growth and equity. Prerequisite: POL 211 and 212 or graduate standing.

POL 584. Contemporary Latin American Politics  
3 credits  
Offered By Announcement only  
Critical examination of selected topics of current interest such as the transition from authoritarianism to democracy, revolutionary movements, religion and politics, and politics of the debt crisis, from a comparative perspective. Prerequisite: POL 211 and 212 or graduate standing.
POL 585. Political Movements in Latin America
3 credits
Offered By Announcement only
Exploration of the various forms of political movements in Latin America, including parties, populists and radical groups. Examines diverse means of organizing and mobilizing support, the range of goals sought, and the conditions that give rise to the various movements. Special attention to the contemporary revival of populism in the region and its implications for democracy. Prerequisite: POL 211 and 212 or graduate standing.

POL 586. Conflict in the Middle East and Africa
3 credits
Offered Fall Semester
Introduction to major paradigms for the explanation of war and conflict in two of the most unstable regions of the world. Reading and class discussions on select cases of current and past conflicts in each region in order to discern patterns of conflict within and across regions, gain a clearer understanding of what drives violent conflict, and assess strategies of resolution. Prerequisite: POL 211, 212.

POL 588. Politics in China
3 credits
Offered Spring Semester
Development and nature of Chinese domestic politics in theory and practice; problems of political stability and conflict; the role of historical and cultural traditions, institutions, social, economic and personality factors in Chinese politics; process of change and problems of leadership succession; the significance of changes in the character and style of Chinese leadership. Prerequisite: POL 211 and 212 or HIS 121 or 122 or graduate standing.

POL 591. Problems in International Politics and Organization
3 credits
Offered By Announcement only
Analysis and evaluation of approaches to international conflict, resolution, reduction and stabilization such as international organization, law, collective security, balance of power, functionalism, world government, morality, and conscience. Special emphasis on recent problems and efforts at institutionalizing social control. Prerequisite: POL 211 and 212 or graduate standing.

POL 592. International Political Economy
3 credits
Offered By Announcement only
This course provides an analysis of the changing trade and financial structures of the international economy and the differing approaches that developed and developing states have taken in adapting to them. Special emphasis will be placed on the political implications of economic strategies, the challenges and opportunities posed by the increasingly free mobility of capital and goods across borders, and the ability of states to shape domestic economic outcomes. Prerequisite: POL 211, 212.

POL 593. International Relations of the Middle East
3 credits
Offered By Announcement only
Regional and interregional analysis of the foreign relations of Middle Eastern nations, domestic and geopolitical factors. Prerequisite: POL 211, 212, 387 or 391 or graduate standing.

POL 595. North-South Relations
3 credits
Offered By Announcement only
Explores conflict and cooperation between the world’s wealthier and poorer countries. Topics include competing approaches to North-South issues; colonialism; foreign aid and economic development; multinational corporations; international debt; trade in manufactures and raw materials; the rise of industrialized countries in Southeast Asia; U.S. relations with, and influence in, the Third World. Prerequisite: POL 211 and 212 or graduate standing.
POL 599. Special Topics
1-3 credits

Offered Fall and Spring Semesters and First and Second Summer Sessions
COMMUNICATION

Communication

COM 101. Mass Media Communication in Society
3 credits  Offered Fall and Spring Semesters and First Summer Session
A survey of the history, development, structure, and effects of mass communication media.

COM 110. Communication Theory
3 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Survey of basic communication theories and models. Study of processes, functions, levels, and general principles of human communication.

COM 250. Freedom of Expression and Communication Ethics
3 credits  Offered Fall and Spring Semesters and Second Summer Session
An examination of the concept of freedom of expression, its philosophical roots, its application of contemporary issues in communication, and of the basics of moral philosophy (ethics) and moral reasoning. Prerequisite: COM 101.

COM 395. Honors Seminar in Communication
3 credits  Offered Fall and Spring Semesters
An examination of central issues and topics in the field of Communication. Prerequisite: Senior standing and enrollment in the School’s honors program.

COM 401. Honors Communication Colloquium
3 credits  Offered Fall and Spring Semesters
An examination of central issues and topics in the field of communication. Prerequisite: Junior or senior standing and enrollment in the School’s honors program.

COM 499. Senior Honors Project/Thesis
3 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Senior standing and enrollment in the School’s honors program.

COM 598. Special Topics in Communication
3 credits  Offered By Announcement only
Prerequisite: 12 credits in Communication at 300 level or above or equivalent.

Communication: Advertising and Public Relations

CAP 114. Introduction to Advertising in Society
3 credits  Offered Fall and Spring Semesters and First Summer Session
History, organization, and role of advertising in American society.

CAP 116. Introduction to Public Relations in Society
3 credits  Offered Fall and Spring Semesters and First Summer Session
History, organization, and role of public relations in American society.

CAP 202. Graphics for Promotional Media
3 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Selection, conceptualization, and study of production processes for type, photography, and artwork. Introduction to promotional publication design is included.

CAP 231. Advertising Copywriting
3 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Principles and techniques in the development of creative strategies and concepts and writing effective advertising messages for all major types of media.
CAP 232. **Writing for Public Relations**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Principles and techniques in the development of creative strategies and concepts and writing effective public relations messages for all types of media.

CAP 311. **Public Relations Research Methods**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Public relations research techniques focusing on applications to strategic planning, message evaluation, opinion research, and theory testing of public relations programs. Emphasis on qualitative and quantitative methods and data analysis. Prerequisite: Admission to major.

CAP 312. **Advertising Research Methods**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Advertising research techniques focusing on applications to strategic planning, consumer behavior, audience measurement, message development, media planning, and evaluation of advertising efforts. Emphasis on secondary, qualitative, and quantitative methods. Prerequisite: Admission to major.

CAP 346. **Advanced Public Relations Writing and Design**  
3 credits  
*Offered Fall and Spring Semesters and First Summer Session*  
Preparation, execution, and production of visual messages for public relations media. Prerequisite: Admission to major, CAP 202.

CAP 380. **Advertising/Public Relations Internship**  
1-3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Supervised activities in advertising and public relations. Course may be repeated up to 3 credits. Prerequisite: Admission to major and permission of Program Director; junior standing.

CAP 384. **Advanced Advertising Writing and Design**  
3 credits  
*Offered Fall and Spring Semesters and First Summer Session*  
Strategy, execution, and production of visual advertising messages for mass media. Prerequisite: Admission to major, CAP 202, ART 109.

CAP 385. **W: Advertising - Direct Response, Promotion and Specialty**  
3 credits  
*Offered By Announcement only*  
Concepts, strategies and applications of direct response, sales promotion, and specialty advertising and techniques for creating effective programs. Prerequisite: Admission to major, CAP 311 and junior standing.

CAP 388. **Advertising: Media Planning and Sales**  
3 credits  
*Offered Fall and Spring Semesters and Second Summer Session*  
Strategy and execution in planning, selling, and purchasing of advertising space and time in mass media. Prerequisite: Admission of major; CAP 311 and junior standing.

CAP 410. **Advanced Promotional Design**  
3 credits  
*Offered Fall and Spring Semesters and Second Summer Session*  
Advertising and public relations graphics, including design theory and techniques for all media are discussed. Prerequisite: Admission of major, CAP 202, 346 or 384, and ART 109.
CAP 416. **Ethics in Advertising/Public Relations**  
3 credits **Offered By Announcement only**
Ethical concepts and issues pertaining to individuals and society with application to advertising and public relations in mass communication. Case studies focus on professional and personal ethics based on traditional teaching, modern codes, and other guidelines within mass media. Prerequisite: Admission to major, permission of instructor.

CAP 434. **Advertising Campaigns**  
3 credits **Offered Fall and Spring Semesters and First Summer Session**
Course emphasizes the strategic planning of marketing and advertising communication objectives. Planning and executing media selections; creative themes; and evaluation of effectiveness are also covered. Prerequisite: Admission to major. CAP 202, 311, 388 and senior standing. Permission of instructor.

CAP 436. **Public Relations Campaigns**  
3 credits **Offered Fall and Spring Semesters**
Planning, execution, and evaluation of communications designed to influence attitudes of specialized publics. Case studies of public relations programs of business firms and other institutions are included. Prerequisite: Admission to major; CAP 202, 311, 346 and senior standing. Permission of instructor.

CAP 438. **Advertising/Public Relations Practicum**  
3 credits **Offered Fall and Spring Semesters and Second Summer Session**
Function as an advertising or public relations account executive in a professional environment. Prerequisite: Admission to major; senior standing; overall GPA of 2.75 and major/minor GPA of 2.75; permission of instructor and program director.

CAP 499. **Projects and Directed Research**  
1-3 credits **Offered Fall and Spring Semesters and First and Second Summer Sessions**
Individual study. No more than three credits may be counted toward a Communication major or minor. Prerequisite: Admission of major; junior standing; permission of instructor and program director.

CAP 512. **Public Opinion and Mass Communication**  
3 credits **Offered By Announcement only**
An exploration of the formation and role of public opinion in mass communication. Emphasis is placed on its role in advertising and public relations. Theories of public opinion in American culture, their application in attitude formation, and research methodologies are examined. Prerequisite: Junior standing; permission of instructor.

CAP 582. **International Advertising and Public Relations**  
3 credits **Offered Fall Semester**
History, theory, and practice of advertising and public relations in a global, multi-cultural environment. Prerequisite: Admission to major; senior standing; permission of instructor and program director.

CAP 583. **Integrated Communications: Perspectives in Advertising and Public Relations**  
3 credits **Offered Fall Semester**
Analysis and application of an integrated communications approach in the fields of advertising and public relations. Prerequisite: Admission to major; senior standing; permission of instructor and Program Director.

CAP 584. **Advertising/Public Relations Management**  
3 credits **Offered Spring Semester**
Principles and practice of advertising and public relations management in a variety of contexts, including agency, consultancy, corporate, and nonprofit. Prerequisite: Admission to major; senior standing; permission of instructor.
CAP 590. Special Topics: in Advertising and Public Relations  
3 credits  
Offered By Announcement only  
Prerequisite: Senior standing; admission to the major, permission of instructor and program director.

CAP 599. Advanced Projects and Directed Research  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual study. Course may be repeated to a maximum of six credits. Prerequisite: Admission to major; Senior standing; permission of supervising instructor and Program Director.

Communication: Broadcasting and Broadcast Journalism

CBR 102. Introduction to Broadcasting and Cable  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Technology, history, economics, regulation and social roles of radio, television, cable television, and other electronic media.

CBR 201. Writing for the Electronic Media  
3 credits  
Offered Fall and Spring Semesters  
Principles of writing for radio and television. Communicating in the aural and visual modes in persuasive, informational, and dramatic contexts is emphasized. Prerequisite: CBR 102, ENG 105.

CBR 233. Television Performance  
3 credits  
Offered Fall and Spring Semesters  
Introduction to communication concepts and skills involved in typical on-camera duties such as interviewing, commercials, characterizations, and ad libbing. Prerequisite: CBR 102, or, or non-majors, permission of instructor.

CBR 235. Radio Production and Performance  
3 credits  
Offered By Announcement only  
Introduction to equipment and procedures of radio. Production of radio programs and formats, editing, announcing, sequencing program elements, and designing program formulas are discussed. Prerequisite: CBR 102.

CBR 245. Introduction to Electronic Media Production  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Introduction to the theory, process, and procedure of electronic media production. Lecture and laboratory are included. Prerequisite: CBR 102 or Sophomore standing.

CBR 301. Measurement and Analysis of Broadcast and Cable Audiences  
3 credits  
Offered Fall and Spring Semesters and Second Summer Session  
Survey of methods used and results obtained in qualitative and quantitative measurements, and analysis of broadcast, and cable audiences. Use of audience data by policy makers, managers, programmers, producers, and advertisers are discussed. Practice in conducting small-scale audience measurement is included. Prerequisite: CBR 102, 201 or CNJ 111.

CBR 302. Social Control of Broadcast and Cable Media  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Course provides analysis of forces that influence broadcasting and cable: federal, state, local statutes, regulations, industry self-policing, roles of public opinion, consumer activism, and professional criticism. Prerequisite: COM 101, CBR 102, and sophomore standing. Students may not take both CBR 302 and CNJ 303 for credit.
CBR 313. Broadcast Sales
3 credits
Offered By Announcement only
Operation of radio and television station sales departments. Development, delivery of sales presentations and use of audience research reports is included. Prerequisite: CBR 301.

CBR 314. Broadcast and Cable Programming
3 credits
Offered Fall Semester
Course covers categories and sources for selecting program materials used in radio, television, and cable television program services. Strategies employed in devising program services are also covered.

CBR 315. Acting for the Camera
3 credits
Offered Fall and Spring Semesters
Dramatic performance techniques for television and motion pictures. Lecture and laboratory are included. Prerequisite: CBR 233 or, for non-majors, permission of instructor.

CBR 317. Broadcast Journalism
3 credits
Offered Fall and Spring Semesters and First Summer Session
Preparation of materials for presentation through the broadcast/cable media with emphasis on newswriting for oral presentation, field reporting, audio, video recording techniques, news program formats, and special news story formats including documentary, features, and investigative reports. Prerequisite: CNJ 111 and 216.

CBR 320. Television Performance: Non-Dramatic
3 credits
Offered Fall and Spring Semesters
Introduction to on-air performance techniques for news and public affairs programming. On-camera and voice-over techniques, field and studio interviews, field reporting, newscast and editorial presentations, commentary, and critical reviews are covered. Lecture and laboratory. Prerequisite: CBR 245 and 317.

CBR 345. Intermediate Electronic Media Production
3 credits
Offered Fall and Spring Semesters
Planning and execution of complex field and studio productions as well as post-production editing. Prerequisite: CBR 245.

CBR 402. Broadcast and Cable Management
3 credits
Offered Spring Semester
Managerial decision-making in broadcast stations and cable systems. Prerequisite: CBR 313 or 314.

CBR 408. Comparative Broadcasting
3 credits
Offered By Announcement only
Seminar on world broadcasting systems and trans-national services. Prerequisite: Senior standing or permission of instructor.

CBR 417. Advanced Broadcast Journalism
3 credits
Offered Fall and Spring Semesters
Gathering and preparation of news stories for presentation in news programs. Includes field reporting, editing; preparation of visual and aural elements, writing, producing, and performing for on-air presentation. Lecture and laboratory are included. Prerequisite: CBR 245 and 317.

CBR 445. Advanced Electronic Media Production
3 credits
Offered Spring Semester
The integration of the producer’s role and the structure of program design as they relate to day-to-day production operations. Lecture and laboratory are included. Prerequisite: CBR 345.
CBR 446. **Electronic Media Production Design**  
3 credits  
Offered By Announcement only  
A communication-based synthesis of the production process. Prerequisite: CBR 345.

CBR 491. **Internship in Broadcasting and Allied Fields**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Course provides a prescribed study and supervised work with practitioners in broadcasting, broadcast journalism, and allied fields. Prerequisite: Senior or Junior standing, major in Communication, cumulative GPA of 2.5 in all courses offered for Communication major, and permission of instructor. CBJ students must have completed CBR 317.

CBR 499. **Projects and Directed Research**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual study. No more than three credits may be counted toward a Communication major or minor. Prerequisite: 12 credits in Communication and permission of supervising instructor.

CBR 531. **Audio Production Techniques**  
3 credits  
Offered By Announcement only  
Writing, preparation, and production of material for auditory presentation, live or recorded, broadcast on open or closed circuit radio systems. Familiarization with magnetic and optical recording procedures, both double and single system sound, in television and motion picture production is discussed. Lecture and laboratory are included. Prerequisite: Permission.

CBR 534. **Practicum in Communication**  
3 credits  
Offered By Announcement only  
Media utilization in specific communications projects. Emphasis is placed on incorporating film, video tape, sound recording, and live presentations in cohesive communication programs. Each student will be expected to design and execute such a program in his/her major field of interest. Discussion and laboratory are included. Prerequisite: Permission of instructor.

CBR 535. **Telecommunication Systems**  
3 credits  
Offered By Announcement only  
The convergence and interrelationship of broadcast, cable, satellite, telephone, computer, and other telecommunication technologies and industries, with emphasis on policy, effects, regulation, economics, management, and information content. Prerequisite: Graduate or Undergraduate senior standing and permission of instructor.

CBR 592. **Special Topics in Broadcasting**  
3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor and program director.

CBR 599. **Advanced Projects and Directed Research**  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual study. Course may be repeated to a maximum of six credits. Prerequisite: Permission of supervising instructor.
Communication: Journalism

CNJ 111. Introduction to News Media Writing
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Principles and practices in journalism for the mass communication media. Prerequisite: 12 college credits, passing score on English-language skills test, typing proficiency of 25 w.p.m.

CNJ 206. Graphics for Communication Media
3 credits
Offered By Announcement only
Selection, preparation, and production processes for type, photography, and artwork by electronic and traditional means. Prerequisite: Three credits in Communication.

CNJ 216. News Reporting and Writing
3 credits
Offered Fall and Spring Semesters and First Summer Session
Practice in gathering material for and preparation of stories. Prerequisite: CNJ 111. (Students transferring credits for CNJ 111 must pass the English-language skills and typing tests required for CNJ 111.)

CNJ 303. Mass Media Law
3 credits
Offered Fall and Spring Semesters and First Summer Session
Study of defamation, right of privacy, journalists’ privilege, advertising law, constitutional guarantees, and Communications Act guarantees. Prerequisite: One of the following: CAP 232, CNJ 216. Students may not take both CNJ 303 and CBR 203 for credit.

CNJ 319. History of Journalism
3 credits
Offered Fall Semester
The development and impact of American journalism.

CNJ 381. Newspaper Editing and Layout
3 credits
Offered Fall Semester
Introduction to electronic editing and development of skills in copy-editing, headline-writing, picture-editing, and newspaper-page layout. Prerequisite: CNJ 216.

CNJ 382. Magazine Planning and Editing
3 credits
Offered By Announcement only
Procedures for designing and publishing company publications, trade, general, and special interest magazines. Prerequisite: CNJ 216.

CNJ 401. Editorial Interpretation of Contemporary Events
3 credits
Offered By Announcement only
Critical examination of fundamental issues in public life. Preparation of editorials and interpretive articles for mass media are included. Prerequisite: CNJ 381 or senior standing or permission of the instructor.

CNJ 414. Publication Design Seminar
3 credits
Offered By Announcement only
Publication Design Seminar focuses on learning advanced techniques for design and layout for a variety of printed media. Each student produces a portfolio of design projects. Prerequisite: CNJ 206 or CAP 202.

CNJ 444. Public Affairs Reporting
3 credits
Offered Fall Semester
Emphasis on writing. Prerequisite: CNJ 216, 303 and senior standing.
CNJ 461. Seminar in News Ethics and Problems
3 credits
Offered Spring Semester
Ethical, practical, and professional problems of news communicators in society.
Prerequisite: Senior standing in Journalism, Broadcast Journalism, Photography or Public Relations.

CNJ 495. Internship in Newspaper/Magazine
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prescribed study and supervised work with professionals in newspaper or magazine. Prerequisite: CNJ 303, senior standing, major in Communication, cumulative QPA of 2.5 in all courses offered for Communication major, and permission of instructor.

CNJ 499. Projects and Directed Research
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual study. No more than three credits may be counted toward a Communication major or minor. Prerequisite: 12 credits in Communication and permission of supervising instructor.

CNJ 510. International Mass Communication
3 credits
Offered By Announcement only
This course deals with issues in international news gathering and distribution, giving special attention to Latin America and the Caribbean. The class takes a comparative approach, looking at media systems in the United States and other nations. Prerequisite: Senior or graduate standing. Six credits in Communication or Latin American studies.

CNJ 513. Computer-Assisted Reporting
3 credits
Offered By Announcement only
Use of computer applications for newsgathering with emphasis on the World Wide Web, commercial online services, and database tools. Prerequisite: CNJ 111 and 216 or instructor's permission.

CNJ 515. Reporting and the Internet
3 credits
Offered By Announcement only
Overview of uses of online computer services for newsgathering and distribution with emphasis on the Internet. Prerequisite: CNJ 111 and 216 or instructor's permission.

CNJ 523. Sports Reporting
3 credits
Offered By Announcement only
An analysis of sports journalism that will develop students’ skills in sports reporting and sports writing. Discussions range across the entire field of sports reporting, including broadcasting, but the greatest emphasis is concentrated on sports reporting and writing for newspapers and magazines. Prerequisite: CNJ 111, 216 or instructor’s permission.

CNJ 544. Feature Writing
3 credits
Offered By Announcement only
Analyzing and writing feature articles for magazines, newspapers, and other news media. Prerequisite: CNJ 216.

CNJ 595. Special Topics in Journalism
3 credits
Offered By Announcement only
Prerequisite: Permission of instructor and program director.
CNJ 599. Advanced Projects and Directed Research  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual study. Course may be repeated to a maximum of six credits.  
Prerequisite: Permission of supervising instructor.

Communication: Motion Pictures

CMP 103. Survey of Motion Pictures  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Examination of the aesthetic, social, and economic aspects of the motion picture industry. Concentration on the present state of the medium with particular emphasis on future trends.

CMP 126. Introduction to Scriptwriting  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Creation and formatting of narrative material for motion pictures and television.  
Prerequisite: CMP 103 or CBR 102 and ENG 106.

CMP 204. History of Motion Pictures (1895-1940)  
3 credits  
Offered Fall Semester and First Summer Session  
Examination of the origin and history of the motion picture. Narrative and non-fiction genres, in the American and world cinemas, from their inception through 1940 are discussed.

CMP 205. History of Motion Pictures (1941-Present)  
3 credits  
Offered Spring Semester  
Examination of the history of the motion picture from 1941 to the present. Narrative and non-fiction genres in the American and world cinemas are included.

CMP 222. Motion Picture Techniques  
3 credits  
Offered Fall and Spring Semesters  
Lectures and laboratory work to acquaint the student with the basic techniques of motion pictures. 16 mm equipment is used to develop an understanding of the motion picture as a creative tool of communication and expression.  
Prerequisite: CMP 103 or sophomore standing.

CMP 226. Writing for Series Television  
3 credits  
Offered Fall and Spring Semesters  
An introduction to the structures and techniques of writing situation-comedy and dramatic series television.  
Prerequisite: CMP 126.

CMP 306. What is Cinema?  
3 credits  
Offered Fall and Spring Semesters  
Combining close analysis of classic and contemporary films with selected readings, this course addresses fundamental questions about movies and their importance to us. Lectures, discussions, and screenings will focus on such topics as the theory and practice of narrative structures in film, the role of reality in the film medium, the powers and limitations of the camera, and film’s evolving forms and impact on society and culture.  
Prerequisite: Junior standing. CMP 204 or 205. Open to non-majors.

CMP 325. Motion Picture Workshop III  
6 credits  
Offered Spring Semester  
An intensive five week introduction to 16mm production and postproduction.  
(Available for incoming MFA students and others by permission of the Program Director).
**CMP 326. Intermediate Scriptwriting**  
*3 credits*  
Offered Fall and Spring Semesters and Second Summer Session  
Study of and practice in writing feature length, narrative motion pictures. Development of story line in treatment form, attention to cinematic structure, the development of character, and its presentation on screen is discussed. Prerequisite: CMP 126 and permission of instructor.

**CMP 352. Motion Picture Workshop II**  
*3 credits*  
Offered Fall and Spring Semesters  
The art and craft of motion picture production. Focus is placed on film editing and other post production procedures including all aspects of sound mixing and dubbing. Lecture and laboratory. Prerequisite: CMP 222 and completion of the core courses and a cumulative quality point average of 3.0 or higher in CMP 103, 126, 204 or 205 and 222.

**CMP 356. Cinematography**  
*3 credits*  
Offered By Announcement only  
An overview of the cinematographer's process from script to film. Working with camera, lighting, grip equipment on exercises, and projects is discussed. Prerequisite: CMP 103, 222, 204 or 205.

**CMP 357. Editing**  
*3 credits*  
Offered By Announcement only  
The course will develop analytic skills and an understanding of the aesthetics, theories, techniques of picture, and sound editing. Prerequisite: CMP 103, 222, 204 or 205.

**CMP 426. Advanced Scriptwriting**  
*3 credits*  
Offered Spring Semester  
A continuation of CMP 326. Study of and practice in writing feature length, narrative motion picture scripts. Attention is given to cinematic structure; the development of character; and its presentation on screen. Emphasis is placed on bringing the script to a completed draft. Prerequisite: CMP 326.

**CMP 427. Aspects of Screenwriting**  
*3 credits*  
Offered By Announcement only  
Advanced examination of one or more aspects of screenwriting from rewrites to adaptations, to character development, and related issues. Prerequisite: CMP 426.

**CMP 451. Motion Picture Practicum - I**  
*3 credits*  
Offered Fall Semester  
The study and practice of motion picture production from script to screen. Lecture and laboratory. Students will develop, preproduce and produce a 16mm film. N.B. This course must be taken in conjunction with CMP 452 unless a waiver is granted by the instructor. Prerequisite: CMP 352 and permission of instructor.

**CMP 452. Motion Picture Practicum - II**  
*3 credits*  
Offered Spring Semester  
The study and practice of motion picture production from script to screen. Lecture and laboratory are included. Students will complete the 16mm films begun in CMP 451. (This course must be taken in the same academic year as CMP 451.) Prerequisite: CMP 451.

**CMP 489. Projects in Screenwriting**  
*3 credits*  
Offered Fall and Spring Semesters  
Individual study. This course and CMP 499 cannot count for more than three credits towards a Communication major or minor. Permission of supervising instructor is required. Prerequisite: CMP 126 and 326.
CMP 494. Motion Picture Internship
3 credits  
Offered Fall and Spring Semesters
Prescribed study and supervised work with practitioners in motion pictures. Prerequisite: Senior or junior standing, admission to major in Motion Pictures, cumulative GPA of 2.5 in all courses offered for Communication major.

CMP 499. Projects and Directed Research
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual study. No more than three credits may be counted toward a Communication major or minor. Prerequisite: 12 credits in Communication and permission of supervising instructor.

CMP 503. Film Directors
3 credits  
Offered Fall Semester
This course will address the conditions of authorship in film through an intensive study of the films of two or more directors, whose careers will serve as case studies. These directors will be historically important and their work will represent significant achievements in the art of film. Prerequisite: CMP 204 and 205. Non-majors and graduate students by permission of instructor.

CMP 504. Aspects of Contemporary Cinema
3 credits  
Offered Spring Semester
The study of the ways in which film communicates. Intensive analysis and criticism of cinematic techniques exemplified through particular films. Prerequisite: Junior standing; CMP 204 or 205; non-majors by permission of program director.

CMP 506. American Movie Genres
3 credits  
Offered Fall Semester
A study of selected movie genres from a variety of critical perspectives. Issues pertaining to selfhood, sexual difference, and other concerns of present-day film criticism will be examined. Prerequisite: CMP 204 and 205. Non-majors by permission of instructor.

CMP 507. Film, Society, and Culture
3 credits  
Offered Spring Semester
Selected films from Europe, Asia, Africa and Latin America will be studied in relation to their diverse social/political and cultural contexts. Prerequisite: CMP 204 and 205. Non-majors by permission of instructor.

CMP 509. Legal Aspects of Motion Pictures
3 credits  
Offered Spring Semester
The law, contracts, and negotiating techniques of the business affairs aspects of the production of motion pictures. Prerequisite: Motion Picture graduate or senior undergraduate standing. Non-Motion Picture graduates or undergraduates by written permission of the Director of the Motion Picture Program.

CMP 529. Nonfiction Film
3 credits  
Offered Fall and Spring Semesters
An examination of American and world nonfiction films. Prerequisite: CMP 204 and 205. Non-majors by permission of instructor.

CMP 551. Animation and Motion Graphics
3 credits  
Offered Spring Semester
Historical and contemporary techniques. Prerequisite: Advanced standing and permission of instructor for non-majors.
CMP 552. Motion Picture Marketing and Distribution  
3 credits  
Offered Fall and Spring Semesters  
Economic and marketing considerations in the production and distribution of motion pictures. Prerequisite: Junior standing and 12 Communication-Motion Pictures credits.

CMP 553. Advanced Motion Picture Marketing  
3 credits  
Offered Fall and Spring Semesters  
Advanced marketing considerations in the distribution of motion pictures. Prerequisite: Junior standing and CMP 552.

CMP 555. Producing the Motion Picture  
3 credits  
Offered Fall Semester  
A practical examination of the development, production, and marketing responsibilities involved in producing theatrical feature films. Focus is placed on the processes involved including the ethical considerations that confront the producer. Prerequisite: Junior standing and 12 CMP credits.

CMP 558. Documentary Production  
3 credits  
Offered By Announcement only  
An introduction to the documentary genre including the production of a documentary from start to finish. Prerequisite: CMP 103, 222, 204 or 205 for undergraduates; permission of instructor for graduate students.

CMP 565. The Structure of Dramatic Art  
3 credits  
Offered By Announcement only  
An investigation into structural forms widely employed by screenwriters with emphasis on Syd Field’s three-act paradigm and Joseph Campbell’s hero monomyth. Prerequisite: MFA Screenwriting status or CMP 126 and 326.

CMP 566. Character and Dialogue  
3 credits  
Offered By Announcement only  
An examination of the craft and techniques of creating original characters and dialogue. Prerequisite: MFA Screenwriting status or CMP 126 and 326.

CMP 594. Special Topics in Motion Picture  
3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor.

CMP 599. Advanced Projects and Directed Research  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual study. May be repeated to a maximum of six credits. Prerequisite: Permission of supervising instructor.

Communication Studies

COS 112. Interpersonal Communication  
3 credits  
Offered By Announcement only  
Overview of current theories of interpersonal communication. Consideration is given to impression formation, relationship between self-concept and others, function of language in social interaction, development, and maintenance of relationships.

COS 210. Writing for the Social Sciences  
3 credits  
Offered Spring Semester  
Principles of writing, reviewing literature, and synthesizing research for communication studies and the social sciences. Prerequisite: COM 110.
COS 211. Public Speaking
3 credits
Course covers theory and methods to develop the art of public speaking. Application of current concepts in informational exchange and persuasion in public forums is also discussed.

COS 304. Intercollegiate Debate Theory and Practice
1 credit
A course designed to teach students how to compete successfully in intercollegiate debating, and to reinforce training through practice and competition. Prerequisite: Permission of instructor. Course may be repeated to a maximum of eight credits; no more than three credits may count toward the major or minor.

COS 316. Small Group Communication
3 credits
Techniques of discussion applied to goal-oriented, small group situations. Consideration is given to research methods, leadership, and conflict resolution. Theory is applied to active classroom participation.

COS 318. Nonverbal Communication
3 credits
Theory and application of selected areas of research in nonverbal communication is addressed. Discussion of environment, space, body movement, posture, eye contact, facial expression, vocal cues, and physical appearance is included.

COS 324. Health Communication
3 credits
This course is designed to provide a broad introduction to human communication in a health-care context. Emphasis will be on issues of social support, patient-health professional/caregiver interaction, organizational culture, planning health promotion campaigns, and cultural conceptions of health and illness.

COS 333. Business Communication
3 credits
Study of the major forms of spoken and written communication in the business context. Prerequisite: Junior standing.

COS 336. Political Communication
3 credits
Uses and functions of communication in American and international politics. Communication during political events and campaigns is also addressed.

COS 343. Introduction to Intercultural Communication
3 credits
Introduction to communication among people from diverse cultures. Application of communication theory to intercultural sensitivity and cultural diversity is emphasized.

COS 377. Argumentation and Critical Thinking
3 credits
Argumentation theory and practice are discussed. Rhetorical and philosophical foundations of argumentation and their application in various settings including academic debate are also covered.

COS 391. Undergraduate Special Topics in Communications Studies
3 credits
COS 405. Practicum in Communication Studies Research
3 credits
Offered Fall and Spring Semesters
Structured participation in programmatic research and applied practice in community. Prerequisite: Junior standing or permission of instructor.

COS 418. Organizational Communication
3 credits
Offered By Announcement only
Introduction to organizational communication theory. Consideration of structure, function, and effects of communication in organizations are analyzed. Emphasis is placed on principles needed for decision making and effective management of organizational communication processes.

COS 442. Communication Research Methods and Analyses
3 credits
Offered By Announcement only
Introduction to communication research methods. Application of quantitative measurement techniques and statistical analyses will be discussed as well as the use of microcomputer statistical programs.

COS 472. Persuasion
3 credits
Offered By Announcement only
Overview of social science theories of persuasion relevant to interpersonal and mass communication contexts.

COS 479. Advanced Communication Theory
3 credits
Offered Spring Semester
Capstone course designed for communication studies majors. Provides students with the opportunity to apply knowledge of communication theory and research skills through development of capstone project. Prerequisite: COM 110, senior standing, or permission of instructor.

COS 498. Communication Studies Internship
1-3 credits
Offered Fall and Spring Semesters
Prescribed study and supervised work with practitioners in organizations. Prerequisite: Junior standing and permission of supervisor.

COS 499. Projects and Directed Research
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual study. No more than three credits may be counted toward a Communication major or minor. Prerequisite: 12 credits in Communication Studies and permission of supervising instructor.

COS 545. Intercultural Communication: International Perspectives
3 credits
Offered By Announcement only
Effects of cultural attitudes, beliefs, and attributions on meaning assignment. Effects of language on the structure of thought. Ethics and process of the diffusion of cultural innovations are analyzed. Prerequisite: Junior standing or permission of instructor.

COS 546. Intercultural Communication: Domestic Perspectives
3 credits
Offered By Announcement only
Effects of cultural attitudes, beliefs, and attributions on meaning assignment. Diffusion of cultural innovations, prejudice, discrimination, and equality are discussed. Emphasis is placed on intercultural interactions within the United States. Prerequisite: Junior standing or permission of instructor.

COS 560. The Executive Communicator
3 credits
Offered By Announcement only
Audience analysis, speech writing, delivery in professional presentations and theory and history of great speeches are covered. Detailed critiques of student speaking styles and performances are also included. Prerequisite: Junior standing or permission of instructor.
COS 591. Special Topics in Communication Studies  
3 credits  
Offered By Announcement only  
Prerequisite: 12 credits in Communication Studies and junior standing.

COS 599. Advanced Projects and Directed Research  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual study. Course may be repeated to a maximum of six credits.  
Prerequisite: Permission of instructor.

Visual Communication

CVC 106. Computers in Communication  
3 credits  
Offered Fall and Spring Semesters  
This course introduces the personal computer as a tool for human communication.  
Students learn to use basic computer tools to build works of communication in a  
variety of forms, including text, numbers, images, sound, and video.

CVC 107. History of Photography  
3 credits  
Offered Spring Semester  
A study of photography as a visual medium of expression and communication. A  
chronological examination of its origins, styles, and uses.

CVC 221. Still Photography I  
3 credits  
Offered Fall and Spring Semesters  
Lectures and digital laboratory work to acquaint the student with black and white  
still photography as a creative tool of communication and expression. Students  
are required to have a 35mm camera with some manual capabilities.

CVC 309. Web Design I  
3 credits  
Offered Fall and Spring Semesters  
Fundamentals of composition, hypertext markup language (HTML), authoring,  
and image editing for web site creation. Prerequisite: CVC 106, or permission of  
instructor. CAP 202 or CVC 221.

CVC 331. Still Photography II  
3 credits  
Offered Fall and Spring Semesters  
Lectures and digital laboratory work to acquaint the student in the use of color,  
electronic lighting and digital photography media as a creative tool of  
communication and expression. Prerequisite: CVC 221 or permission of instructor.

CVC 361. Photojournalism and Editing  
3 credits  
Offered Fall and Spring Semesters  
The criteria and use of still photography as a means of visual communication with  
an emphasis on its use by the news media. Criteria for evaluating non-mechanical  
qualities of photographs is also discussed. Prerequisite: CVC 221, 331.

CVC 409. Multimedia I  
3 credits  
Offered Fall and Spring Semesters  
Designed to introduce the visual communication student to computer based  
interactive media. This course is an introduction to programming using lingo in  
Macromedia Director as well as using basic authoring skills required in other  
courses to produce a multimedia project of content. Prerequisite: CVC 309, CBR  
245.

CVC 419. Advanced Web Production  
3 credits  
Offered Fall and Spring Semesters  
Teaches students advanced programming and multimedia techniques for the  
world wide web. Key areas include Java script and other client side, server-side,  
programming languages used for the web, digital media and streaming  
technologies. Prerequisite: CVC 309, CBR 245, CVC 409.
CVC 422. The Photographic Essay
3 credits
Offered Fall Semester
Advanced use of still photography as a tool for social and journalistic investigation of contemporary issues with an emphasis on the photographic essay. Prerequisite: CVC 361 or permission of instructor.

CVC 435. Seminar in Visual Storytelling
3 credits
Offered Fall and Spring Semesters
An advanced seminar with emphasis on the visual narrative and storytelling. Students select media appropriate to the story. Prerequisite: CVC 422 and senior standing.

CVC 496. Internship in Visual Communication
1-3 credits
Offered Fall and Spring Semesters
Prescribed study and supervised work with practitioners in Visual Communication. Prerequisite: Senior or upper-level junior standing, major in Communication, cumulative GPA of 2.5 in all courses offered for Communication major, and permission of instructor.

CVC 499. Projects and Directed Research
1-3 credits
Offered Fall and Spring Semesters
Individual Study. No more than three credits may be counted towards a Communication major or minor. Prerequisite: 12 credits in Communication and permission of supervising instructor.

CVC 596. Special Topics in Visual Communication
1-6 credits
Offered Fall and Spring Semesters
CVC 596 is a special topics class in visual communication. Topics will vary and students may take up to two different special topics courses. Prerequisite: 12 credits of CVC courses.
EPS 270. Human Development—A Life Span Approach
3 credits
Offered Fall Semester
Processes and theories of human development from birth to old age are explored. Areas to be covered include: physical development, cognitive development, social and personality development, moral development, and language development. Emphasis is placed on development as a life-long process and its importance in understanding human behavior.

EPS 280. Introduction to Family Studies: Dating, Coupling, Parenting
3 credits
Offered Fall and Spring Semesters
Theory and practice of romantic relationships and parent-child relationships, including discussion and skills building. Research based information on how to maximize the quality of these interpersonal relationships will be examined.

EPS 301. Personal Growth and Wellness
3 credits
Offered Fall and Spring Semesters
Increasing one’s personal wellness and growth opportunities through hands-on learning as based on the research literature of positive psychology, self-actualization, and wellness.

EPS 305. Career Development and Planning
3 credits
Exploration and planning of careers based on three knowledge domains: cognitive and social foundations, the occupational world and work behavior, career choice, development in individuals and organizations.

EPS 310. Interdisciplinary Introduction to Sport in America: Psychosocial Theories and Practices
3 credits
Uses an ecological model to integrate societal, cultural, group dynamics, media, interpersonal, and intrapersonal aspects of sport. Students will learn how to understand and analyze one topic (sport) through various theoretical lenses, in this case, physiological, psychosocial, sociological, and communication. Topics range from exercise physiology to legal and ethical issues. Prerequisite: Sophomore standing or higher.

EPS 330. Introduction to Counseling and Therapy
3 credits
Offered Spring Semester
A survey of the theories and practical applications within the many paradigms addressing mental health. Course does not prepare student for practice in mental health professions. Prerequisite: PSY 110.

EPS 340. Psychology and Sociology of Sexual Identity
3 credits
Offered Fall and Spring Semesters
History, psychology, and sociology of gay, lesbian, and transgendered populations. Prerequisite: PSY 110 or SOC 101.

EPS 360. Educational Psychology
3 credits
Offered Fall and Spring Semesters
A review of basic educational psychology principles including cognitive and language development, personal, social and moral development, learning theories, and motivation. A review of basic concepts that contribute to effective learning and other aspects of education. Prerequisite: Sophomore standing or PSY 110.
EPS 362. Introduction to Multiple Intelligence
3 credits
Offered First and Second Summer Sessions
Students will be provided with an awareness of both the Multiple Intelligence Model and Brain Based Learning, through lectures, discussions, and exercises. The student will identify their learning styles in order to discuss strengths and deficits. Activities will be provided to enhance teaching and learning experiences. Creative writing exercises will be provided.

EPS 381. Romantic Relationships: Theory, Research, and Practice
3 credits
Offered Spring Semester
An introduction to the psychological science of romantic relationships, covering current theories that explain how relationships flourish. The course also covers the practical aspects of romantic relationships. Local and national resources for fostering strong relationships provide a third focus of the course. Prerequisite: Six credits of social science.

EPS 428. Field Experience in Community Services
3 credits
Offered By Announcement only
The student will spend a minimum of two hours per week in a supervised field placement in a community setting and one hour per week in on-campus supervision. Prerequisite: Senior standing and permission of instructor.

EPS 499. Individual Study
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual work on a special project under faculty guidance. Prerequisite: Permission of directing faculty member and Department Chairman.

EPS 505. Lifespan Human Development
3 credits
Offered Fall Semester
Theories and research relating to the biophysical, cognitive, and psychosocial domains of human lifespan development. Prerequisite: Advanced undergraduate or graduate standing.

EPS 506. Foundations of Mental Health Counseling
3 credits
Offered By Announcement only
Students will learn basic concepts and skills for mental health counselors in a multicultural world. Prerequisite: Advanced undergraduate or graduate standing.

EPS 509. Field Studies in Education
1- 6 credits
Offered Fall and Spring Semesters
Individual study of a school or school system, identifying its strengths and weaknesses, and making positive recommendations. Prerequisite: Approval of advisor.

EPS 510. Professional, Legal and Ethical Issues in Counseling
3 credits
Offered Fall Semester
Professional, legal, ethical, and licensing issues in the counseling profession. Prerequisite: Advanced undergraduate or graduate standing.

EPS 511. Lifestyle and Career Counseling
3 credits
Offered Spring Semester
An introductory course in career development and career counseling, focusing on theories of career development, counseling tools, strategies, and sociological, economic, and psychological influences on the American worker. Prerequisite: EPS 510 or permission of instructor.
EPS 512. Assessment Strategies for Counselors I
3 credits  
Offered Spring Semester
Emphasis on statistical procedures and psychometric principles necessary for responsible test use. Exposure to a variety of test and non-test assessment techniques in school, career, marriage and family, and mental health counseling. Prerequisite: EPS 510 or equivalent and graduate standing in counseling program.

EPS 513. Counseling Process and Practice
3 credits  
Offered By Announcement only
Emphasis on communication skills and establishing the counseling relationship with a focus on ethical concerns relating to counseling practice. Prerequisite: EPS 510 and 505. Corequisite: EPS 612.

EPS 514. Psychosocial Bases of Social and Cultural Diversity
3 credits  
Offered Spring Semester
Interrelationship between psychology and sociology in understanding development of diversity in human social systems. Implications for counseling and therapy. Prerequisite: EPS 505 or equivalent or permission of instructor.

EPS 515. Dynamics of Marriage and Family Systems
3 credits  
Offered Fall Semester
Based on General Systems Theory, this course focuses on systematic approach to the interactive dynamics of couple and family systems. The history and development of marriage and family therapy as a profession. Prerequisite: Advanced undergraduate or graduate standing.

EPS 526. Counseling in Community Settings
3 credits  
Offered Fall Semester
Exploration of and participation in community services appropriate to human services professionals, master’s counselors, and therapists. Prerequisite: Advanced undergraduate or graduate standing.

EPS 531. Organization Development
3 credits  
Offered By Announcement only
Techniques, strategies, and models of Organizational Development as they relate to various kinds of institutions. Simulations and actual interventions are stressed.

EPS 533. Organization and Administration of Higher Education I
3 credits  
Offered Fall Semester
Theoretical approaches from organizational analysis. Applications to problems, processes, and patterns of higher education institutions. Consideration given to legal status, governance patterns, and external relations. Administrator, faculty, trustee, and student roles are also explored.

EPS 534. Theories of Supervision
3 credits  
Offered By Announcement only
Examination of the elements of human behavior involved in successful supervision of instruction. Survey of current supervisory practices in the schools. Consideration of leadership theory.

EPS 539. Effective Teaching and Learning in the Community College
3 credits  
Offered By Announcement only
Preparation for community college teachers in classroom issues using a theoretical base. Items covered will include teaching performance, teaching and learning styles, motivating learners, educational factors relating to cultural and ethnic variables, and discovery of instructional resources.

EPS 543. The Community College
3 credits  
Offered By Announcement only
An overview of American community colleges including historical evolution, purposes and functions, characteristics of students and faculty, organization and administration, curricula, current issues, and trends.
EPS 544. Assessing Learning in the Community College
3 credits
Offered By Announcement only
Assessment and analysis of learning processes and outcomes in higher education. Formative and summative assessment, data analysis and interpretation are included. Class activities include: lectures, group projects, collaborative learning experiences, reports, participation in assessment strategies, role playing, and demonstration of assessment techniques.

EPS 545. Administration of Student Affairs
3 credits
Offered First Summer Session
History and philosophy of student affairs will be addressed as well as principles and organization of student affairs administration, current problems, procedures, and recent developments. Prerequisite: Required of students in student affairs administration.

EPS 550. Educational Measurement and Evaluation
3 credits
Offered By Announcement only
Basic principles of measurement as they apply to the construction of teacher-made tests and the selection and use of standardized tests. Attention is also given to the use of measurement instruments in connection with both formative and summative evaluation. Behavioral objectives are considered in the context of criterion-referenced and mastery tests. Prerequisite: TAL 260 or permission of instructor.

EPS 553. Introductory Statistics
3 credits
Offered Fall Semester and Second Summer Session
Basic Statistical procedures will be discussed including measures of central tendency, variability and relationship, sampling, and basic tests of statistical significance.

EPS 554. Essentials of Research in Social and Behavioral Sciences
3 credits
Offered Spring Semester
Study of the standards methods and techniques of research in the behavioral and social sciences. Brief orientation to quantitative and qualitative procedures used in the analysis and interpretation of research data are emphasized.

EPS 565. Family Therapy with Ethnic Minority Families
3 credits
Offered Fall Semester and Second Summer Session
A course in special issues and strategies in family therapy with minority populations focusing on African American and Hispanic clients. Prerequisite: EPS 280 or 515 or 612 or permission of instructor.

EPS 568. Computer Applications in Educational and Behavioral Science Research
3 credits
Offered By Announcement only
An introduction to the use of microcomputer statistical packages in social science research, with emphasis given to SPSS for Windows. Course content will cover a broad range of activities encountered in the data analytic process including planning and creating a database, data coding, file manipulation tasks, data screening, and statistical analysis. Prerequisite: EPS 553 or equivalent with permission of instructor.

EPS 570. Professional Interviewing: Social Science, Work Settings, Forensics/Investigation, Negotiation, Journalistic
3 credits
Offered Fall and Spring Semesters
An introduction to the interviewing process and skills with an emphasis on basic communication principles for professionals and academic use in a variety of situations, including: social science research, forensics/investigation, performance appraisals, negotiation, journalistic, and human resources. Course is taught in a combined didactic lecture/discussion and experiential modality. Prerequisite: Junior, Senior, or Graduate standing.
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<th>Credits</th>
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<tr>
<td>EPS 590</td>
<td>Workshop in Education</td>
<td>1-3</td>
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<td>EPS 591</td>
<td>Workshop in Education</td>
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**Exercise and Sport Science**

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<th>Course Title</th>
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<tr>
<td>ESS 105</td>
<td>Introduction to Athletic Training and Sports Medicine</td>
<td>3</td>
<td>Offered Second Summer Session</td>
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<td>In this practical, hands-on course, the students will learn to identify basic sport injuries that afflict the major joints of the body, and review basic methods to treat these injuries. The student will also learn how nutrition, improper biomechanics, and poor training can all impact sport performance. Plus, participants will be given the opportunity to learn and practice techniques or procedures (such as athletic taping or bracing) that may be useful in minimizing the incidence of injury.</td>
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<td>ESS 120</td>
<td>Tennis</td>
<td>2</td>
<td>Offered Fall and Spring Semesters</td>
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<td>Theory, knowledge, skills, and practice in tennis. There is a $25.00 fee for balls, racquets and equipment associated with this class. For credit only.</td>
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<td>ESS 122</td>
<td>Golf</td>
<td>2</td>
<td>Offered Fall and Spring Semesters</td>
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<td></td>
<td>Theory, knowledge, skills, and practice in golf. There is a $65.00 for practice facility and range balls associated with this class. For credit only.</td>
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ESS 123.  **Swimming and Lifeguard Training**  
*2 credits*  
Offered Fall and Spring Semesters  
Theory and practice in teaching techniques in swimming and professional lifeguarding, including First Aid and CPR. Upon successful completion, students will be eligible for an American Red Cross Lifeguarding Certificate. There is a $60.00 fee associated with this class for American Red Cross Certification, books, and equipment. Prerequisite: Pass swimming pre-test. Credit only.

ESS 124.  **Scuba**  
*3 credits*  
Offered Fall and Spring Semesters  
Basic scuba and open water "I" certification. Includes theory, practical instruction, open water dives, and NAUI certification. For credit only. There is a $65.00 scuba rental fee associated with this class. Prerequisite: ESS 123 or equivalent.

ESS 140.  **Introduction to Athletic Training**  
*2 credits*  
Offered Fall Semester  
Introduction to clinical athletic training for first year athletic training majors. Emphasis will be on the clinical education components. University of Miami athletic training staff, policies and procedures as used in the clinic/athletic training room, entry level taping skills, and interaction with various community and university agencies. Corequisite: ESS 141.

ESS 141.  **Introduction to Athletic Training Lab**  
*1 credit*  
Offered Fall Semester  
Introduction to clinical athletic training for the first year athletic training major. Hands on experience for the entry level athletic training student. Students will be required to complete a competencies check list with a passing grade. Clinical hours in the athletic training room will give the student the opportunity to use the knowledge, skills, and techniques learned in this course. The student must complete 70 clinical hours which are required for the application process to the Athletic Training Education Program. Student must be additionally enrolled in ESS 140. Fee $65.00 required for Lab.

ESS 145.  **Responding to Emergencies**  
*3 credits*  
Offered Fall Semester  
Students will become familiar with accident, injury, and illness situations, techniques for immediate first aid, and legal parameters involved when administering emergency care. American Red Cross Certification in adult CPR and first-aid obtained.

ESS 150.  **Nutrition for Sports and Fitness**  
*3 credits*  
Offered Fall and Spring Semesters  
Fundamentals and theories of nutrition with a specific focus on nutrition for both sports and fitness.

ESS 155.  **Biological and Health Related Bases of Exercise**  
*3 credits*  
Offered Fall Semester  
This course prepares students to perform exercise prescription for aerobic and resistance training programs according to sound physiological principles. Students will learn how to quantify work and power output during exercise and its implications for improving one’s health, longevity, and activities of daily living.

ESS 156.  **Laboratory Applications to Exercise Physiology**  
*1 credit*  
Offered Fall Semester  
This laboratory will incorporate clinical testing for fitness evaluations, strength assessment, and risk assessment. Students will have the opportunity to perform hands-on testing and assessment using sophisticated laboratory equipment with guidance for analysis and interpretation of results. Prerequisite: ESS 155.
ESS 184. **Athletic and Sports Injuries**  
3 credits  
Athletic injuries in sports that occur over the principal joints in the body and the inclusion of anatomical structures that are frequently damaged. Operational treatments and rehabilitation programs after surgery.

ESS 201. **Introduction to Sport Administration**  
3 credits  
Basic overview of sports management.

ESS 204. **Sports Personnel/Career Management**  
3 credits  
This course will expose students to the employment opportunities in the sports industry through the following modalities: lecture, videos, speakers and visitation. Students will also learn the techniques of resume writing and the job interview. Prerequisite: Open only to SPAD majors and minors. Must have taken ESS 201 and earned a C+ or better.

ESS 206. **Sport Facilities and Event Management**  
3 credits  
This course is an overview of the policy and procedures necessary to organize and develop sport events and facilities. In depth review of all programs, functions and procedures necessary for the operation of events and facilities are examined. Prerequisite: Open only to SPAD majors and minors. Must have taken ESS 201 and earned a C+ or better.

ESS 210. **Foundations to Athletic Training**  
2 credits  
Offered Spring Semester  
Introduction to Sports Medicine/Athletic Training with emphasis on study of the sports medicine team, legal concerns, nutrition, and pre-participation physicals. Course will discuss the basic principles of injury prevention including the role of conditioning, equipment, and protective padding. Additionally, students will be introduced to the study of etiology and mechanisms of injury, pathology, and recognition of clinical signs and symptoms of athletic injury. The student must complete 100 clinical hours, which apply toward the clinical hour requirement for graduation. Prerequisite: Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.

ESS 221. **Introduction to Exercise: Bioenergetics and Skeletal Muscle Physiology**  
3 credits  
Offered Fall Semester  
This course discusses the structure and function of human skeletal muscle as a biological machine, biological energy systems as they function during exercise, fatigue and recovery, the contractile process in skeletal muscle, and the specific changes resulting from variations in the training stimulus.

ESS 222. **Exercise Physiology Laboratory: Neuromuscular**  
2 credits  
Offered Fall Semester  
This course examines the nature of data collection in exercise physiology. Students will receive information on collection theory and its application to the measurement of a number of physiological systems during exercise. The course is designed to establish a clear linkage between the chronic and acute changes that occur during exercise and the laboratory methods that are used to assess those changes. Corequisite: ESS 221.

ESS 230. **Medical Terminology and Documentation**  
1 credit  
Offered Fall and Spring Semesters  
Terminology, note writing, and documentation techniques in sports medicine. A treatment cycle model will be introduced. Prerequisite: Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.
ESS 232. Basic Human Physiology

3 credits
Offered Spring Semester
This course presents a general overview of the major systems of the human organism with an examination of how they function in the human body.

ESS 235. Personal and Community Health

2 credits
Offered Fall Semester
Overview of current strategies and practices for healthy living, including health maintenance and disease prevention. Prerequisite: Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.

ESS 245. Kinesiology

3 credits
Offered Fall and Spring Semesters
Study of the structure and function of the skeletal, joint, and muscular systems. Emphasis is placed on the mechanics of the movement of the human body and its relationship to sport and physical performance. Prerequisite: BIL 109 or HSC 210.

ESS 246. Gross Anatomy

3 credits
Offered Spring Semester
The essentials of Myology, Osteology, and Arthrology are also dissected. Many of the dissection areas are injury sites in sports, such as the knee, shoulder, elbow, neck, and spinal nerves. There is a laboratory fee requirement for this course ($100.00).

ESS 250. Orthopedic Assessment: Lower Extremity

2 credits
Offered Fall Semester
Common types of orthopedic/sports dysfunctions to lower extremity will be discussed. Injuries will be discussed from the following viewpoints: etiology and mechanism of injury, pathology, recognition and valuation techniques, protocols, and prevention. Prerequisite: ESS 246. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses. Corequisite: ESS 251.

ESS 251. Orthopedic Assessment: Lower Extremity Lab

1 credit
Offered Fall Semester
Study of techniques used to evaluate orthopedic and sports injuries occurring to the lower extremity. Clinical experience for the intermediate level athletic training student. Emphasis will be on orthopedic assessment, goniometry, manual muscle testing techniques, and gait evaluations. Clinical hours in the athletic training room will give the student the opportunity to use the knowledge, skill, and techniques learned in this course. The student must complete 100 clinical hours which apply toward the clinical hour requirement for graduation. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses. Corequisite: ESS 250.

ESS 260. Orthopedic Assessment: Upper Extremity

2 credits
Offered By Announcement only
Common types of orthopedic/sports dysfunctions to the upper extremity will be discussed. Injuries will be discussed from the following viewpoints: etiology and mechanism of injury, pathology, recognition and evaluation techniques, protocols, and prevention. Prerequisite: ESS 246. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both. Corequisite: ESS 261.
ESS 261. Orthopedic Assessment: Upper Extremity Lab
1 credit
Offered Spring Semester
Study of techniques used to evaluate orthopedic and sports injuries occurring to the upper extremity. Clinical experience for the intermediate level athletic training student. Emphasis will be on orthopedic assessment, goniometry, manual muscle testing techniques, and gait evaluations. Clinical hours in the athletic training room will give the student the opportunity to use the knowledge, skill, and techniques learned in this course. The student must complete 100 clinical hours which apply toward the clinical hour requirement for graduation. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses. Corequisite: ESS 260.

ESS 264. General Medical Conditions Evaluation
1 credit
Offered Fall Semester
This class is the study of the clinical signs and symptoms of General Medical conditions that will present to the Certified Athletic Trainer. Emphasis will be placed on the techniques and instrumentation used for performing appropriate evaluation procedures. Prerequisite: Athletic Training majors only. ESS 235, 245, 246.

ESS 302. Sport Marketing
3 credits
Offered Fall and Spring Semesters
This course is designed as a marketing course that deals exclusively with Sport Marketing. Students are expected to develop comprehensive marketing and sponsorship plans. This course will require moderate to heavy computer knowledge. This course is designed to maximize the practical applications of marketing theory to the sport business environment. Prerequisite: Open only to SPAD majors and minors. Must have taken ESS 201 and earned a C+ or better.

ESS 306. Essential Leadership in Sports and the Professions
3 credits
Offered Fall and Spring Semesters
A variety of leadership and management skills will be examined, including communication, problem solving, conflict management, group dynamics, and leadership theory. Practical application to sport and allied professions will be included. Self-assessment opportunities and exercises will be utilized. Prerequisite: Open only to SPAD majors and minors. Must have taken ESS 201 and earned a C+ or better.

ESS 307. Motivational Strategies in Sport and the Professions
3 credits
Offered Fall and Spring Semesters
This course will examine the concepts of motivation as it pertains to sport and leadership responsibilities in work environments. Principles of extrinsic and intrinsic motivation, peak performance, goal setting, motivation strategies, and theories will be integrated.

ESS 308. Ethical Decision Making in Sport and the Professions
3 credits
Offered Fall and Spring Semesters
This course will examine ethical dilemmas in decision-making and other contemporary issues in sports management and campus and community environment. Real and hypothetical situations will be utilized. Prerequisite: Open only to SPAD majors and minors. Must have taken ESS 201 and earned a C+ or better.

ESS 310. Elements of Sports Psychology
3 credits
Offered Fall and Spring Semesters
Introduction to the field of sport and exercise psychology by examination of psychological theories and research related to sport and exercise behavior. Prerequisite: ESS 301 or permission.
ESS 321. **Introduction to Systemic Exercise Physiology**  
3 credits  
*Offered Spring Semester*  
The structure, function, and training of the cardiorespiratory system. Special emphasis on structural changes in the systems with exercise and their influence on cardiovascular performance, body composition, exercise efficiency and health. Prerequisite: ESS 221 or permission of the instructor.

ESS 322. **Exercise Physiology Laboratory: Cardiorespiratory**  
2 credits  
*Offered Spring Semester*  
This course concentrates on collection of cardiorespiratory data. In addition, the application of these data to exercise prescription for specific athletic and non-athletic populations will be covered. Corequisite: ESS 321.

ESS 363. **Principles of Exercise Prescription: Neuromuscular**  
3 credits  
*Offered Spring Semester*  
The study of specific techniques to enhance neuromuscular performance in sport and everyday activity. Students will examine current training strategies and understand their strengths and weaknesses as applied to specific populations. Prerequisite: ESS 221.

ESS 365. **Principles of Exercise Prescription: Cardiovascular**  
3 credits  
*Offered Spring Semester*  
This class is the study of the theory and principles behind the development of exercise programs. Students will learn how to accurately evaluate and develop individual exercise prescription based upon sound scientific research. Exercise prescriptions will be developed in accordance with the guidelines set forth by the National Strength and Conditioning Association and the American College of Sports Medicine. Prerequisite: One year of Biology.

ESS 366. **Exercise Physiology Laboratory: Assessment**  
1 credit  
*Offered Fall Semester*

ESS 401. **Legal Aspects of Sport**  
3 credits  
*Offered Fall and Spring Semesters*  
This course will focus on legal issues applicable to sport administration, including tort law, risk management, negligence, and constitutional law. Relevant legal cases and concepts will be incorporated. Prerequisite: Open only to SPAD majors and minors. Must have taken ESS 201 and earned a C+ or better.

ESS 403. **Sport Information Management**  
3 credits  
*Offered Fall Semester*  
This course centers upon the development of those skills that are necessary for Sport Information Directors. Specifically, these traditionally include marketing, media, promotion, and public relations. This course hopes to provide detailed knowledge to allow the student to participate in these activities in a professional manner. Prerequisite: Open only to SPAD majors and minors. Must have taken ESS 201 and earned a C+ or better.

ESS 405. **Finance and Budget in Sport Administration**  
3 credits  
*Offered Fall Semester*  
This course seeks to develop those financial skills necessary to understand a wide variety of financial concepts that impact sport managers. Such topics would include but not be limited to: Sport franchise value/valuations; economic impact of sport; risk-return models; financial statement analysis, and budgeting. Prerequisite: FIN 300, ACC 211. Open only to SPAD majors and minors. Must have taken ESS 201 and earned a C+ or better.
ESS 408.  Recreational Sport Programming
3 credits  Offered Spring Semester
This course will cover the organization and administration of recreational sports including the programming, services, and delivery required at high schools, colleges and/or health/fitness industry. Prerequisite: ESS 303, 401, 405.

ESS 410.  Problems and Issues in Sport Administration
3 credits  Offered Fall Semester
This course is designed as a seminar course. Topical issues in high school, collegiate and professional sport are presented and discussed in detail. A number of student-centered activities are introduced to aid in the development of the student. Prerequisite: Senior standing. Open only to SPAD majors. Must have taken ESS 201 and earned a C+ or better.

ESS 421.  Systemic Exercise Physiology
3 credits  Offered Spring Semester
This course examines the short and long term physical responses to exercise and provides a general overview of the field of exercise physiology with reference to the latest trends in modern physiological research. Prerequisite: ESS 232.

ESS 431.  Lab Experiences in Systemic Exercise Physiology
2 credits
This class will present laboratory experiences relevant to theory and exercise physiology information presented in class. The laboratory experiences will sequentially follow lecture material presented in the classroom. Corequisite: ESS 421.

ESS 443.  Clinical Sports Medicine Lab I
2 credits  Offered Fall and Spring Semesters
The application of athletic training practices in selected clinical and educational settings including team coverage. Additionally, each student must complete the required clinical proficiencies with a passing grade of a “B” or better to advance to the next level. Failure to complete the proficiencies with the passing grade of “B” or better will require the student to repeat the lab. The student must complete 225 hours of documented clinical hours, which apply toward graduation requirement of 1300 hours. Prerequisite: Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.

ESS 444.  Clinical Athletic Training Lab II
2 credits  Offered Spring Semester
The application of athletic training practices in selected clinical and educational settings including team coverage. Additionally, each student must complete the required clinical proficiencies with a passing grade of a “B” or better to advance to the next level. Failure to complete the proficiencies with the passing grade of “B” or better will require the student to repeat the lab. The student must complete 225 hours of documented clinical hours, which apply toward the graduation requirement of 1300 hours. Prerequisite: A “B” or better grade in ESS 443. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.

ESS 455.  Clinical Athletic Training Lab III
2 credits  Offered Fall and Spring Semesters
The application of athletic training practices in selected clinical and educational settings including team coverage. Additionally, each student must complete the required clinical proficiencies with the passing grade of a “B” or better to advance to the next level. Failure to complete the proficiencies with the passing grade of “B” or better will require the student to repeat the lab. The student must complete 225 hours of documented clinical hours, which apply toward the graduation requirement of 1300 hours. Prerequisite: A “B” or better grade in ESS 443 and 444. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.
ESS 456. **Athletic Training Lab IV**  
2 credits  
Offered Fall and Spring Semesters  
The application of athletic training practices in selected clinical and educational settings including team coverage. Additionally, each student must complete the required clinical proficiencies with a passing grade of a “B” or better. Failure to complete the proficiencies with the passing grade of “B” or better will require the student to repeat the lab. The student must complete 225 hours of documented clinical hours, which apply toward the graduation requirement of 1300 hours. Prerequisite: A “B” or better grade in ESS 443, 444, and 455. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.

ESS 457. **Clinical Internship in Exercise and Sport Sciences**  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
A comprehensive program of observation and supervised experience under the direction of a professional in the field for one semester. Supervised by University faculty. Prerequisite: Permission of department chairperson.

ESS 458. **Projects in Exercise and Sport Sciences**  
3 credits  
Offered Fall and Spring Semesters  
This class focuses on developing and conducting a high level sophisticated research in the exercise science and/or sports medicine field. Prerequisite: ESS 221, 321. Open to all Honors Program students or other students receiving special permission of the instructor.

ESS 461. **Therapeutic Modalities**  
2 credits  
Offered Fall Semester  
Students will acquire the theoretical knowledge necessary for the clinical application of therapeutic modalities. Principles of electrophysics and biophysics, specific physiological effects and therapeutic indications and contraindications associated with cryotherapy, paraffin, ultrasound, electrotherapeutic and hydrotherapeutic modalities, intermittent compression, massage, and other contemporary modalities will be discussed. Prerequisite: Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses. Corequisite: ESS 462.

ESS 462. **Therapeutic Modalities Laboratory**  
1 credit  
Offered Fall Semester  
This laboratory will help students apply the techniques and clinical skills related to the application of therapeutic modalities. Clinical hours in the athletic training room will give the student the opportunity to use the knowledge, skills, and techniques learned in this course. Students must complete 100 hours of documented clinical hours, which apply toward the clinical hour requirement for NATA certification eligibility. Prerequisite: Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses. Corequisite: ESS 461.

ESS 463. **Therapeutic Rehabilitation**  
2 credits  
Offered Spring Semester  
This course enables students to acquire the theoretical knowledge for the clinical application of a rehabilitation program, physical examination, principles of therapeutic exercise, open and closed chain exercise, muscle re-education, and special therapeutic techniques such as aquatic therapy. Prerequisite: ESS 246. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses. Corequisite: ESS 464.
ESS 464. Therapeutic Rehabilitation Laboratory
1 credit
Offered Spring Semester
This laboratory will place emphasis on the techniques and clinical skills relating to the rehabilitation of athletic injuries. Clinical hours in the athletic training room will give the students the opportunity to use the knowledge, skills, and techniques learned in this course. The student must complete 100 hours of documented clinical hours, which apply toward the clinical hour requirement for NATA certification eligibility. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses. Corequisite: ESS 463.

ESS 465. Pharmacology
2 credits
Offered Fall Semester
Introduction to the basic principles of pharmaceutical intervention and the implications for rehabilitation as related to the Certified Athletic Trainer. Prerequisite: ESS 210, 230, 264. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.

ESS 474. Sport Medicine Modalities
3 credits
Offered Fall Semester
Emphasis upon the basic therapeutic modalities of Sports Medicine. Includes the study of anatomical structure, biomedical evaluation techniques, and treatment. Prerequisite: ESS 474 and experience or permission.

ESS 475. Organization and Administration of Athletic Training
3 credits
Offered Fall Semester
Basic concepts of legal liability, budget, financial management, inventory control, facilities design and maintenance will be addressed. Additionally, the student will discuss the day to day supervision, scheduling and general administration of the athletic training room. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.

ESS 476. Seminar in Athletic Training
2 credits
Offered Fall Semester
Topics in Athletic Training with discussions covering the NATA competencies and objectives in written and oral practical formats. Prerequisite: Permission of the instructor. Open only to ATHT majors. Must have completed ESS 140 and 141 and earned a grade of B or better for both courses.

ESS 477. Advanced Nutrition for Sports and Fitness
3 credits
Offered Spring Semester
This course is an in-depth study of nutritional concerns of today’s athlete. From Dehydration to Classic Carbohydrate Loading and from Female Athlete Triad to Ergogenic Aids in Sports, this course provides state of the art information on the latest nutritional issues for the exercising individual and for the athlete. Prerequisite: ESS 221 or permission of the instructor.

ESS 478. Laboratory Experience in Nutrition
2 credits
Offered Spring Semester
Students will learn how to calculate hydration needs for various sports, electrolyte concentrations of various commercial drinks, classic carbohydrate menus for endurance activities. Students will learn how to enter and interpret dietary food logs and records using computerized dietary analysis systems. Students will also learn more about energy density composition of various foods so that menu plans and dietary plans can be better understood. Corequisite: ESS 477.

ESS 490. Special Topics in Exercise and Sport Sciences
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
This course is designed for students wishing to focus on a specific area of study within the umbrella of the Exercise and Sport Sciences curriculum. Students will be given supervision and support in a direction relevant to their needs and interests in a structured setting.
ESS 495. Individual Study
1-3 credits
Offered Fall and Spring Semesters and First Summer Session
The Application for Admission to Advanced Individual Study Form will be required.
Prerequisite: Application for Admission to Advanced Individual Study form required.

ESS 496. Individual Study
1-3 credits
Offered Fall and Spring Semesters and Second Summer Session
The Application for Admission to Advanced Individual Study Form will be required.
Prerequisite: Application for Admission to Advanced Individual Study form required.

ESS 497. Internship in Sport Administration
9 credits
Offered Fall Semester
Field Experience that requires the student to participate in the work environment.
Student is expected to contribute 450 hours during the course of the semester.
Prerequisite: ESS 301, Senior standing. Open only to SPAD majors. Must have taken ESS 201 and earned a C+ or better.

ESS 498. Seminar in Sport Administration
3 credits
Offered Spring Semester
Professional seminar to accompany internship in sport administration. Students will be required to interact with other internship students and supervisors on a regular basis and additionally, students will be required to submit comprehensive reports regarding their internship experiences. Prerequisite: Senior standing. Open only to SPAD majors. Must have taken ESS 201 and earned a C+ or better.

ESS 515. Nutrition Diet and Exercise
3 credits
Offered First Summer Session
Students will learn the latest concepts in weight management, physical fitness, and healthy eating. They will be able to understand the complex interplay of carbohydrates, protein, fat, water, fiber, vitamins, and minerals in the nourishment of their body and overall well-being. They will also examine serious health issues such as the use/misuse of anabolic steroids, weight control, and eating disorders. Prerequisite: Permission of instructor.

ESS 520. Cellular Exercise Physiology
3 credits
Offered Spring Semester
The course examines Bioenergetics and Muscular Physiology in training and detraining. Topics include the energy systems and their functional application during exercise, muscle structure and function, cellular and sub-cellular modifications of organelles and contractile mechanisms as a result of training and physiological bases of training techniques.

ESS 521. Systemic Exercise Physiology
3 credits
Offered Fall Semester
The study of the physiological effects of acute vs. chronic training on homeostatic function, musculoskeletal systems, energy system function, cardiovascular and the pulmonary systems. Student will be able to understand and interpret terminology and research literature published in the field. Prerequisite: One year of undergraduate chemistry and one year of undergraduate human biology.

ESS 522. Basic Statistics in Exercise and Sport Sciences
3 credits
Offered Fall Semester and First and Second Summer Sessions
Introduction to basic statistical techniques commonly used in the Exercise and Sport Sciences. Designed as a prerequisite for ESS 646.
ESS 523. Athletic Training Techniques - Assessment
3 credits  Offered Fall Semester
This course will introduce the basic concepts related to injury evaluation. With this information, and with the development of basic skills, the student should be able to form an impression of the nature of most musculoskeletal injuries. Prerequisite: ESS 525 and 588.

ESS 524. Athletic Training Techniques - Rehabilitation
3 credits  Offered Fall Semester
This course will introduce theoretical concepts that must be understood in order to be able to rehabilitate a musculoskeletal injury. Regarding actual rehabilitation techniques, the emphasis will be on therapeutic exercise with only a brief introduction to therapeutic modalities. Prerequisite: ESS 525 and 588.

ESS 525. Advanced Kinesiology
3 credits  Offered Fall and Spring Semesters
In-depth study of the human skeletal and muscular systems with a focus on the mechanics of movement as related to physical activity, sports, and athletics. Prerequisite: ESS 245 or permission of instructor.

ESS 530. Laboratory Techniques in Functional Evaluation of Skeletal Muscle
3 credits  Offered Spring Semester
This course examines the theories of data collection and collection techniques used to evaluate musculo-skeletal and neuromuscular function. The application of both computerized and non-computerized collection systems for performance evaluation is covered. The course is also designed to establish a clear linkage between the acute and chronic musculo-skeletal and neuromuscular changes that occur during exercise and the laboratory methods used to assess those changes. Collection theory, musculoskeletal and neuromuscular function, methods of strength evaluation, anaerobic power testing, electromyography, and a number of other functional parameters will be discussed. Prerequisite: ESS 520.

ESS 531. Laboratory Experiences in Systemic Exercise Physiology
3 credits  Offered Fall Semester
This course provides a laboratory assessment of physiological principles and theories learned in the classroom setting. Focus will be on systemic application to exercise as an acute or chronic stressor. Corequisite: ESS 521.

ESS 532. Sports Injuries: Prevention and Treatment
3 credits  Offered Fall and Spring Semesters
Prevention, diagnosis, treatment and rehabilitation of sports injuries. Anatomical and kinesiological applications to sports injuries. Prerequisite: BIL 109.

ESS 534. Contemporary Issues in Sports Medicine
3 credits  Offered By Announcement only
The study of special problems and contemporary issues associated with sports medicine. Prerequisite: Background and experience or permission.

ESS 540. Exercise Psychobiology
3 credits  Offered Fall and Spring Semesters
This course is designed primarily for graduate level Exercise and Sport Science students who are interested in the biochemical basis of personality as affected by exercise and sport. The course involves interdisciplinary integration and comprehensive reviews of ancient and current literature dealing with exercise, stress, emotional, personality, immune system function and neuroendocrine function. Prerequisite: ESS 521.
ESS 541. Neurophysiology in Exercise Science  
3 credits  
Offered Spring Semester  
Examination of the functions of the central, peripheral, and autonomic nervous systems in regulating exercise homeostasis and the structural and functional modifications to the systems through training. NOTE: This course is a writing intensive course. This means that all examinations and papers include a critical evaluation of the student’s ability to convey information using the written word. Prerequisite: ESS 520.

ESS 545. Special Sport Populations  
3 credits  
Offered Spring Semester  
This course presents an in-depth examination of chronic conditions and medical problems commonly observed in athletes. Students will learn about the etiology of the medical condition, how exercise affects the condition, and the most recent therapeutic treatments prescribed for the condition. Prerequisite: ESS 521.

ESS 555. Exercise Biochemistry  
3 credits  
Offered Fall Semester  
This course presents an in-depth examination of the biochemical basis of exercise. Topics include neural control of movement, neuro-endocrine control of metabolism, the kinetics of glucose, lactate, free fatty acids, and amino acids, and the influence of contractile activity on skeletal muscle gene expression. Both the instructor and the students will incorporate current peer-reviewed research in the field. Prerequisite: One year of Chemistry and biochemistry recommended.

ESS 561. Advanced Tests and Measurements in Exercise and Sport Sciences  
3 credits  
Offered Fall Semester  
Advanced techniques of testing, measurement, and evaluation in exercise and sport sciences. Individual projects. Prerequisite: Permission.

ESS 562. Fiscal Management in Sports Administration  
3 credits  
Offered Fall Semester  
Fiscal management as related to athletic sports administration, recreation and leisure sports administration, and physical education. Prerequisite: Background and experience in Exercise Science or permission.

ESS 563. Facilities and Event Management  
3 credits  
Offered Spring Semester  
This course is designed to introduce students to principles and practices of planning, funding and managing facilities associated with sports participation including professional sport venues, college sports, parks, recreational sport and health/fitness clubs. Students will gain an understanding of promoting, marketing, and maintaining sport facilities. Prerequisite: ESS 566.

ESS 564. Principles of Sports Marketing  
3 credits  
Offered Fall and Spring Semesters  
This course will focus on the vast world of sports marketing. The basic principles of marketing and marketing management will be introduced and integrated with application of these principles to sport and sports-related organizations. Prerequisite: ESS 301 or permission of instructor.

ESS 565. Legal Aspects of Sports and Exercise Science  
3 credits  
Offered Spring Semester  
Legal liability, personal injury, negligence and other related legal aspects of sports and exercise science. Prerequisite: Background and experience or permission.
ESS 566. Organization and Administration of Sports Programs
3 credits
Offered Fall Semester
Administrative and organizational procedures and problems specific to athletic administration, recreation and leisure sports administration, and physical education. Prerequisite: Background and experience in Exercise Science or permission.

ESS 567. Elements of Sports Psychology
3 credits
Offered Fall and Spring Semesters
Introduction to the study of sport and exercise psychology including theory, current research and practical application. Prerequisite: Permission of instructor.

ESS 568. Developmental Sports Psychology
3 credits
Offered By Announcement only
Examination of the concept of sport psychology which includes but is not limited to performance, enhancement, student performance and academic application. Prerequisite: Permission of instructor.

ESS 571. Sport Industry in South Florida
3 credits
Offered Spring Semester
This course will examine the various sport based organizations/events that are part of the sport industry in South Florida. Study of these organizations/events will include (a) products/services produced, (b) organizational structure, (c) economic impact on the local community, (d) key management personnel, (e) physical facilities, and (f) internship/employment opportunities.

ESS 572. Creative Approaches to Problem Solving and Conflict Management
3 credits
Offered Spring Semester
This hands-on course will examine the concepts of problem solving and conflict management from both personal and organizational perspectives. Students will have the opportunity to study in-depth both of these concepts (and the relationship between them) through a combination of lecture, theory, individual and group activities, readings, practical exercises, and self-assessment tools.

ESS 573.Sport Governance
3 credits
Offered Spring Semester and Second Summer Sessions
This course provides the student with an examination of the governing organizations of sport at the youth, secondary, intercollegiate, professional, international, sport specific and Olympic levels. In addition, policy development in sport management will be explored. Prerequisite: Graduate standing.

ESS 574. Ethical Decision Making in Sports and the Professions
3 credits
Offered Fall and Spring Semesters
This course will examine ethical decision-making in a variety of environments with an emphasis on sport professions. Real and hypothetical situations will be utilized, and the course will combine theory with practical application. The case method in sport ethics will be incorporated. Prerequisite: Permission of instructor.

ESS 575. Essential Leadership in Sports and the Professions
3 credits
Offered Fall and Spring Semesters
This course will examine the concept of leadership as it pertains to sports and other professions. Various leadership and management skills will be included with a focus on practical applications in a work environment. Theory and self-assessment strategies will be incorporated. Prerequisite: Permission of instructor.

ESS 576. Practical Approach to Motivation and Ethical Decision Making
1-3 credits
Offered Spring Semester
A critical study of practical problems of professionals in Exercise and Sport Sciences. Prerequisite: Background and experience or permission.
**ESS 577. Advanced Nutrition for Sports and Fitness**  
**3 credits**  
*Offered Spring Semester*

This course presents an in-depth study of the nutritional concerns of today's recreational and competitive athlete. Topics include Dehydration, Classic Carbohydrate Loading, Protein needs, Ergogenic Aids, and more. State-of-the-art research in the field is provided. This is also a writing intensive course. Thus, writing skills will represent an integral part of one's grade. Prerequisite: ESS 155 and 221 or 521.

**ESS 578. Pharmacology for Allied Health Professionals**  
**3 credits**  
*Offered Spring Semester*

The study of drug families and drugs in common use across spectra of age, illness, disease, and disability. Students will understand body systems treated with current pharmaceuticals over-the-counter (OTC) medications, and neutraceuticals. Actions, key adverse effects, and influences on individuals undergoing physical activity will be emphasized. Prerequisite: ESS 521.

**ESS 579. Principles of Exercise Prescription/Assessment: Cardiovascular**  
**3 credits**  
*Offered Spring Semester*

This course presents a comprehensive overview of the physical, physiological and metabolic responses of the human body to exercise testing and training both in health and disease. The successful student will gain an understanding of the process involved in prescribing safe and effective therapeutic exercise in healthy individuals as well as patients with heart and lung disease, diabetes and obesity. An overview of environmental and legal considerations in the prescriptive process will also be discussed. Prerequisite: ESS 521.

**ESS 580. The Scientific Bases for Training Prescription: Neuromuscular**  
**3 credits**

An examination of the scientific bases of modern training techniques designed to optimize performance, their functional application and potential impact on performance in sport and everyday activity. Prerequisite: ESS 520 and 521 or permission of the instructor.

**ESS 581. Issues Specific to Women’s Health**  
**3 credits**  
*Offered Spring Semester*

This course focuses upon clinical health issues relevant to women. Students will acquire a body of knowledge concerning the specific biological and physiological changes women experience from birth to maturity, and from the pre- to postmenopausal state. Women will learn significant issues related to women’s health and be able to make more educated decisions regarding their health and treatment options. Prerequisite: ESS 521 or permission of the instructor.

**ESS 582. Psychosocial Issues in Women’s Health**  
**3 credits**  
*Offered Spring Semester*

This course covers a broad perspective of women and their self-esteem, their femininity, and their role in family household. Attention will be paid to the historical, cultural, and anthropological development of women and their role in society. The influence of gender will explore several areas which include a) pregnancy, b) menopause, c) menstrual cycle, d) stress and career vs. family, e) depression, and f) body image.

**ESS 583. Sports Medicine for the Female Athlete**  
**3 credits**  
*Offered Fall Semester*

This course focuses upon the physiological effects of exercise on the female athlete as it relates to her performance and health. Physiological differences between male and females will be examined as it impacts the woman’s performance capabilities and potential. Gender specific problems regarding the exercising female will be explored. Prerequisite: ESS 521.
ESS 584. **Obesity: Prevention and Treatment**  
3 credits  
Offered Fall Semester  
This course is designed to evaluate dieting, rebound effect, set point theory, brown fat, and adaptive thermogenesis, as they relate to the etiology of obesity. The course will cover a step-by-step approach in the recognition, and management of the overweight patient. This includes determination of basal metabolic rate, thyroid function, percent body fat, quantification of adipocyte number and mass, and research on exercise as a therapeutic intervention. Students will learn to design exercise programs for hypothetical obese patients and the impact of both diet and exercise on long-term weight management. Prerequisite: ESS 521 and 577 or permission of the instructor.

ESS 585. **Advanced Topics in Exercise and Sport Sciences**  
3 credits  
Offered Spring Semester and First and Second Summer Sessions  
This course will provide a synthesis of essential concepts in specialty subjects relevant to one’s field of interest. Prerequisite: Permission of instructor.

ESS 586. **Exercise Prescription/Assessment Laboratory**  
3 credits  
Offered Fall Semester  
Prerequisite: ESS 579.

ESS 587. **Laboratory Experience in Sports Nutrition**  
3 credits  
Offered Spring Semester  
This laboratory class provides case study analyses and computerized nutrient analysis systems designed to evaluate nutrition and hydration needs of the recreational and competitive athlete. From urinalysis and blood work to body composition and computerized nutrient data base systems, this laboratory provides a clinical approach to evaluating the nutrition status of the exercising individual. Corequisite: ESS 577.

ESS 588. **Gross Anatomy in Exercise and Sport Sciences**  
3 credits  
Offered Spring Semester  
Human dissection of the major muscles, arteries and nerves of the body. Course is held at the University of Miami, Medical Campus, cadaver laboratory. Special consideration is given to injury sites in sports such as the knee, shoulder, elbow, neck and spinal areas. Students are required to pay a laboratory fee for this class. Prerequisite: BIL 109.

ESS 589. **Directed Readings in Exercise and Sport Sciences**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Directed Readings focusing on research and contemporary trends. Prerequisite: Permission of Chairperson.

ESS 590. **Special Topics in Exercise and Sport Sciences**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
This course is designed for students wishing to focus on a specific area of study within the umbrella of the Exercise and Sport Sciences curriculum. Students will be given supervision and support in a direction relevant to their needs and interests in a structured setting. Prerequisite: Background and experience or permission.

**Teaching and Learning**

TAL 101. **Social and Technological Foundations of Education**  
2-3 credits  
Offered Fall and Spring Semesters  
Introduction to social and technological foundations of education, focusing on the historical, philosophical, and sociological analysis of schools in American society and applications of technology in education.
TAL 102. **Educational Technology Laboratory**

1 credit  
Offered Fall and Spring Semesters

Applications of technology to education, including use of technology in instruction, assessment, and productivity. Field based. Corequisite: TAL 101.

TAL 103. **Psychological Foundations of Education**

1- 3 credits  
Offered Fall and Spring Semesters

The teaching-learning process in the classroom, including human development, learning theories, motivation, assessment and evaluation.

TAL 107. **American Sign Language I**

3 cr.

This course is designed to allow participants to learn about Deaf Culture and be able to sign with sufficient fluency to discuss work, social, and family topics using two to four sentence responses.

TAL 207. **American Sign Language II**

3 cr.

This course is designed to allow participants to learn about Deaf Culture and be able to sign with sufficient fluency to discuss work, social, and family topics using four to six sentence responses. Students will be able to independently participate in a signed conversation without the use of voicing. Prerequisite: TAL 107 (ASL I).

TAL 191. **Developmental Reading for College Students**

3 credits  
Offered Fall and Spring Semesters

Instruction in college level reading skills based on individual student needs with emphasis on vocabulary, rate of comprehension and retention, and functional reading.

TAL 202. **Language and Culture in the Classroom**

3 credits  
Offered Fall and Spring Semesters

Survey of diverse aspects of language and culture which influence the teaching-learning process. Field experiences in schools with diverse populations. Prerequisite or corequisite: TAL 101.

TAL 203. **Children’s Literature**

3 credits  
Offered Fall and Spring Semesters

History, trends, and genres of children’s literature with emphasis on children’s literature as a curriculum resource.

TAL 204. **Meeting the Educational Needs of Diverse Secondary Learners**

3 credits  
Offered Fall and Spring Semesters

Course is designed to assist general education teachers in meeting the needs of diverse secondary school students. Emphasis is placed on language and culture in the classroom, as well as students with disabilities. Prerequisite: TAL 101.

TAL 205. **Classroom and Behavior Management**

3 credits  
Offered Fall and Spring Semesters

Principles of behavior analysis and other classroom management strategies as applied to elementary school. Field experience in schools with diverse populations and English language learners is included. Prerequisite: TAL 101.

TAL 304. **Content Area Reading and Learning Strategies**

3 credits  
Offered Fall and Spring Semesters

Essentials of literacy instruction in different subject areas for middle, junior, and senior high schools; instructional methods and materials for development of language arts, reading, and study skills. Emphasis is placed on selecting appropriate materials, motivating students, and helping students with exceptional needs and students who are English language learners. Field experience required.
TAL 330. Introduction to the Education of Exceptional Individuals
3 credits
Offered Fall and Spring Semesters
A survey course providing a general orientation to Exceptional Individual Education as an integral part of the general education structure. Includes an introduction to appropriate educational programs for exceptional individuals.

TAL 332. Assessment of Exceptional Students
3 credits
Offered Spring Semester
Assessment process and techniques used in the identification, assessment, and instruction of exceptional students. Prerequisite: TAL 101, 102, 202, 205, 330.

TAL 341. Introduction to Models of Curriculum Development in TESOL
3 credits
Offered By Announcement only
This course is designed to provide participants with professional training in developing multicultural curricula and instructional materials for students in the process of learning English as a new language. Prerequisite: TAL 101; 102; 243 or permission of instructor.

TAL 420. Introduction to Literacy Instruction in the Elementary School
3 credits
Offered Fall and Spring Semesters
Literacy instruction in the elementary school with emphasis on curriculum, methods and materials for teaching reading, writing, listening, speaking, and viewing. Field experience is required. Prerequisite: Application to teacher candidacy. Corequisite: TAL 421.

TAL 421. Literacy Instruction in the Elementary School II
3 credits
Offered Fall and Spring Semesters
A continuation of TAL 420 with an emphasis on assessment, and adaptation. Field experience is required. Corequisite: TAL 420.

TAL 422. Mathematics Instruction in the Elementary School
3 credits
Offered Fall and Spring Semesters
Content and appropriate methods for teaching mathematics in grades K-6. Content is defined as pre-algebra mathematics. Prerequisite: Application to teacher candidacy.

TAL 423. Content Area Instruction in the Elementary School
3 credits
Offered Fall and Spring Semesters
Methods and materials for teaching science, social studies, and health in the elementary school. Prerequisite: Application to teacher candidacy.

TAL 424. Fine Arts in the Elementary School
3 credits
Offered Fall and Spring Semesters
Content and methods for teaching art and music in the K-6 program. Emphasis is placed on the use of these disciplines to aid the classroom teacher in accomplishing academic objectives and in developing well-rounded individuals.

TAL 425. Inclusive Classrooms in the Elementary School
3 credits
Offered Fall and Spring Semesters
Prepares elementary school teachers to meet the individual needs of students with disabilities who have been integrated into the general education classroom. Prerequisite: TAL 420 and 422.

TAL 426. Instructing Students who have Literary Challenges
3 credits
Offered Fall and Spring Semesters
A course on providing corrective, remedial, and/or clinical reading instruction for students who are struggling to become literate. Emphasis is placed on diagnosis as well as remediation. Prerequisite: TAL 420 and 421.
TAL 427. Language and Assessment in ESOL
3 credits
Offered Fall and Spring Semesters
Study of language systems with a focus on understanding and applying linguistic terms. Course prepares teachers to conduct informal and formal language assessment procedures with limited-English-proficient students. Field experiences in schools with diverse populations. Prerequisite: TAL 202, 205, 420, 421, 422.

TAL 428. ESOL Curriculum and Methods
3 credits
Offered Fall and Spring Semesters
This course focuses on applying TESOL theories, principles, and current research to the development and use of instructional materials, curriculum, and methods. The course will enhance participants’ knowledge of the regular English language arts curriculum in comparison with the ESOL curriculum. Prerequisite: TAL 202, 205, 420, 421, 422, 423, 427 (may be taken concurrently with TAL 427 with permission from the instructor).

TAL 432. Curriculum and Instruction in Exceptional Student Education for K-6 Settings
3 credits
Offered Fall Semester
Instructional strategies and materials appropriate for teaching students enrolled in Exceptional Student Education programs in K-6 settings. Students must be enrolled concurrently in TAL 434. 50 hours of field experience required in an assigned K-6 ESE setting. Prerequisite: TAL 101, 102, 202, 205, 330, 332, and admission to teacher candidacy.

TAL 434. Curriculum and Instruction in Exceptional Student Education for Grades 7-12 Settings
3 credits
Offered Fall Semester
Instructional strategies and materials appropriate for teaching students enrolled in Exceptional Student Education programs in grades 7-12 settings. Students must be enrolled concurrently in TAL 432. 50 hours of field experience required in an assigned K-6 ESE setting. Prerequisite: TAL 101, 102, 202, 205, 330, 332, and admission to teacher candidacy.

TAL 440. Instruction in the Secondary School
3 credits
Offered Fall and Spring Semesters
Presentation and analysis of effective instruction in the secondary school. Prerequisite: Application to teacher candidacy.

TAL 441. Instruction in Secondary English
2-3 credits
Offered Fall Semester
Analysis of methods, materials, and content appropriate for teaching language arts in the secondary school. Prerequisite: Permission of instructor.

TAL 443. Instruction in Secondary Mathematics
3 credits
Offered Fall Semester
Analysis of methods, materials, and content appropriate for teaching mathematics in the secondary school. Prerequisite: Permission of instructor.

TAL 444. Instruction in Secondary Science
2-3 credits
Offered Fall Semester
Analysis of methods, materials, and content appropriate for teaching science in the secondary school. Prerequisite: Permission of instructor.

TAL 445. Instruction in Secondary Social Studies
2-3 credits
Offered Fall Semester
Analysis of methods, materials, and content appropriate for teaching the social sciences in the secondary school. Prerequisite: Permission of instructor.
TAL 446. **Methods of Teaching Theatre**  
**3 credits**  
Analysis of methods, materials, and content appropriate for teaching the theatre arts in elementary and secondary school.

TAL 470. **Associate Teaching in the Elementary School (Semester-Long)**  
**6- 9 credits**  
Offered Fall and Spring Semesters  
A comprehensive semester-long program in observation and supervised teaching in the elementary school. The student spends full time in an elementary school participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 471. **Associate Teaching in the Elementary Schools for K-12 Areas**  
**3- 6 credits**  
Offered Fall and Spring Semesters  
A comprehensive program in observation and supervised teaching in the elementary school. The student spends full-time for one half a semester in an elementary school, participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 472. **Associate Teaching in the Secondary School**  
**6- 9 credits**  
Offered Fall and Spring Semesters  
A comprehensive program in observation and supervised teaching in the secondary school. The student spends full time in a secondary school participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 473. **Associate Teaching in the Secondary School for K-12 Areas**  
**3- 6 credits**  
Offered Fall and Spring Semesters  
A comprehensive program in observation and supervised teaching in the secondary school. The student spends full time for one half a semester in a secondary school, participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 477. **Field Experience in Education**  
**1- 9 credits**  
Offered By Announcement only  
Placement in government agencies, medical centers, adult education centers, public and private school classrooms, community agencies, and local businesses related to academic course work or area of interest. A minimum of 30 hours per credit of supervised field experience. One hour bi-weekly integrative seminars with faculty supervisors to focus on personal meaning derived from and given to the experience, self-evaluation, group sharing, and discussion of commonalities of experiences is required. Prerequisite: Permission of advisor.

TAL 478. **Associate Teaching in Elementary School (Year-Long)**  
**4- 8 credits**  
Offered By Announcement only  
A comprehensive year-long program in observation and supervised teaching in the elementary school. The student spends full time in an elementary school participating in all activities of the teacher under the guidance of school and university personnel following the calendar of the school system. Prerequisite: Approval of the Committee on Field Experiences.

TAL 480. **Seminar on Teaching**  
**3 credits**  
Offered Fall and Spring Semesters  
Topical seminar to accompany associate teaching. Prerequisite: Concurrent with associate teaching.
TAL 495. Individual Study  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual work on a special project under faculty guidance. Application for Admission to Advanced Individual Study will be required. Prerequisite: Permission of directing faculty member and Department Chairman.

TAL 501. Classroom Based Assessment  
3 credits  
Offered Fall and Spring Semesters  
Principles and classroom applications of educational measurement and assessment.

TAL 502. Classroom Based Research  
3 credits  
Offered By Announcement only  
Application of research principles to evaluation and improvement of teacher effectiveness. Use of scientific methods in problem solving and decision making in the classroom. Student experiences in the planning, conduct, analysis and reporting of classroom research are included.

TAL 503. Micro-Computer Applications in Education  
3 credits  
Offered Spring Semester  
Microcomputer applications in early childhood, elementary, and secondary English, Social Studies, Science, and Mathematics education.

TAL 506. Issues and Strategies for ESOL  
3 credits  
Offered By Announcement only  
This course provides a comprehensive foundation in ESOL (English for Speakers of Other Languages) competencies based on Florida's mandates and TESOL standards. Theory and practice will be emphasized in the areas of applied linguistics, cross cultural communication and understanding, methods of teaching, assessment, and curriculum and material development. Prerequisite: TAL 101 and 204 or permission of instructor.

TAL 508. Teaching English Grammar for TESOL  
3 credits  
Offered By Announcement only  
This course is designed to provide participants with a knowledge of the rules of modern English grammar and an ability to teach and test application of those rules in a range of language skill contexts to students whose native language is not English. Analysis of grammar texts and tests are emphasized.

TAL 517. Curriculum, Assessment, Teaching and Learning for Physical Science  
3 credits  
Analysis of content knowledge, pedagogy, and materials appropriate for teaching physical science in the elementary school. The course content focuses on instructional practice with an emphasis on developing teacher content knowledge in physical science, pedagogy, and student literacy in physical science.

TAL 518. Curriculum, Assessment, Teaching and Learning for Number, Operations, and Algebra  
3 credits  
This course examines topics that address the mathematical ideas underlying number, operations and algebra. Related curriculum, instructional and assessment issues will be also discussed.
TAL 519. Equity in Math, Science, and Technology
3 credits
Issues of unequal student achievement, course taking, degree-seeking, and careers that rely on mathematics, science, and technology. Focus is on social-demographic groups defined along lines of race, ethnicity, social class, gender, language, and their interactions. Historical and social antecedents, current day policies and practices, extant research, consequences, and future trends. Prerequisite: Graduate student; advanced undergraduate with consent of professor.

TAL 521. Curriculum, Assessment, Teaching and Learning for the Life Sciences
3 credits
Analysis of content knowledge, pedagogy, and materials appropriate for teaching life science in the elementary school. The course content focuses on instructional practice with an emphasis on developing teacher content knowledge in life science, pedagogy, and student literacy in life science.

TAL 524. Fine Arts in Elementary School
3 credits
Content and methods for teaching art and music in the K-6 program. Emphasis is placed on the use of these disciplines to aid the classroom teacher in accomplishing academic objectives and in developing well-rounded individuals. Prerequisite: Admission to graduate studies.

TAL 527. Language and Assessment in ESOL
3 credits
Offered By Announcement only
Study of language systems with a focus on understanding and applying linguistic terms. Course prepares teachers to conduct informal and formal assessment procedures with English language learners. Field experience with English language learners is required. Prerequisite: TAL 531, 550 or 620, 603, 622.

TAL 528. ESOL Curriculum, Materials, and Methods
3 credits
Offered By Announcement only
This course focuses on applying TESOL theories, principles, and current research to the development and use of instructional materials, curriculum, and methods. The course will enhance participant’s knowledge of the regular English language arts curriculum in comparison with the ESOL curriculum. Field experience with English language learners is required. Prerequisite: TAL 531, 550 or 620, 603, 622.

TAL 531. Educating Exceptional Students
3 credits
Offered Fall and Spring Semesters
A survey course in special education emphasizing characteristics and problems associated with various categories of exceptional learners. Policy, issues, and trends in special education will be discussed.

TAL 540. General Methods of Teaching in the Secondary School
3 credits
Offered Fall and Spring Semesters
Research-based instructional processes in the secondary school. Prerequisite: Senior standing in Education, or permission of instructor.

TAL 541. Teaching English in the Secondary School
3 credits
Offered Fall Semester
Content and methods appropriate for teaching English language arts in the second school. Twenty hours of field experience required. Prerequisite: Application to teacher candidacy.

TAL 544. Teaching Science in the Secondary School
3 credits
Offered Fall Semester
Content and methods for teaching science in the secondary school. Prerequisite: TAL 540; Teacher candidacy.
TAL 550. Language and Early Reading Instruction
3 credits
Offered Fall Semester
Factors related to emergent literacy with an emphasis on diverse aspects of language that influence literacy and learning; development of emergent literacy and word perception; emergent literacy curriculum development; appropriate assessment and instructional techniques. Understanding of reading as a process of student engagement in fluent decoding and construction of meaning. Writing intensive.

TAL 551. Word Perception in Reading
3 credits
Offered By Announcement only
Administration and interpretation of a standard reading inventory. An examination of the word recognition and vocabulary curriculum as well as appropriate assessment devices and instructional techniques.

TAL 552. Reading Comprehension
3 credits
Offered Spring Semester
Development of comprehension, rate, and study skills; reading in the content areas; evaluation of materials, organization of programs; issues, problems, and exceptional readers. Emphasis is placed on understanding reading as a process of student engagement in fluent decoding of words and construction of meaning.

TAL 554. Literacy and Learning Strategies in the Content Area
3 credits
Offered Fall and Spring Semesters
Literacy instruction in content areas for grades 6 through 12; instructional methods and materials for development of language arts, reading, and study skills. Emphasis on appropriate materials, motivation, and support for students with exceptional needs and English language learners.

TAL 584. Supervision of Associate Teachers
3 credits
Offered By Announcement only
For clinical teachers to prepare for induction, guidance, and supervision of field experience students and associate teachers. Prerequisite: Prior Teaching experience.

TAL 591. Workshop in Education
1- 6 credits
Offered By Announcement only
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 592. Seminar in Teaching English as a Foreign Language
3 credits
Offered By Announcement only
This course is designed to provide prospective international teachers of English as a new language with essential strategies and multiple models of teaching techniques; and the theoretical framework to apply these strategies and techniques. Prerequisite: Admission to graduate program.

TAL 593. Workshop in Education
1- 6 credits
Offered By Announcement only
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 594. Workshop in Education
1- 6 credits
Offered By Announcement only
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.
TAL 595. Workshop in Education
1-6 credits
Offered By Announcement only
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 596. Workshop in Education
1-6 credits
Offered By Announcement only
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 597. Workshop in Education
1-6 credits
Offered By Announcement only
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 598. Workshop in Education
1-6 credits
Offered By Announcement only
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 599. Workshop in Education
1-6 credits
Offered By Announcement only
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.
**Engineering**

**Biomedical Engineering**

**BME 111. Introduction to Engineering I**
3 credits  
*Offered Fall and Spring Semesters*

Use of engineering tools for problem solving are discussed. Topics include the use of computer techniques for data acquisition, analysis, presentation, software design, computer aided drafting, and development of design skills through several design and building competitions. Introduction to professional ethics and intellectual property rights, the use of MATLAB, AutoCAD, and programming in C++.

**BME 112. Introduction to Engineering II**
2 credits  
*Offered Fall and Spring Semesters*

Introduction to biomedical engineering analysis, design, and manufacturing processes. Ethics, regulatory factors, and biomedical engineering design tools (mechanical, electrical and computer tools) are introduced. Hands on experience is provided through a project in which the students design, assemble, program, and test biomedical devices. Prerequisite: BME 111.

**BME 265. Medical Systems Physiology**
3 credits  
*Offered Spring Semester*

Human physiological processes from a bioengineering and medical point of view. Pertinent aspects of anatomy, biophysics, biochemistry, and disease mechanisms are also included. Prerequisite: BIL 150, 151, CHM 111, 112.

**BME 301. Practical Training**
1-3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

This course serves as a way to acknowledge and evaluate a student’s work on a design or research project that is conducted in a non-teaching laboratory or in a corporation. The activity supplements rather than substitutes for any of the degree requirements in BME.

**BME 305. Biomedical Technology**
3 credits  
*Offered Spring Semester*

Non-mathematical introduction to technical and clinical aspects of biomedical engineering. Biomedical signals and instrumentation, sensors, transducers, physiological measurements, laboratory instrumentation, implants, cardiac assist devices, radiology, ultrasound, CT, MRI, transmission, and scanning electron microscopy. Field trips to clinical and research laboratories are included. Open only to non-BME students. Prerequisite: BIL 150, CHM 111.

**BME 310. Mathematical Analysis in Biomedical Engineering**
3 credits  
*Offered Fall and Spring Semesters*

Mathematical modeling of physiological and other biomedical engineering systems and devices. Basic engineering principles and mathematical tools are covered for rigorous understanding of physiological regulation and control in biosystems. Prerequisite: PHY 207, MTH 311.

**BME 320. The Evolution of Technology**
3 credits  
*Offered Spring Semester*

Organized and taught by an interdisciplinary team, this innovative course is designed for juniors and seniors. An experimental elective, the course uses multimedia to explore the ways in which innovation is driven by the needs of society and individuals, and nurtured by improvements in tools and production. Five broad subject areas will receive special attention: survival, communication, transportation, entertainment and medicine. Prerequisite: Junior standing or higher, or permission of the instructors.
BME 330. Foundations of Medical Imaging
3 credits Offered Fall Semester
Physical and biological principles of medical imaging, including ultrasound, X-ray, nuclear, magnetic resonance, electrical impedance and optical imaging. Propagation and interaction of ultrasonic waves, light waves, X-ray photons, and nuclear radiation in hard and soft biological tissue. Prerequisite: PHY 207, MTH 311 or MTH 211 or MTH 312. Corequisite: BME 310.

BME 335. Biomaterials I
3 credits Offered Fall and Spring Semesters
Introduction to the field of Biomaterials. Review of materials science for four main types of biomaterials: ceramics, metals, polymers, and composites. Lectures on special topics given by guest lecturers who are active in their specific areas, under supervision of the instructor. Prerequisite: MEN 301.

BME 375. Biomechanics I
3 credits Offered Fall and Spring Semesters
Application of solid and fluid mechanics to describe the mechanical behavior of human motion, mechanical behavior of soft and hard biological tissues, cells and biofluids. Review of fundamental concepts and techniques of mechanics (stress, strain, constitutive relations). Focus on mechanical properties of specific tissues, including tendon, skin, smooth muscle, heart muscle, cartilage, and bone. Cellular and biofluid mechanics will be presented. Prerequisite: CAE 210.

BME 399. Cooperative Education
1 credit Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical application of classroom theory through alternating semester or summer employment with firms offering positions consistent with the student's field of study. May be repeated.

BME 401. Senior Project I
1-2 credits Offered Fall and Spring Semesters
Planning Phase of an individual or group project for seniors, to be taken during the penultimate semester to graduation. Prerequisite: Senior standing.

BME 402. Senior Project II
1-2 credits Offered Fall and Spring Semesters
Completion of individual or group project for seniors, to be taken during the final semester before graduation. A total of 3 credits in this 401-402 sequence. Prerequisite: Senior standing.

BME 415. Independent Study
1-3 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Research and/or design projects consisting of an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.

BME 440. Biomedical Measurements
4 credits Offered Fall and Spring Semesters
Introduction to the principles of measurements in physiological and biological systems, as well as a discussion of measurable parameters, transducers, sensors, signal conditioning, and processing. Laboratory experiments are conducted in parallel with the course. Prerequisite: BIL 150, 151, EEN 305, 307.
BME 460. Introduction to Physiological Fluid Mechanics
3 credits
Offered Spring Semester
The role of transport processes in biological systems, mathematical modeling of physiological fluid transport, conservation of mass and momentum rheology of blood flow in large and small vessels, approximation methods for the analysis of complex physiological flow, fluid flow in the circulation and tissue. Basic engineering principles and mathematical tools are covered for rigorous understanding of physiological fluid flow. Prerequisite: PHY 207, CAE 210, MTH 311.

BME 480. Biomedical Instrumentation
3 credits
Offered Fall and Spring Semesters
Analysis and design of systems and electronic circuitry in medical and biological instrumentation. Treatment of bioelectric potentials electrodes, transducers, high gain-low noise input circuits, timing and switching circuits, biotelemetry, bioelectrodes, and bioelectric systems are discussed. Prerequisite: EEN 305, 307. Corequisite: BME 440.

BME 501. Unified Medical Sciences I
3 credits
Offered Fall Semester
Treatment of the basic biological and medical elements in physiological systems. The anatomy, physiology, biophysics, biochemistry and certain aspects of clinical medicine are unified with an emphasis on cellular and subcellular systems. Not open to BME undergraduates. Prerequisite: Permission of course coordinator.

BME 502. Unified Medical Sciences II
3 credits
Offered Fall Semester
Treatment of the basic biological and medical elements in physiological systems. The anatomy, physiology, biophysics, biochemistry, and certain aspects of clinical medicine are unified with an emphasis on cardiovascular, renal, digestive, endocrine, and reproductive systems. Not open to BME undergraduates. Prerequisite: Permission of course coordinator.

BME 503. Unified Medical Science III
3 credits
Offered Spring Semester
Treatment of the basic biological and medical elements in physiological systems. The anatomy, physiology, biophysics, biochemistry, and certain aspects of clinical medicine are unified with an emphasis on neural, sensory, and muscular systems. Not open to BME undergraduates. Prerequisite: Permission of course coordinator.

BME 506. ProEngineer Applications for Biomedical Engineering
1 credit
Offered Spring Semester
Laboratory course for computer based two and three dimensional drawing and design based on ProEngineer. Parametric design, parts, features, assemblies for complex modeling. Applications in biomedical engineering design. Prerequisite: BME 111, 112, EEN 118.

BME 507. LabView Applications for Biomedical Engineering
1 credit
Offered Spring Semester
Laboratory course for computer based instrumentation and design based on Labview. Virtual instrumentation, data acquisition and display, GPIB instrument control, biomedical applications in biosignal recording, and monitoring are discussed. Prerequisite: BME 111, 112, EEN 118.

BME 511. Clinical Engineering
3 credits
Offered By Announcement only
Clinical engineering concepts, medical instrumentation and systems, patient safety, requirements and regulations for medical devices, hospital organization, accreditation requirements, and related topics are discussed. Prerequisite: Permission of instructor.
BME 512. Regulatory Control of Biomedical Devices
3 credits
Offered Spring Semester
Regulatory agencies and requirements, Food and Drug Administration, 510(k) and premarket approval (PMA), international regulatory requirements, ISO 9000 series, CE, UL, product and process validation, quality engineering, quality improvement programs, rapid prototyping, packaging and sterilization, and project management are discussed.

BME 520. Medical Imaging Systems
3 credits
Offered By Announcement only
Engineering and scientific principles of medical imaging systems. The concepts of instrumentation and diagnostic applications of different techniques and systems are presented. Demonstrations or exhibitions of medical systems are given in the visits to clinic and research laboratories. Topics include digital image and image processing fundamentals, radiographic (X-ray, CT), magnetic resonance (MRI) and radio-isotopic (PET) systems, and associated image reconstruction techniques. Basic concepts and simulation of imaging systems are emphasized. Prerequisite: EEN 118, 201, 307, BME 570 (co-requisite) or equivalent.

BME 521. Medical Imaging Applications
3 credits
Offered Fall Semester
Medical applications of imaging systems and image processing techniques. Topics include image fundamentals (resolution, format, and storage), image processing fundamentals (transformation, compression, enhancement, segmentation, registration, and reconstruction), and image analysis fundamentals (calibration, quantification, correlation, linearity and depiction). Course includes dedicated computer laboratory projects and demonstrations given in clinical and research laboratories at the medical campus. Prerequisite: EEN 118, 201, 307. Corequisite: BME 570 or equivalent.

BME 525. Special Problems
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Research and/or design projects consisting of an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Senior or graduate standing; permission of instructor.

BME 526. Special Problems
1-3 credits
Offered Fall and Spring Semesters
Research and/or design projects consisting of an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.

BME 527. Special Problems
1-3 credits
Offered Fall and Spring Semesters
Research and/or design projects consisting of an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.

BME 528. Engineering Hemodynamics
3 credits
Offered By Announcement only
Fluid mechanics of circulation with emphasis given to function of the heart and its valves, systemic circulation including arterial flow, capillary, venous flows, pulmonary circulation including alveolar sheet flow. Particular stress is placed on the modeling of physiological events related to blood flow in cardiovascular devices and prostheses. Prerequisite: MEN 309 or equivalent.

BME 529. Special Problems
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Research and/or design projects. Individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.
BME 531. Technical Entrepreneurship I
1 credit  Offered Fall and Spring Semesters
The first half of a two-semester sequence that simulates the work of a product
development team to gain experience in technical entrepreneurship. The students
propose product ideas, assess those collectively, select a few, form teams, define
the product, and perform market analysis. The course is concluded with a
business and technical development plan for the team’s project. Lectures are
presented on a variety of entrepreneurial topics. Prerequisite: Junior or higher
standing.

BME 532. Technical Entrepreneurship II
2 credits  Offered Fall and Spring Semesters
The second half of a two-semester sequence that simulates the work of a product
development team to gain experience in technical entrepreneurship. The students
complete the development of a working prototype and refine their marketing and
business plan based on experience gained during the development phase.
Lectures are presented on relevant entrepreneurial topics. Prerequisite: Junior or
higher standing.

BME 535. Advanced Biomaterials
3 credits  Offered By Announcement only
Applications of biomaterials in different tissue and organ systems. Relationship
between physical and chemical structure of materials and biological system
response are discussed as well as choosing, fabricating, and modifying materials
for specific biomedical applications. Prerequisite: BME 335 or permission of
instructor.

BME 540. Microcomputer-Based Medical Instrumentation
3 credits  Offered By Announcement only
Principles and design of microcomputer-based biomedical instruments, analog
and digital signal conversion, microcomputer hardware and software design,
algorithm development for medical applications, medical signal processing with
microcomputers, software safety in life support systems, and current applications
are discussed. Prerequisite: EEN 304 and 315, or permission of instructor.

BME 541. Medical Electronic Systems Laboratory
2 credits  Offered Spring Semester
Laboratory course for BME 540. Design of medical instruments integrated with

BME 545. Biomedical Optical Instruments
3 credits  Offered Fall Semester
Introduction to geometrical optics, light sources, detectors, and fiber optics with
an emphasis on engineering aspects and medical applications. Fiber-optic delivery
systems for medical applications, optics of the eye and visual instruments, and
optical instruments used in medicine (microscopes, endoscopes, ophthalmic
instruments) are discussed. Hands-on sessions in the laboratory are included.
Prerequisite: PHY 207, MTH 311 or permission of the instructor.

BME 546. Medical Applications of Lasers
3 credits  Offered Spring Semester
Review of geometrical optics, fiber optics, wave optics, laser physics, and
technology. Medical laser systems, optical properties of tissue, light propagation
in tissue, laser-tissue interactions, and surgical applications of lasers are also
covered. Hands-on sessions in the laboratory are included. Prerequisite: PHY 207,
MTH 311 or permission of the instructor.
BME 550. Rehabilitation Engineering
3 credits  Offered Fall Semester
Principles of rehabilitation engineering with emphasis on currently used assistive
devices for ambulation and hand motion. Human neural and muscle physiology,
electromyography, functional electrical stimulation, artificial and biological
sensors, control, and design aspects of active assistive devices for the active
assistive devices for the handicapped are discussed. Prerequisite: EEN 305 or
permission of instructor.

BME 560. Biomedical Transport Phenomena
3 credits  Offered Fall and Spring Semesters
General phenomenological laws, momentum transport, energy transport, mass
transport, viscoelasticity, diffusivity, thermal conductivity of biological materials,
first and second laws of thermodynamics, blood as a living fluid, cellular and
membrane transport, transport in microcirculation, large vessels, and transport
phenomena in the lung and other organs are discussed. Prerequisite: MTH 311 or
permission of instructor.

BME 565. Principles of Cellular and Tissue Engineering
3 credits  Offered Fall Semester
Introduction to cellular and tissue engineering. Current therapeutic approaches
for lost/damaged tissue or organ function, tissue engineering strategies to
replace/repair tissue or function: infusion of cells, production and delivery of
tissue-inducing substances, cells placed on or within biomaterial scaffolds,
examples of tissue engineering applications: skin, heart muscle, blood vessels,
and blood. Prerequisite: BIL 150, BME 335 or permission of instructor.

BME 570. Introduction to Biosignal Processing
3 credits  Offered Fall and Spring Semesters
Course topics include quantitative description, analysis, and processing of
biophysical and physiological (cardiovascular, neural, sensory, muscular,
respiratory and other) signals using computers. Survey of time-frequency
representations, correlation, convolution, coherence, filtering, averaging, and
classification is also included. Prerequisite: EEN 118, BME 440 or permission of
instructor.

BME 571. Introduction to Biosignal Processing Lab
1 credit  Offered Fall and Spring Semesters
Laboratory course in conjunction with BME 570 course. Corequisite: BME 570.

BME 575. Biomechanics II
3 credits  Offered By Announcement only
Applications of linear and nonlinear viscoelastic concepts to the biomedical
characteristics of biological tissues and structures at small and large deformations
of blood flow, experimental methods of analysis, artificial organs, and life-support
systems. Prerequisite: BME 375.

BME 581. Radiation Biology and Physics
3 credits  Offered Fall Semester
The principles, methods, and results of radiation biology with physics applications
in radiation therapy will be introduced in the course. The course will focus on
mechanisms of radiation and biological system interaction, biological aspects of
the foundation of radiation therapy, and mathematical models for radiobiological
analysis. Corequisite or prerequisite: BME 502 or permission of instructor.
BME 582. Radiation Dosimetry  
3 credits  
Offered Spring Semester  
The principles and instrumentation of radiation dosimetry with focus on the applications in radiation therapy will be introduced in this course. The course will emphasize radiation dose computation algorithms and applications in treatment dose planning. The course will also cover a categorized dosimetric analysis of radiation therapy to different clinical conditions. Prerequisite: BME 310, 581.

BME 585. Bioelectromagnetism  
3 credits  
Offered By Announcement only  
Historical review of the discovery of the role of electric, magnetic, and electromagnetic fields in living systems. The survey of electro, magneto, and therapeutic devices are included as well as the interactions between electromagnetic fields and living tissues in both harmful and beneficial ways. Prerequisite: Either BME 502 or 503, or permission of instructor.

BME 586. Dynamic Analysis of Biological Tissues  
3 credits  
Offered By Announcement only  
Dynamic analysis of biological tissues including characterization of viscoelastic properties of biological tissues using a Dynamic Mechanical Analyzer. Lab experiments are included. Prerequisite: BME 375, 335 or consent of instructor.

BME 590. Special Topics  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule following the title Special Topics. Prerequisite: Junior or higher standing.

Civil, Architectural, and Environmental Engineering

CAE 111. Introduction to Engineering I  
3 credits  
Offered Fall and Spring Semesters  
Use of engineering tools for problem solving. Computer techniques for data acquisition, analysis and presentation, software design, and computer aided drafting are covered. Development of design skills is achieved through several design and building competitions. Introduction to professional ethics and intellectual property rights, MATLAB, AutoCAD, and programming in C++ is also included.

CAE 112. Introduction to Engineering II  
2 credits  
Offered Spring Semester  
Hands-on applications of various surveying instruments for leveling, angles and distance measurements, and other engineering applications. Hands on application of Geographic Information Systems, including ArcView and extensions. Prerequisite: CAE 111.

CAE 201. Computer-Aided Drafting and Design  
2 credits  
Offered Fall Semester  
The use of AutoCAD and MicroStation software as an aid to drafting and engineering design. Prerequisite: CAE 112.

CAE 210. Mechanics of Solids I  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Vectors, force systems, equilibrium, analysis of frames, machines, trusses for internal forces, friction, centroids, moment of inertia, and shear and bending moment diagrams are discussed. Prerequisite: MTH 110 or 111; or Corequisite PHY 205; or permission of instructor.
CAE 211. Mechanics of Solids II
3 credits
Offered Fall and Spring Semesters
Flexural, shear, principal, and torsional stresses are discussed as well as displacements and instability. An introduction to statically indeterminate analysis is also included. Prerequisite: CAE 210. Corequisite: CAE 212.

CAE 212. Structural Laboratory
1 credit
Offered Fall and Spring Semesters
Laboratory techniques, tests for tension, compression, shear, bending, and torsion are discussed. Models, similitudes, buckling of columns, and review of current research are also included. Laboratory 3 hours. Prerequisite: ENG 107. Corequisite: CAE 211

CAE 213. Behavior of Structural Systems I
3 credits
Offered Fall Semester
Design and testing of experimental models of qualitative and quantitative prediction of full scale structural behavior. Investigation of single and multi-story rectangular frames, curved structures and longspan buildings. Application of graphical and analytical techniques to determine basic system layout and preliminary dimensioning of key subsystems and members is also included. Prerequisite: ARC 231.

CAE 240. Environmental Pollution
3 credits
Offered Spring Semester
Exploration of contemporary environmental issues. Introduction to engineering approaches for protecting and cleaning up the environment, techniques for assessing the impact of human activity on the environment, strategies for pollution control and implementation of environmental mitigation measures. Prerequisite: Sophomore standing.

CAE 310. Structural Analysis
3 credits
Offered Fall and Spring Semesters
External reactions, normal forces, shear force, bending moments, displacements by Moment-Area, conjugate beam, Castigliano’s First Theorem, and Virtual Work methods are discussed. The influence lines and indeterminate analysis by the by the method of consistent deformations, slope deflection, and moment distributions is also included. Prerequisite: CAE 211.

CAE 313. Behavior of Structural Systems II
3 credits
Offered Spring Semester
Overall analysis of simple and multi-story frame structures. Consideration of flat plates, prestressed concrete flat slabs, slab and beam, joist and girder, waffle and space truss systems, columns, wall and rigid frame subsystems under vertical and horizontal loads. Application of structural model analysis to supplant or supplement mathematical analysis is included. Prerequisite: CAE 213.

CAE 320. Design of Concrete Structures
3 credits
Offered Fall and Spring Semesters
Course topics include design of concrete beams, columns, structural systems one-way slabs, and isolated footings by ultimate design methods. Prerequisite: CAE 310.

CAE 321. Design of Steel Structures
3 credits
Offered Fall and Spring Semesters
Design of tension, compression, flexural members, and beam columns using load and resistance factor design are discussed. Introduction to design and detailing of welded and bolted connections is also included. Prerequisite: CAE 310.
CAE 330. Fluid Mechanics  
3 credits  
Offered Fall and Spring Semesters  
Properties of fluids, gas systems, pressure distribution in static fluids, and hydrostatic forces on plane and curved surfaces are discussed. Kinematics and dynamics of fluid motion, dimensional analysis and similitude, flow in closed conduits, pumps, design of water distribution systems, and an introduction to flow in open channels is also included. Prerequisite: CAE 210, PHY 206.

CAE 340. Introduction to Environmental Engineering  
3 credits  
Offered Fall and Spring Semesters  
Environmental mass and energy balances, introduction to environmental chemistry, air pollution, water pollution, sustainable solid waste management, risk assessment, and global atmospheric change are discussed. Prerequisite: MTH 112, CHM 111 or permission of instructor.

CAE 345. Environmental Laboratory  
3 credits  
Offered Fall Semester  
Laboratory-based course focusing on the analysis of environmental samples including water, wastewater, air, and solids. Basic analytical techniques and quality control are also included as well as an introduction to advanced analytical measurements. Prerequisite: CHM 112, CAE 340.

CAE 350. Transportation Engineering I  
3 credits  
Offered Fall Semester  
Application of surveying techniques and calculations for the mapping, planning, design, and construction of transportation systems in all modes — land, sea, and air. Vertical and horizontal control including open and closed traverses, and route surveying. Cross-sections, profiles, contour mapping, and mass diagram calculations. Basic geometric design including horizontal curves and symmetric and non-symmetric vertical curves. Prerequisite: MTH 211 (Calculus III) and junior standing.

CAE 370. Geotechnical Engineering I  
3 credits  
Offered Fall and Spring Semesters  
Soil composition and classification, excavation, grading, fill compaction, stress distribution in soils, one-dimensional flow of water through soil, laboratory, and field permeability, effective stress concept, calculation of consolidation, field settlement, bearing capacity, and design and analysis of shallow foundations are discussed. Prerequisite: CAE 211. Corequisite: CAE 371.

CAE 371. Geotechnical Laboratory  
1 credit  
Offered Fall and Spring Semesters  

CAE 380. Architectural Acoustics and Lighting  
3 credits  
Offered Spring Semester  
Principles of architectural acoustics and lighting, perception of sound and light, and analysis and design of the sonic and luminous environment are covered. Prerequisite: EEN 205.

CAE 399. Internship  
1 credit  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Practical application of classroom theory through employment with firms offering positions consistent with the student’s field of study. Courses may be repeated.

CAE 400. Preparation for FE Exam  
1 credit  
Offered Spring Semester  
Review of material in preparation for the Fundamentals of Engineering (FE) examination. For credit only. Prerequisite: Senior standing.
CAE 402. Professional Practice  
3 credits  
Offered Fall and Spring Semesters  
A discussion of professionalism and ethics in the practice of engineering, including the philosophy and methodology of engineering and the foundation of ethics and engineering ethics. Techniques for coordinating decisions and actions of the participants involved into the design and construction of Architectural/Civil/Environmental Engineering projects. Principles of engineering economics and cost analysis. Legal, contractual, and behavioral aspects of Architectural/Civil/Environmental Engineering projects. Case histories illustrating these concepts will be discussed. Presentations of practicing engineers on topics relevant to this course will be given. Prerequisite: Senior standing.

CAE 403. Senior Design Project  
3 credits  
Offered Fall Semester  
Two-semester comprehensive design project based on the knowledge and skills acquired in earlier coursework and incorporating engineering standards and realistic constraints. The faculty coordinator and several practicing engineers/architects provide consultation, guidance, and recommendations on aspects such as problem definition, evaluation of design approaches, design development, and the preparation of construction documents. Prerequisite: Senior standing or permission of instructor.

CAE 421. Timber Structural Systems  
3 credits  
Offered By Announcement only  
Engineering properties of timber, design of tension, compression, and flexural members are covered. The design and detail of connections and hardware, and the design of timber systems and heavy timber construction is also included. Prerequisite: CAE 310.

CAE 430. Water-Resources Engineering  
3 credits  
Offered Fall Semester  
Basic principles of open channel flow. Computation of water surface profiles, hydraulic structures, design of lined and unlined open channels, design of sanitary sewer systems, rainfall characteristics, rainfall abstractions, and calculation of stormwater runoff are discussed. Introduction to hydrology is also included. Prerequisite: CAE 330.

CAE 440. Design of Water Quality Control Systems  
3 credits  
Offered Spring Semester  
Principles of domestic wastewater treatment, design of biological and chemical waste treatment processes, design and sizing of small scale treatment units, and design of water treatment processes are discussed. An introduction to industrial waste treatment. Prerequisite: CAE 330, 340 or permission of instructor.

CAE 450. Transportation Engineering II  
3 credits  
Offered Spring Semester  
Transportation system planning and design. Advanced geometric design for highway and railway/transit. Human, vehicle, and environmental factors affecting the design, operation, and safety of transportation systems. Planning and design of both landside/airside aspects of airport facilities. Water port and multi-modal facilities design. Prerequisite: CAE 350.

CAE 460. Construction Management  
3 credits  
Offered Spring Semester  
An introduction to the management of construction projects including legal considerations as well as the techniques of management science applied to construction. The course includes engineering methods of cost and time estimating, and exercises in applications of engineering economics, network planning techniques, including CPM and PERT are introduced. The management principles of time and cost control are also explored. Computer application of project management tools are included. Prerequisite: Senior level standing.
CAE 470. Geotechnical Engineering II  
3 credits  
Offered Fall Semester  
Theories of lateral earth pressure, slope stability, seepage, flow nets, and filter design are discussed. Design and analysis of earth retaining systems and land cofferdams are also included. Prerequisite: CAE 330, 370, 371. Prerequisite or corequisite: CAE 320 or 321.

CAE 480. Building Environmental Systems  
3 credits  
Offered Fall Semester  
Design of building environmental systems, including water supply and waste removal, space air diffusion, fans, air supply and waste removal, space air diffusion, fans, air distribution systems, building fire safety, and smoke control. Building automation and control are also included. Prerequisite: CAE 330.

CAE 510. Structural Mechanics  
3 credits  
Offered By Announcement only  
Analysis of stress and deformation of solids. Application to systems in the elastic and inelastic range. Topics include beams of special geometry and support, stress concentrations, stresses in elastic foundations, torsion, energy methods, failure theories, and brittle fracture. Prerequisite: CAE 310 and senior standing.

CAE 511. Advanced Structural Analysis  
3 credits  
Offered Fall Semester  
General methods of indeterminate analysis. Elements of energy method in indeterminate analysis of axial, flexural torsional, and composite members. Basic flexural and stiffness methods and matrix development are also included. Prerequisite: CAE 310.

CAE 520. Advanced Design of Concrete Structures  
3 credits  
Offered Spring Semester  
Design of reinforced concrete flat plates, flat slabs, two-way slabs, long columns, and slab-column connections are discussed. Deflections, crack widths, and background of current ACI Building Code are also included. Prerequisite: CAE 320.

CAE 521. Advanced Design of Steel Structures  
3 credits  
Offered Fall Semester  
Steel framing systems, design of members and connections of braced and rigid frames, design for torsion, and design of steel-concrete composite members are discussed. Prerequisite: CAE 321.

CAE 522. Design of Prestressed Concrete Structures  
3 credits  
Offered By Announcement only  
Materials and systems for prestressing, design of prestressed concrete members for flexure and shear, camber, deflection, and crack control are discussed. Design of continuous beams, compression members, two-way concrete floor systems, and the loss of prestress are also included. Prerequisite: CAE 320.

CAE 523. Design of Masonry Structures  
3 credits  
Offered By Announcement only  
Masonry construction. Design of flexural and compression members, bearing walls, shear walls, diaphragms, and connections of masonry structures. Arches, vaults, and buttresses are also included. Prerequisite: CAE 320.

CAE 524. Design of Bridge Structures  
3 credits  
Offered By Announcement only  
Engineering principles of analysis and design of highway bridges. Topics include load types, failure modes, and design philosophies. Computation of design force envelopes via influence lines. Design of slabs, rolled beam, plate girder, reinforced concrete, and prestressed concrete bridges. Prerequisite: CAE 310, 320, 321 or permission of instructor.
CAE 530. **Water-Quality Control in Natural Systems**  
3 credits  
Offered Spring Semester  
Water quality regulations, fate and transport processes, water-quality control in rivers, lakes, wetlands, oceans, and ground water are discussed. Prerequisite: CAE 430. Prerequisite or corequisite: CAE 440.

CAE 531. **Surface-Water Hydrology**  
3 credits  
Offered By Announcement only  
Rainwater characteristics, abstraction processes, surface-runoff, routing, and water-quality models. Design of stormwater-management systems, evapotranspiration, and regional water-management is also included as well as case studies. Prerequisite or corequisite: CAE 430.

CAE 532. **Ground-Water Hydrology**  
3 credits  
Offered By Announcement only  

CAE 540. **Environmental Chemistry**  
3 credits  
Offered Spring Semester  
Kinetics, equilibrium, acid-base, oxidation-reduction, and reaction chemistry applied to water and wastewater engineering. Prerequisite: CHM 112 or permission of instructor.

CAE 541. **Environmental Microbiology**  
3 credits  
Offered Spring Semester  
Classification of microorganisms. Microbial agents of infectious diseases and modes of disease transmission. Control of pathogens through water and waste treatment, food protection, and insect control. Microbial ecology and bioremediation systems. Laboratory exercises in microbiology. Prerequisite: Permission of instructor.

CAE 542. **Solid and Hazardous Waste Engineering**  
3 credits  
Offered Fall Semester  
Solid-waste characteristics, recycling, incineration, hazardous waste characteristics, prevention, and physical and chemical treatment are covered. Design projects are also included. Prerequisite: CAE 340.

CAE 543. **Air Pollution Control Engineering**  
3 credits  
Offered Spring Semester  
Fundamentals of air pollution and air quality; properties and control of particulates, volatile organic compounds, carbon monoxide, sulfur oxides, and nitrogen oxides; motor vehicle emissions; health and aesthetic effects (acid rain, visibility), laws and regulations, meteorology and pollutant transport in the atmosphere; indoor air pollution. Prerequisite: MAE 303 and CAE 330/MAE 309 or permission of instructor.

CAE 550. **Advanced Highway Design**  
3 credits  
Offered Fall Semester  
Functional classification and design volumes; Reviews of traffic, vehicle and roadway characteristics; Design controls, criteria and standards; Vertical alignments; Horizontal alignments; Compound curves; Cross sections; Climbing lanes; Earthwork computation; At-grade intersection; Interchange; Design consistency; GeoPak software implementation; Use of traffic simulation software as a design aid. Prerequisite: CAE 450 or equivalent.
CAE 551. Urban Traffic Control
3 credits  
Offered Spring Semester
Traffic control devices; Detection systems; Installation and maintenance; Design of signal timing plans; Performance analysis of signalized intersections; Signal coordination; Actuated controllers; Computer simulation/optimization models; Adaptive traffic control and predictions; Ramp metering. Prerequisite: CAE 450.

CAE 553. Transportation Systems Planning and Demand Modeling
3 credits  
Offered By Announcement only
Transportation demand analysis and forecasting. Sampling techniques, collection and analysis of survey data. Disaggregate and aggregate models. Trip generation, distribution, modal split and assignment. Transportation network equilibrium. Transportation system management. Prerequisite: IEN 311, CAE 301 or consent of instructor.

CAE 570. Foundation Engineering
3 credits  
Offered Spring Semester
Rock and soil formation. Subsurface exploration. Design and analysis of shallow and deep foundations. Reinforced soils. Prerequisite: CAE 370, 371, 320 or permission of instructor.

CAE 580. Hospital and Health Care Facility Design
3 credits  
Offered First Summer Session
Planning, design, and construction of modern hospital and health care facilities. Design criteria for functional services, and required structural and patient safety. Design standards. Discussion of construction related topics and problems. Prerequisite: Permission of instructor.

CAE 581. Energy-Efficient Building Design
3 credits  
Offered By Announcement only
Concepts and methods of energy-efficient and environmentally-friendly building design. Topics include energy and sustainable design strategies, climate, passive and active solar design, passive cooling systems, day lighting, and computer simulation of energy flows in buildings. A quantitative understanding of energy fundamentals, examples from practice, and design exercises using computer simulation programs are emphasized. Prerequisite: MAE 303 or permission of instructor.

CAE 590. Special Topics
1-3 credits  
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.

CAE 591. Special Topics
1-3 credits  
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.

CAE 592. Special Topics
1-3 credits  
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.

CAE 593. Special Topics
1-3 credits  
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.
CAE 594. Special Topics  
1-3 credits  
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.

CAE 595. Special Problems  
1-4 credits  
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

CAE 599. Cooperative Education  
1 credit  
Practical application of classroom theory through alternating semester or summer employment with industries offering positions consistent with the student’s field of study. Course may be repeated. Periodic reports and conferences are required. Prerequisite: Permission of Department Chair.

Electrical and Computer Engineering  
EEN 111. Introduction to Engineering I  
3 credits  
Offered Fall and Spring Semesters  
Use of engineering tools and computer techniques for problem solving, data acquisition, analysis, presentation, software design, and computer aided drafting. Development of design skills through several design and building competitions is included as well as an introduction to professional ethics, intellectual property rights, the use of MATLAB, AutoCAD, and programming in C++.

EEN 112. Introduction to Engineering II  
2 credits  
Offered Spring Semester  
Course is designed to provide first-year undergraduate students with an introduction to some key electrical and computer engineering concepts and topics by discussing their roles in some of the commonly used electrical and computer engineering systems. Numerical examples, circuit simulations, and computer programming are introduced through the use of MATLAB, microcontroller programming languages, and PSpice. Hands-on experience are provided through a project where the students design, assemble, program, and test a microcontroller-based mobile robot with a variety of sensing devices. Prerequisite: EEN 111.

EEN 118. Introduction to Programming  
3 credits  
Offered Fall and Spring Semesters  
Introduction to computing, problem solving, program design, C++ language fundamentals, and software engineering principles. Software design projects are included.

EEN 201. Electrical Circuit Theory  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Fundamentals of DC-AC circuit laws, including steady state and transient analysis. Lecture, 3 hours. Prerequisite or corequisite: MTH 112.

EEN 204. Electrical Circuits Laboratory  
1 credit  
Offered Fall and Spring Semesters and Second Summer Session  
Laboratory work employing the techniques of circuit theory to physical components, devices, and circuits. Use of electronic computing techniques to relate analytical and empirical investigations. Laboratory, 3 hours. Prerequisite: EEN 201.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEN 205</td>
<td>Principles of Electrical Engineering—I</td>
<td>3</td>
<td>Fall and Spring</td>
<td>Fundamentals of DC and AC Circuits and a survey of Electrical Machinery and Electronics. Not open to students with credits in EEN 201. Lecture, 3 hours. Prerequisite or corequisite: MTH 112.</td>
</tr>
<tr>
<td>EEN 218</td>
<td>Intermediate Computer Programming</td>
<td>3</td>
<td>Fall and Spring</td>
<td>Continuation of the programming sequence with emphasis on C++ and the skills required of a capable programmer. Essential data structures, algorithms, introduction to algorithm analysis, basic sorting, searching, and data management are discussed. Dynamic and static memory management as well as object oriented programming are also included. Prerequisite: EEN 118 or equivalent.</td>
</tr>
<tr>
<td>EEN 301</td>
<td>Electromagnetic Field Theory</td>
<td>3</td>
<td>Fall</td>
<td>Vector analysis, static and time-varying fields, Maxwell’s equations, propagation of electromagnetic waves, and transmission line theory and applications are discussed. Prerequisite: PHY 207 and MTH 210.</td>
</tr>
<tr>
<td>EEN 304</td>
<td>Logic Design</td>
<td>3</td>
<td>Fall and Spring and First Summer Session</td>
<td>Boolean algebra and its applications in analysis and design of logic circuits. Introduction to SSI and MSI circuits as building blocks, memory elements, and analysis and synthesis of synchronous and asynchronous sequential systems are discussed. Prerequisite: EEN 118 or CSC 120.</td>
</tr>
<tr>
<td>EEN 305</td>
<td>Electronics I</td>
<td>3</td>
<td>Fall and Spring and First Summer Session</td>
<td>Introduction to operational amplifiers, semiconductor physics, and devices. Diodes, bipolar junction transistors (BJT), and field-effect transistors (FETs) are discussed. Emphasis is placed on DC and AC analysis of electronic circuits. CAD tools for circuit simulations are also included. Prerequisite: EEN 201.</td>
</tr>
<tr>
<td>EEN 306</td>
<td>Electronics II</td>
<td>3</td>
<td>Fall and Spring and Second Summer Session</td>
<td>Continuation of EEN 305. Emphasis is placed on integrated circuits, frequency response of amplifiers, and feedback theory. Practical applications of operational amplifiers, other integrated circuits, and CAD tools for circuit simulations are also included. Prerequisite: EEN305; Prerequisite or corequisite: EEN 307</td>
</tr>
<tr>
<td>EEN 307</td>
<td>Linear Circuits and Signals</td>
<td>3</td>
<td>Fall and Spring and First Summer Session</td>
<td>Second-order transient circuit analysis, Laplace transforms, circuits and waveform analysis using Laplace transform, convolution, Fourier series, and integrals are discussed. Prerequisite: EEN 201.</td>
</tr>
<tr>
<td>EEN 308</td>
<td>Linear Control Systems</td>
<td>3</td>
<td>Fall</td>
<td>Introduction to system theory, transfer function and state variable modeling of linear continuous time systems, root locus, Bode plot, Nyquist criterion, analysis and controller design using root locus and frequency domain techniques, proportional-integral-derivative controllers. Prerequisite: EEN 307, MTH 201, 311.</td>
</tr>
</tbody>
</table>
EEN 310. Introduction to Engineering Probability
3 credits
Offered Fall and Spring Semesters
Axioms of probability, discrete and continuous random variables, probability density functions. Expectation, conditioning, independence, functions of random variables, characteristic functions, multiple random variables. Sums of random variables, limit theorems, probability bounds, convergence concepts. Introduction to statistical analysis, estimation, and hypothesis testing. Cross-listed with IEN 310. Prerequisite: MTH 112 and junior standing.

EEN 311. Electronics Laboratory
1 credit
Offered Fall and Spring Semesters and First Summer Session
Laboratory course in conjunction with courses EEN 305 and 306. Prerequisite: EEN 204. Prerequisite or corequisite: EEN 306.

EEN 312. Microprocessor
4 credits
Offered Fall and Spring Semesters and Second Summer Session
Microprocessor systems, programming languages, and applications with hands on experience. Lecture, 3 hours; laboratory, 3 hours. Prerequisite: EEN 304.

EEN 315. Digital Design Laboratory
1 credit
Offered Fall and Spring Semesters and First Summer Session
Familiarization with properties and use of logic gates, flip-flops, digital standard components, and programmable logic devices. Design and implementation of combinational and synchronous digital systems and Computer Aided Engineering (CAE) tools for design and simulation of digital systems are also included. Prerequisite: EEN 304.

EEN 318. Advanced Computer Programming
3 credits
Offered Spring Semester
Continuation of the programming sequence. Object oriented programming with C++, emphasizing the skills required of a professional programmer. Essential data structures and algorithms: trees, graphs, hash tables, parsing and text processing. Advanced sorting and data management algorithms. Advanced features of C++; effective programming with C. Prerequisite: EEN 218.

EEN 336. Signals and Systems
3 credits
Offered Fall Semester
Continuous and discrete-time transform analysis techniques. Linear time-invariant signals and systems, continuous and discrete-time Fourier transforms, and Z-transform are discussed. Sampling and reconstruction of signals, frequency response, transfer functions, and applications are also included. Prerequisite: EEN 307.

EEN 346. Signals and Systems Laboratory
1 credit
Offered Fall and Spring Semesters
Provide instruction in modern laboratory for electrical engineering analysis and design. Students work with software tools and electronic test equipment to perform analysis and design tasks on problems related to circuits, signals and systems. Prerequisite: EEN 204. Prerequisite or corequisite: EEN 307.
EEN 368. Internet Computing I  
3 credits  
Offered Spring Semester  
Principles and practices used in creating interactive internet sites. Use of Dynamic HyperText Markup Language, Cascading Style Sheets and JavaScript in the creation of dynamic content. Connection to Common Gateway Interface programs to process form, input and dynamically generate web pages. Use of eXtensible Markup Language/eXtensible Stylesheet Language to provide content understanding. Introduction to Java as an internet language. Prerequisite: EEN 218 or CSC 220.

EEN 399. Cooperative Education  
1 credit  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Practical application of classroom theory through alternating semester or summer employment with firms offering positions consistent with the student’s field of study. Course may be repeated.

EEN 402. Electrical Machine Theory  
3 credits  
Offered Fall Semester  
Theory of electromechanical energy conversion, covering transformers, DC and AC rotating machines, and associated equipment for these machines and laboratory experiments pertaining to the theory are covered. Prerequisite or corequisite: EEN 307.

EEN 404. Communication Systems  
3 credits  
Offered Spring Semester  
Introduction to digital communication, including binary and M-ary baseband and bandpass modulation over additive white Gaussian noise channels. Optimal receivers, pulse shaping for bandlimited channels, synchronization, multiple access. Prerequisite: EEN 336 and EEN/IEN 310.

EEN 405. Solid-State Electronics  
3 credits  
Offered Spring Semester  
Principles of semiconductor electronics, energy bands of semiconductors, Fermi level, carrier distribution, and transport mechanisms are discussed. Application of semiconductor theory to various junction and field effect devices are included. Prerequisite: EEN 301 and PHY 207.

EEN 406. Illumination  
3 credits  
Offered By Announcement only  
Illumination, light sources, light control, application, circuits, wiring, control equipment, and flood lighting are discussed. Lecture, 3 hours. Prerequisite: EEN 201 or junior standing.

EEN 414. Computer Organization and Design  
3 credits  
Offered Fall and Spring Semesters  
Organization and design of computers, hardware description language, instruction set architecture, control unit implementation, microprogramming, memory organization, and high speed arithmetic unit are discussed. Prerequisite: EEN 312 or CSC 228.

EEN 415. Senior Project I  
1 credit  
Offered Fall and Spring Semesters  
Topics cover tasks in project planning including scheduling, documentation, communication (written and oral), financial constraints, and ethics. Students are required to present project proposals to serve as the basis for the follow-up course, EEN 416. Prerequisite: Senior standing.
EEN 416. **Senior Project II**  
**2 credits**  
*Offered Fall and Spring Semesters*  
The capstone design course for Electrical Engineering majors. An electrical system is designed, implemented, and documented. Prerequisite: EEN 415 and Electrical Design Elective.

EEN 417. **Embedded Microprocessor System Design**  
**2 credits**  
*Offered Fall Semester*  
Study of microcomputer system design, scientific methods for quantifying system performance, embedded controller applications using high level languages, and debugging strategies. Lecture, 1 hour; laboratory, 3 hours. Prerequisite: EEN 218 and 315; Prerequisite or corequisite: EEN 414.

EEN 418. **Senior Project Planning**  
**1 credit**  
*Offered Fall and Spring Semesters*  
The creative process of devising a product to meet customers needs including an overview of the design process, analysis of requirements, project planning, scheduling, evaluation, and documentation. Students are required to present project proposals to serve as the basis for the follow-up senior design project. Prerequisite: Senior standing.

EEN 419. **Senior Project**  
**2 credits**  
*Offered Fall and Spring Semesters*  
The purpose of this course is to integrate the student's knowledge in hardware, software, and project management. A major digital system is designed, implemented, debugged, and documented. Prerequisite: EEN 418, 417, 454.

EEN 421. **Introduction to 3D Computer Modeling and Animation**  
**2 credits**  
*Offered Fall Semester*  
Introduction to the fundamental principles of computer animation with hands-on experience. Focus on 3D modeling, texture mapping, lighting, character animation, inverse kinematics, dynamics, rendering and compositing. Prerequisite: Permission of the instructor.

EEN 422. **Advanced 3D Character Design and Motion Capture for Computer Games**  
**2 credits**  
*Offered Spring Semester*  
Introduction to game development pipeline, from design, conception, modeling, texture mapping, rigging, motion capture and animation, special effects to level design and the pipeline flow control. Prerequisite: EEN 421.

EEN 424. **UNIX Systems and Servers**  
**3 credits**  
*Offered Fall Semester*  
Practical hands-on experience with UNIX systems programming and administration. Programming using scripting languages, file systems features, multiprocessing, inter-process communication, and networking fundamentals are discussed. Prerequisite: EEN 218.

EEN 435. **Communication Electronics**  
**3 credits**  
*Offered By Announcement only*  
Design of communication circuits including oscillators, mixers, phase-locked loops, and tuned networks; AM and FM transmitters and receivers. Prerequisite: EEN 306.

EEN 436. **Introduction to Digital Signal Processing**  
**3 credits**  
*Offered By Announcement only*  
Basic principles of digital signal processing are discussed including discrete time systems and signals, z-transform, sampling, frequency response, discrete Fourier transform, Finite and Infinite Impulse Response digital filters, and applications in related fields. Prerequisite: EEN 336.
### EEN 437. Real-Time Digital Signal Processing Laboratory
1 credit  
Offered Fall Semester  
Digital signal processing hardware for real-time operation, software development tools, instruction set, and DSP experiments with audio and speech application are discussed. Prerequisite or corequisite: EEN 436.

### EEN 452. Professional Seminar
1 credit  
Offered By Announcement only  
Review of material in preparation for the Florida State Engineering Intern examination. Only available on “credit-only” basis. Prerequisite: Graduating senior in Engineering.

### EEN 454. Digital System Design and Testing
2 credits  
Offered Spring Semester  
Functional building blocks and concepts of control and timing in digital design. Descriptive techniques for digital systems and design for testability. Prerequisite: EEN 315 and 316.

### EEN 455. Design-for-Testability Laboratory
1 credit  
Offered Fall and Spring Semesters  
Project laboratory demonstrating the techniques necessary to design, implement, and debug and test a large system. The process is carried through from conceptual design, implementation, integration, simulation, and synthesis on a FPGA chip. Prerequisite or corequisite: EEN 454.

### EEN 470. Object Oriented Windows
3 credits  
Offered By Announcement only  
Introduction to message driven Windows, Windows programming techniques, and components including resource, device context, controls, and serializable objects. Document/view objects architecture, multitasking, and object sharing are also included. Prerequisite: EEN 218 or CSC 220.

### EEN 500. Engineering Analytical Techniques
3 credits  
Offered By Announcement only  
Complex variables, analytic functions, power series, residue theorem, conformal mappings, series solution, Bessel functions, Legendre polynomials, singular value decomposition, vector, and matrix norms are discussed. Prerequisite: MTH 311.

### EEN 502. Engineering Acoustics
3 credits  
Offered Fall Semester  
Introduction to basic principles of acoustics, methods of sound measurement, physiological, psychological acoustics, the acoustics of the major classes of musical instruments and speech, fundamentals of transducers, architectural acoustics, and the effects and control of noise are covered. Prerequisite: EEN 336 or permission of instructor.

### EEN 503. Principles of Electro-optics
3 credits  
Offered Fall Semester  
Principles of optics, optical fibers, electro-optics, light wave propagation in anisotropic and periodic media, guided waves, and integrated optics are discussed. Electro-optic devices including sources and detectors, optical fiber communication, and optics for medical and biomedical applications are also covered. Prerequisite: PHY 206, 207 and EEN 301 or equivalent.

### EEN 504. Optics and Fiber Communication
3 credits  
Offered Spring Semester  
Introduction to optics and fiber communication, light propagation in free space and waveguides, imaging, wave phenomena and diffraction, interferometer, spectrometer, holography, fiber coupling, and fiber communication are covered. Lecture, 1 1/2 hours; laboratory, 3 hours. Prerequisite: EEN 301 or prerequisite or corequisite: BME 545.
EEN 506. Solid-State Devices
3 credits  Offered By Announcement only
Principles of operation, properties and applications of semiconductor devices, junction, metal-semiconductor, metal-oxide-semiconductor, optoelectronic, bulk-effect, and charge-coupled are covered. Prerequisite: EEN 405 or PHY 520.

EEN 507. Active Filter Design
3 credits  Offered Spring Semester
Active lowpass filter design, gain-tuning and passive-tuning, immittance calculations, high-frequency lowpass filters, frequency and time domain analysis of lowpass, highpass, bandpass, and bandstop filters are discussed. Classical filters and Active filter classification including gain-sensitivity limitations are also included. Prerequisite: EEN 307.

EEN 508. Digital Control Systems
3 credits  Offered By Announcement only
Basic concepts relevant to the analysis and design of digital computer controlled systems. Sampling, z-transform, discrete transfer functions, discrete-time state space modeling, stability, reachability, and observability are discussed. Analysis and design in time and frequency domains, state feedback and observers, optimal control, estimation, and linear quadratic Gaussian design are also included. Prerequisite: EEN 308.

EEN 510. Passive Filter Design
3 credits  Offered By Announcement only
Design of RLC passive filters, properties of positive-real functions, and Brune test are discussed. Design of driving-point and transfer immittances of RC, RL, LC, and RLC one-port and two-port networks are also covered as well as the design of Butterworth, Chebyshev, and elliptic ladder filters. Prerequisite: EEN 307.

EEN 511. Software Engineering
3 credits  Offered By Announcement only
Modern programming methodologies, structured programming and data abstractions, specification, design, implementation, testing, and maintenance of large scale software are covered. Prerequisite: EEN 318.

EEN 512. Software Architecture
3 credits  Offered Spring Semester
Examination of the building blocks of software systems. Design techniques to meet functional requirements. Component-based designs. Model representations. Analysis of designs for functionality, performance, reliability, reusability, and maintainability. Prerequisite: EEN 318.

EEN 513. Software Design and Testing
3 credits  Offered Fall Semester

EEN 514. Computer Architecture
3 credits  Offered Spring Semester and First Summer Session
Computer data and instruction types, survey of existing architectures, and the interaction between hardware and software sub-systems are discussed. Advanced topics in computer architecture. Prerequisite: EEN 414.
EEN 516. Analog Integrated Circuits
3 credits
Offered Fall Semester
Analysis and design of analog integrated circuits with emphasis on MOS technology. Design of operational amplifiers, comparators, sample, hold circuits, and voltage references are discussed. Fundamentals of data converters and CAD methods for analog integrated circuits are also covered. Prerequisite: EEN 306.

EEN 518. Modern Control Theory
3 credits
Offered By Announcement only
State-space modeling of continuous-time systems, stability, reachability, observability, performance, robustness measures in controller design, State feedback and observers are discussed. Optimal control, estimation, and Linear quadratic Gaussian design are also included. Prerequisite: EEN 308.

EEN 519. Design of Computing Languages
3 credits
Offered By Announcement only
Major features of modern programming languages with emphasis on design and software efficiency. Interaction between language design and the design of its compiler are included. Prerequisite: EEN 218.

EEN 521. Computer Operating Systems
3 credits
Offered Fall Semester
Multi-programming and resource allocation, process communication, scheduling resource allocation methods, memory management, data protection, file control, and considerations for parallel/distributed environments are discussed. Case analysis of two systems such as: OS/2, DOS/Windows, UNIX, and VM are included. Prerequisite: EEN 218, 414.

EEN 523. Principles of Database Systems
3 credits
Offered By Announcement only
Theory and design of database systems, Entity-relationship, relational, network, and hierarchical database models. Relational algebra and calculus, normalization, query languages/optimization, physical data organization, concurrency, security, recovery, and integrity are discussed. A relational database project is required. Prerequisite: EEN 218 or CSC 220.

EEN 525. Antennas and Propagation
3 credits
Offered By Announcement only
Principles of electromagnetic radiation and diffraction, fundamentals of antennas, wire, loop, and micro-strip antennas, array antennas, beam-forming. propagation characteristics in the mobile and indoor environments, path loss, link budget, fading, and diversity are covered. Prerequisite: EEN 301.

EEN 532. VLSI Systems
3 credits
Offered Fall Semester
Fundamentals of MOS Technology in VLSI. System data, control flow, structures, design, layout, maskmaking, fabrication, packaging, and testing of VLSI chips are discussed. Highly concurrent Very Large Scale Integration computational systems are also covered. Prerequisite: EEN 305 and 304.

EEN 533. Random Signals and Noise
3 credits
Offered Fall Semester
Probability models, Bayes’ theorem, Limit theorems of Laplace and Poisson, functions of random variables, Central limit theorem, conditional expectation and estimation, Stochastic processes, stationarity and ergodicity, cross-spectral analysis, filtering, and prediction are discussed. Prerequisite: IEN 311.
EEN 534. Communication Networks
3 credits
Offered Fall Semester
Principles of digital communications, Local Area Networks (LANs), Wide Area Networks (WANs), Open systems Intercommunication (OSI), Internet reference models, internet architecture and protocols, packet switching and routing, and network performance are discussed. Prerequisite: EEN 312 and IEN 311.

EEN 536. Digital Signal Processing
3 credits
Offered By Announcement only
Fast Fourier transform, design, implementation, realization of digital filters, finite wordlength effects, decimation, interpolation, multirate signal processing, and Discrete Hilbert transform are covered. Prerequisite: EEN 436.

EEN 537. Principles of Artificial Intelligence
3 credits
Offered Fall Semester
Search techniques, game trees, exhaustive vs. cutoff search, natural language processing, augmented transition networks, knowledge representation, cognitive aspects, semantic networks, problem-solving, expert systems, and AI machines are covered. Prerequisite: EEN 218.

EEN 538. Introduction to Digital Image Processing
3 credits
Offered Fall Semester

EEN 539. Digital Communications
3 credits
Offered By Announcement only
Quantization, on-off keying, frequency shift keying, phase shift keying, error performance, signal-to-noise ratio, coding, methods of synchronization, multiplexing, and spread spectrum are covered. Prerequisite: EEN 404 and IEN 311.

EEN 540. Digital Speech and Audio Processing
3 credits
Offered Spring Semester
Introduction to human speech production, hearing, and perception. Digital speech and audio signal analysis in time and frequency, speech and audio coding, speech synthesis and recognition, language modeling, design of systems for human-machine interaction are also covered. Prerequisite: EEN 436 or consent of instructor.

EEN 542. Digital Integrated Circuits
3 credits
Offered Spring Semester
Design and operation of state-of-the-art digital integrated circuits. Circuit simulation methods using CAD programs, various TTL, CMOS, ECL, and I2L families are discussed. Prerequisite: EEN 304, 306.

EEN 546. Reliable Digital System Design
3 credits
Offered By Announcement only
Topics include descriptive technique for digital systems, synchronizer failure and metastability estimation, design for testability, and estimating digital system reliability. Computer-Aided Engineering (CAE) tools are also covered. Not open to students with credit in EEN 454. Offered only for Graduate students. Prerequisite: EEN 315.

EEN 548. Machine Learning
3 credits
Offered By Announcement only
Fundamentals of intelligent system design and strategies of learning capability simulation. Selected case studies of learning systems for engineering applications are included. Prerequisite: EEN 218 and MTH 309 or permission of instructor.
EEN 553. **Neural Networks**  
3 credits  
*Offered By Announcement only*  
Artificial neural network algorithms and structures, learning process, perceptron, least-mean-square algorithms, multilayer perceptron, error back-propagation, radial-basis function networks, the Hopfield network, and self-organizing systems are discussed. Prerequisite: IEN 311 or equivalent, senior standing.

EEN 555. **Microwave Transistor Amplifier Design**  
3 credits  
*Offered Fall Semester*  
Analysis and design of transistor amplifiers and oscillators at microwave frequencies. Scattering parameter methods, stability considerations, matching networks, and narrowband and broadband techniques are discussed. Computer aided design methods for microwave transistor amplifiers are also included. Prerequisite: EEN 306.

EEN 562. **Wireless and Cellular Communication**  
3 credits  
*Offered Fall Semester*  

EEN 563. **Wireless Communication Lab**  
1 credit  
*Offered By Announcement only*  
Simulation and measurements involving RF/microwave devices, radio subsystems, propagation channels, splitters/combiners, directional couplers, filters, antennas, receiver front-ends, frequency synthesizers, modulators, power amplifiers, free-space, and indoor propagation channels are covered. Prerequisite: EEN 435. Prerequisite or corequisite: EEN 562.

EEN 564. **Wireless Networks**  
3 credits  
*Offered Spring Semester*  
Network architecture: Base Transceiver Subsystem (BTS), Base Station Controller (BSC), and Mobile Switching Center (MSC). Call processing: initialization, origination, termination, handoff, and supervision. Mobility management: registration, roaming, Home Location Register (HLR), and Visitor Location Register (VLR). Traffic Engineering: Quality of Service (QoS) and Erlang. Network signaling standards: Interim Standard-634 (IS-634), IS-41 and Mobile Application Part (MAP). Wireless data: Wireless Application Protocol (WAP), Short Message Service (SMS), General Packet Radio Service (GPRS), and International Mobile Telecommunications (IMT-2000). Prerequisite: EEN 534 or 575.

EEN 565. **Introduction to Information Theory and Coding**  
3 credits  
*Offered By Announcement only*  
Entropy, conditional entropy, mutual information, source coding, Huffman code, arithmetic code, channels and channel capacity, error detection, error correction, and Hamming codes are discussed. An introduction to linear block codes and cyclic codes is included. Prerequisite: IEN 311.

EEN 566. **Internet and Intranet**  
3 credits  
*Offered By Announcement only*  
Internet Protocol (IP) standards, address structures and functions. HTML, XML, CGI, Perl language, and object oriented modeling concepts are covered. An introduction to Java language. constructs, exceptions, building, constructing JAVA applets, Java Tools, compiler, applet viewer, and debugger are also included. Offered only for Graduate students. Prerequisite: EEN 218, MTH 220, or EEN 490., or EEN 490.
EEN 567. Database Design and Management
3 credits  Offered Spring Semester
Database systems design, modeling, implementation, management methodologies, and techniques. Different database systems are addressed including relational, object-oriented, object-relational, and distributed database systems. Internet (WWW) technology, data warehousing, and online analytical processing applications of database management systems and hands-on experience with commercial database systems is also included. Prerequisite: EEN 218 or CSC 220.

EEN 568. Internet Computing II
3 credits  Offered Fall Semester
General object oriented techniques and modeling language. Java programming including client/server networking, multi-threading, Java Database Connectivity, swing, applets, and servlets. Principles and practices used in connecting web sites to back-end databases with Active Server Pages, JavaScript, Java Servlets, and Java Server Pages are also covered. Prerequisite: EEN 368.

EEN 570. Network Client-Server Programming
3 credits  Offered Spring Semester
Introduction to server-client systems and programming. Advanced server-client design and implementation based on distributed component object model in Windows and UNIX. Prerequisite: EEN 218 or equivalent

EEN 571. Interactive Multimedia Computing
3 credits  Offered Spring Semester
Interactive multimedia technologies including hardware, software, standards, concepts and issues, compression, decompression, user interface design, query by content, multimedia indexing, and distributed multimedia are discussed. Prerequisite: EEN 567 or equivalent.

EEN 572. Object-Oriented and Distributed Database Management Systems
3 credits  Offered By Announcement only
Object-Oriented modeling concepts in languages and database systems. Object-Oriented database systems. Semantic data models, nested-relational, object-relational databases. Distributed database system. Federated Databases. Application to engineering design problems. Prerequisite: EEN 567 or equivalent.

EEN 573. Network Computing
3 credits  Offered Spring Semester

EEN 574. Agent Technology
3 credits  Offered By Announcement only
Agent definition and applications, agent modeling, theories, agent representation using KIF (Knowledge Interchange Format), agent behavior, ethical and emotional agents, agent communication languages (KQML (Knowledge Query and Manipulation Language)), agent development environments and tools, agent systems (cooperative agents, interface agents, information agents, learning agents, believable agents, agents for workgroups, mobile agents),and agent case studies are covered. Prerequisite: EEN 537 or equivalent.
EEN 575. **Data Network Design and Management**  
3 credits  
*Offered Spring Semester*  
Networking fundamentals and current technologies. Data network planning, analysis, design, and management techniques. Different network technologies are addressed and contrasted in terms of topology, performance, and scope of real applications. Network management systems are investigated including fault, configuration, security, and performance management. Network management information bases, protocols, and hands-on experience with network equipment and network management systems are also included. Prerequisite: EEN 218 and IEN 311.

EEN 576. **Internet and Intranet Security**  
3 credits  
*Offered Fall Semester*  
Security issues and applications for securing internet and intranet-based information exchange. Secure information models, security tools, security services, security protocols, electronic commerce, virtual private networks, firewalls, and security versus cost tradeoffs are covered. Prerequisite: EEN 368.

EEN 577. **Data Mining**  
3 credits  
*Offered By Announcement only*  
Introduction to the general principles of inferring useful knowledge from large data sets. Data mining algorithms, including inferring rules, linear regression, decision trees, association rules, and predictive models. Evaluation of data mining algorithms, including training, testing, prediction, comparison, cost, and cross-validation. Data mining applications. Prerequisite: EEN 567 or equivalent.

EEN 578. **E-Commerce Technology**  
3 credits  
*Offered By Announcement only*  
Tools and techniques providing the foundation for the design, implementation, and deployment of e-commerce systems. Search engines, information retrieval for e-commerce, e-commerce interfacing design, and e-commerce systems case studies are also included. Prerequisite: EEN 368, 424 and 567.

EEN 579. **Mobile Computing**  
3 credits  
*Offered By Announcement only*  
Mobile computing and proxy architectures, mobile web protocols, mobile user interfaces, applications, systems-ware adaptations, mobile databases, transactions, data synchronization, privacy, authentication, and security are covered. Prerequisite: EEN 368.

EEN 580. **Electrical and Computer Engineering Internship**  
1-3 credits  
*Offered Fall and Spring Semesters*  
Analysis, design, and research experience obtained at an operating and recognized industry. Approved project jointly supervised and assessed by departmental faculty and industrial partner. Prerequisite: Permission of advisor.

EEN 581. **Special Problems**  
1-3 credits  
*Offered Fall Semester*  
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

EEN 582. **Special Problems**  
1-3 credits  
*Offered Spring Semester*  
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.
EEN 583. Special Problems
1- 3 credits
Offered First Summer Session
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

EEN 584. Special Problems
1- 3 credits
Offered Second Summer Session
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

EEN 585. Special Problems
1- 3 credits
Offered By Announcement only
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

EEN 586. Multimedia Networking
3 credits
Offered Fall Semester

EEN 587. Multimedia Databases
1- 3 credits
Offered Fall Semester
Introduction to the fundamental concepts and techniques pertinent to multimedia databases. Introduction to a variety of techniques and emerging innovative solutions to represent, store, index, retrieve, integrate, and manipulate data in various media type(s) to construct multimedia databases. Prerequisite: EEN 567 or permission of instructor. Prerequisite or corequisite: EEN 571.

EEN 590. Special Topics in Information Technology
1- 3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Information Technology. Prerequisite: Permission of instructor.

EEN 591. Special Topics in Information Technology
1- 3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Information Technology. Prerequisite: Permission of instructor.

EEN 592. Special Topics in Audio Engineering
1- 3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Audio Engineering. Prerequisite: Permission of instructor.

EEN 593. Special Topics in Audio Engineering
1- 3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Audio Engineering. Prerequisite: Permission of instructor.

EEN 594. Special Topics in Computer Engineering
1- 3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Computer Engineering. Prerequisite: Permission of instructor.
EEN 595. Special Topics in Computer Engineering
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Computer Engineering.
Prerequisite: Permission of instructor.

EEN 596. Special Topics in Computer Engineering
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Computer Engineering.
Prerequisite: Permission of instructor.

EEN 597. Special Topics in Electrical Engineering
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Electrical Engineering.
Prerequisite: Permission of instructor.

EEN 598. Special Topics in Electrical Engineering
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Electrical Engineering.
Prerequisite: Permission of instructor.

EEN 599. Special Topics in Electrical Engineering
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Electrical Engineering.
Prerequisite: Permission of instructor.

Industrial Engineering

IEN 101. Introductory Industrial Engineering Seminar
0 credits
Offered By Announcement only
Weekly meetings involving Industrial Engineering faculty, students, alumni, and/or other practicing engineers to permit exposure to various areas of activity in Industrial Engineering. This includes plant tours.

IEN 111. Introduction to Engineering I
3 credits
Offered Fall and Spring Semesters
Use of engineering tools and computer techniques for problem solving, data acquisition, analysis, presentation, software design, and computer aided drafting. Development of design skills through several design and building competitions. Introduction to professional ethics, intellectual property, ethics, intellectual property rights, and an introduction to use of MATLAB, AutoCAD, and programming in C++.

IEN 112. Introduction to Engineering II
2 credits
Offered Spring Semester
Continuation of IEN 111. An overview of Industrial Engineering concepts and issues important to the design and operation of industrial and service systems. Students will learn the use of software tools developed to enhance the Industrial Engineer’s ability such as database management, high level programming languages, electronic spreadsheets, and computer graphics. Prerequisite: IEN 111.

IEN 124. Introduction to Computer Programming
3 credits
Offered By Announcement only
Fundamentals of computing, introduction to the BASIC computer programming language, fundamentals of FORTRAN programming, and the application of programming fundamentals in the solution of scientific and engineering oriented problems on the computer. Use of word processing capability of the computer is also included. Prerequisite: High school or college algebra.

IEN 201. Methods Analysis and Project Management
3 credits
Offered Fall Semester
IEN 202. Computer Environments for Industrial Engineers  
3 credits  
Offered By Announcement only  
Introduction to microcomputers and operating systems. Industrial engineering information processing through applications such as word processing, electronic spreadsheets, database management, and computer graphics are discussed.

IEN 212. Quality Through Design  
3 credits  
Offered By Announcement only  
Course introduces design and quality issues that relate to competitiveness. Topics include quality basics, invention-innovation-improvement cycle, management of design, design basics, quality function deployment, tool kit, internal forces on design, external forces on design, and case studies.

IEN 310. Introduction to Engineering Probability  
3 credits  
Offered Fall and Spring Semesters  
Axioms of probability, discrete and continuous random variables, probability density functions, cumulative distribution function, expectation, conditioning, independence, functions of random variables, multiple random variables, sums of random variables, introduction to statistical analysis, estimation, and hypothesis testing. Cross-listed with EEN 310. Prerequisite: (MTH 112 or equivalent) and junior standing.

IEN 311. Applied Probability and Statistics  
3 credits  
Offered Fall and Spring Semesters  
Descriptive statistics, basic probability and distribution theory, point and interval estimation, testing hypothesis, simple linear regression, correlation, and quality control charts are discussed. Examples are drawn from various disciplines. Cross-listed with MAS 311. Prerequisite or corequisite: MTH 112 or 132.

IEN 312. Applied Statistical Methods  
3 credits  
Offered Spring Semester  
Linear regression, multiple regression, analysis of variance, and design of experiments are discussed. Cross-listed with MAS 312. Prerequisite: IEN 310 (EEN 310) or IEN 311 (MAS 311) or equivalent.

IEN 320. Entrepreneurship for Engineers  
3 credits  
Offered By Announcement only  
Entrepreneurship as it affects engineering students. How to identify business opportunities, how to obtain financing and sustain a business, and how to take charge of the individual’s entrepreneurial goals are covered.

IEN 351. Industrial Safety Engineering  
3 credits  
Offered Fall Semester  
Basic principles of accident prevention and safety engineering approach to the design of mechanical equipment, facilities, and manufacturing processes. Analysis and design of fire prevention procedures and accident control procedures in industry are included. Prerequisite: Junior standing or permission of instructor.

IEN 360. Productivity Engineering  
3 credits  
Offered Spring Semester  
Definitions and scope of productivity engineering and management. The productivity cycle. Productivity measurement, evaluation, improvement—discussion and examples. Productivity planning and improvement through the application of industrial and systems engineering techniques. Discussion of individual techniques with examples. Application potential of the course in real life situations. Prerequisite: MTH 112 or equivalent.
IEN 361. Industrial Cost Analysis  
3 credits  
Offered Spring Semester  
Analysis of financial statements and cost factors in manufacturing and service systems. Cost accounting methods, job order costing and process costing approaches. Deterministic and probabilistic estimates of cost. Prerequisite: IEN 306 or permission of instructor.

IEN 380. Engineering Economy  
3 credits  
Offered Fall Semester  
Engineering Economy Fundamentals. Interest and money-time relationship, methods of making economic decisions, risk and uncertainty, sensitivity analysis, selections among multiple alternatives, depreciation, benefit-cost analysis, replacement studies, minimum cost analysis, and related topics. Prerequisite: MTH 112 or equivalent.

IEN 399. Internship  
1 credit  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Practical application of classroom theory through employment with firms offering positions consistent with the student’s field of study. Course may be repeated.

IEN 406. Computer-Aided Manufacturing  
3 credits  
Offered Spring Semester  
A comprehensive view of manufacturing with a focus on design, automation, and the use of computers in manufacturing. The topics include computer-aided design, communications, programmable logic controllers, CNC machining, industrial robots, process planning, and computer-integrated manufacturing. Laboratory projects are an integral part of the course. Prerequisite: IEN 306.

IEN 407. Product Design for Manufacturing  
3 credits  
Offered Spring Semester  
The different phases of engineering design process. Guided Iteration Methodology for product design. Topics include design for manufacturability (DFM), best practices of product realization, solid modeling using SolidWorks, quality in design, issues in patents, liability and ethics. Engineering design specifications, evaluation methods for design alternatives. Prerequisite: IEN 306.

IEN 441. Deterministic Models in Operations Research  
3 credits  
Offered Fall Semester  
Introduction to deterministic mathematical models with applications to operational problems. Topics include the methodology of operations research, mathematical programming, game theory, network flow-theory, and dynamic programming. Cross-listed with MAS 441. Prerequisite: MTH 210.

IEN 442. Stochastic Models in Operations Research  
3 credits  
Offered Spring Semester  
Probabilistic models in operations research. Topics include probabilistic inventory models, queuing theory, Markov chains, and probabilistic dynamic programming. Cross-listed with MAS 442. Prerequisite: IEN 310 (EEN 310) or IEN 311 (MAS 311) and IEN 441 (MAS 441).

IEN 462. Production Systems Design  
3 credits  
Offered By Announcement only  
Recent advances in design and manufacturing including concurrent engineering, design for manufacturability, robust design - Tauchichi methods, computer integrated manufacturing, integrated production control, Just-in-Time production systems, group technology, focused factories, flexible manufacturing systems, and agile manufacturing. Prerequisite: IEN 310 (EEN 310) or IEN 311 (MAS 311).
IEN 465. **Production and Inventory Control**

3 credits  
Offered Fall Semester

Production and inventory management techniques such as forecasting methods, inventory control subject to both known and uncertain demand, aggregate planning, introduction to scheduling, materials requirement planning (MRP), just-in-time (JIT) manufacturing, and introduction to scheduling are covered. Prerequisite: IEN 310 (EEN 310) or IEN 311 (MAS 311).

IEN 470. **Engineering Professionalism**

3 credits  
Offered By Announcement only

Engineering design and configuration management, product warranties and safety, environmental responsibilities, ethics, professionalism, proposal preparation, contracts, execution, project scheduling, engineering economic analysis including present value, net present value, depreciation methods, costs, and financial statements are covered. Prerequisite: Junior standing or permission of instructor.

IEN 494. **Senior Project**

3 credits  
Offered Fall and Spring Semesters

Integration of Industrial Engineering principles and techniques in the design and improvement of production and service systems. Course includes preparation of project proposal, data collection, analysis, reporting, and formal presentations. Prerequisite: Senior standing.

IEN 501. **Manufacturing Analysis and Design I**

3 credits  
Offered By Announcement only

Analysis of Production Systems stressing diagnosis of problems associated with work measurement, manufacturing methodologies, and their interaction with cost factors. Prerequisite: Permission of instructor.

IEN 502. **Manufacturing Analysis and Design II**

3 credits  
Offered By Announcement only

Analysis of production systems stressing diagnosis of problems of quality and production control, utilizing quantitative techniques and analytical methods. Prerequisite: Permission of instructor.

IEN 505. **Robotics**

3 credits  
Offered Fall Semester

Fundamentals of robotics including kinematics and dynamics, trajectory planning, sensors and actuators, robotic vision, and case studies. Building your own robot is an integral part of hands-on laboratory exercises. Matlab controltoolbox and image analysis toolbox will be extensively used for design and analysis. Prerequisite: IEN 306 or permission of instructor.

IEN 507. **Design of Manufacturing Systems**

3 credits  
Offered Spring Semester

State-of-the-art techniques and tools relevant to the design, analysis, and control of modern manufacturing systems. Topics include modeling of manufacturing systems, tools for manufacturing system analysis, manufacturing system planning and scheduling, and lean manufacturing systems. Prerequisite: IEN 465 or permission of instructor.

IEN 509. **Automated Assembly**

3 credits  
Offered Fall Semester

Fundamentals of automated assembly including parts transfer systems and feeders, parts orientation and grasping techniques, product design for automated assembly (DFA), assembly robots, and performance and economics of assembly systems. Prerequisite: IEN 406 or permission of instructor.
IEN 512. **Statistical Quality Control and Quality Management**  
3 credits  
Offered Fall Semester  
Principles and practices of quality control in industry. Engineering and administrative aspects of quality control programs, process control, and acceptance sampling. Application of quantitative methods to the design and evaluation of engineering and industrial systems and processes are discussed as well as concepts of Total Quality Management. Prerequisite: IEN 311 (MAS 311) or IEN 312 (MAS 312).

IEN 513. **Quality Management in Service Organizations**  
3 credits  
Offered Fall Semester  
Course examines the issues of quality and productivity management in the service sector. Topics covered include the development and use of questionnaires, service industry applications of quality such as in banking, insurance, healthcare, transportation, government, public utilities, and retail trade. Prerequisite: Senior standing or permission of instructor.

IEN 524. **Decision Support Systems in Industrial Engineering**  
3 credits  
Offered Spring Semester  
Theory and application of decision support systems in industrial engineering. Topics include the study of model-based, data-based, knowledge-based, and communication-based decision support systems. Emphasis is placed on the selection process of the appropriate systems for various decision problems in industrial environments. Prerequisite: Senior standing or permission of instructor.

IEN 547. **Computer Simulation Systems**  
3 credits  
Offered Spring Semester  
Computer simulation and the development of simulation models. Application of discrete and continuous system simulation languages to systems studies is also included. Prerequisite: IEN 442 (MAS 442) or permission of instructor.

IEN 551. **Accident Prevention Systems**  
3 credits  
Offered Spring Semester  
Introduction to the basic principles of accident prevention and how to apply the safety engineering approach to the design of industrial accident prevention systems. Prerequisite: IEN 351 or permission of instructor.

IEN 557. **Ergonomics and Human Factors Engineering**  
3 credits  
Offered Fall Semester  
The study of human capacities and limitations with emphasis on human performance in system design. Topics include design of displays and controls, workload, job design, human information processing, anthropometry, workplace design, biomechanics, task analysis, and research techniques in human factors engineering. Lecture, 3 hours. Prerequisite: IEN 312 (MAS 312) or permission of instructor.

IEN 558. **Industrial Hygiene I**  
3 credits  
Offered Fall Semester  
Recognition of occupational chemical health hazards. Evaluation methods and analytical procedures used to determine level of exposure to chemical and toxic hazards. Control measures and compliance with OHSA requirements with special emphasis on industrial ventilation, and other methods of control are included. Prerequisite: ((CHM 111 or CHM 151) and senior standing) or permission of instructor.
IEN 559. Industrial Hygiene II  
**3 credits**  
*Offered Spring Semester*  
Recognition of physical occupational health hazards and evaluation methods and instruments used in measuring exposure levels with special emphasis on physical hazards. Protective measures and compliance with OHSA requirements is also included. Lecture, 3 hours. Prerequisite: ((CHM 111 or CHM 151) and senior standing) or permission of instructor.

IEN 565. Design of Integrated Manufacturing Systems  
**3 credits**  
*Offered By Announcement only*  
The design of integrated manufacturing systems including concepts of production planning and control, forecasting techniques, inventory systems, production planning and scheduling methods, material requirement planning, plant layout and facility location, design principles of material handling, new trends in batch, and discrete-parts are discussed. Prerequisite: Senior standing or permission of instructor.

IEN 568. Materials Handling and Facilities Planning  
**3 credits**  
*Offered Spring Semester*  
Analysis and design of production and service facilities, emphasis on material handling requirements. Capacity requirements, facility location, layout, storage systems and warehousing are discussed. Prerequisite: Senior standing or permission of instructor.

IEN 570. Engineering Management  
**3 credits**  
*Offered Spring Semester*  
Integrating engineering discipline into the social and economic considerations of managing systems. Tools and techniques used by engineering managers including engineering project life cycle, role playing, communication, decision-making in engineering management, and managing change in engineering organizations are discussed. Prerequisite: IEN 311 (MAS 311) or IEN 312 (MAS 312) or permission of instructor.

IEN 571. Engineering Entrepreneurship  
**3 credits**  
*Offered Spring Semester*  
The conversion of technological know-how and engineering theories into business enterprises. The role of technology in creating wealth, connecting technology with market, the role and characteristics of entrepreneurs, starting a business and the business plan, innovation, industrial and service organizations, and the new business environment. Prerequisite: Senior standing or permission of instructor.

IEN 572. Management of Technology  
**3 credits**  
*Offered Fall Semester and Second Summer Session*  
Engineering, Science and Management Principles contributing to the development of a successful framework for Managing technology within an organization, nationally, or internationally. The process of technological innovations, technological planning and forecasting, and socio-economic changes. Prerequisite: Senior standing or permission of instructor.

IEN 590. Special Topics in Industrial Engineering  
**1-3 credits**  
*Offered By Announcement only*  
Sub-titles describing the topics are shown in parentheses in the class schedule, following the title “Special Topics”. Prerequisite: Permission of instructor.

IEN 591. Dean’s Seminar: Entrepreneurship  
**1 credit**  
*Offered By Announcement only*  
Weekly seminar given by guest speakers on topics including process of management, marketing, planning, R & D, financing, taxation, governmental regulations, and international commerce. Prerequisite: Permission of instructor.
IEN 594. Master’s Capstone Design Project
3 credits
Offered Fall Semester
A capstone design project for students in the five-year BSIE/MSIE program. Integration of Industrial Engineering principles and techniques in the design and improvement of production and service systems is emphasized. Offered for students in this program only. Prerequisite: Methods Analysis, Applied Probability, Statistics, and senior standing.

IEN 595. Special Problems
1- 3 credits
Offered By Announcement only
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of department chairman.

IEN 596. Special Problems
1- 3 credits
Offered By Announcement only
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of department chairman.

IEN 599. Cooperative Education
1 credit
Offered By Announcement only
Practical application of classroom theory through alternating semester or summer employment with industries offering positions consistent with the student’s field of study. Course may be repeated. Periodic reports and conferences are required.

Mechanical and Aerospace Engineering

MAE 111. Introduction to Engineering I
3 credits
Offered Fall and Spring Semesters
Use of engineering tools and computer techniques for problem solving. Data acquisition, analysis, presentation, software design, and computer aided drafting are covered. Development of design skills through several design and building competitions. Introduction to professional ethics and intellectual property rights. Introduction to use of MATLAB, AutoCAD, and programming in C++.

MAE 112. Introduction to Engineering II
2 credits
Offered Fall and Spring Semesters
Introduction to engineering design and the design process. Course topics include safety, reliability, human and environmental factors, economic analysis, and cost estimation. Professional ethics, product liability, solid modeling, machine shop orientation, and practice are also included. Group design projects. Prerequisite: MAE 111.

MAE 119. Energy and Environment
3 credits
Offered Fall Semester
Conventional energy systems; environmental problems caused by energy carriers and energy consumption; the greenhouse effect, acid rain, and pollution; need for cleaner energy sources; environmental and other characteristics of unconventional energy sources; synthetic energy carriers and their environmental characteristics; possible solutions to energy available and related environmental problems; solar-hydrogen energy system. Prerequisite: Freshman standing.

MAE 202. Dynamics
3 credits
Offered Fall and Spring Semesters
Discussion of motion description and analysis, application of Newton’s laws, energy, and momentum principles to mechanical systems. Introduction to mechanical vibrations. Prerequisite: CAE 210. Corequisite: PHY 205.
MAE 207. Mechanics of Solids II  
3 credits  
Offered Fall and Spring Semesters  
Discussion of displacements, instability, flexural, shear, torsional, and principle stresses. Introduction to statically indeterminate analysis. Prerequisite: CAE 210.

MAE 241. Measurements Laboratory  
3 credits  
Offered Spring Semester  
Introduction to experimental mechanical engineering. Basic principles of measurement, data interpretation, and uncertainty analysis are covered. Laboratory exercises in mechanical engineering areas are included. Prerequisite: MAE 207, IEN 311, ENG 107. Corequisite: EEN 201 or 205.

MAE 301. Engineering Materials Science  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Introduction to the physics and chemistry of the solid state including the structure and properties of metals, polymers, and ceramics. Prerequisite: CHM 111 or 151. Corequisite: PHY 207.

MAE 302. Mechanical Behavior of Materials  
3 credits  
Offered Fall Semester  
Application of metallurgy and mechanics to the study of the plastic deformation and fracture of metals, ceramics, and plastics. Lecture, 2 hours; laboratory, 3 hours. Prerequisite: MAE 207.

MAE 303. Thermodynamics I  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Thermodynamic properties of materials; the first and second laws of thermodynamics; application to thermodynamic processes; introduction to heat transfer. Prerequisite: PHY 206, MTH 112 or 132.

MAE 304. Kinematic Design  
3 credits  
Offered Spring Semester  
Fundamentals of kinematic analysis and design of motion of linkages, cams, and gears are discussed. Analysis of forces in linkages, cams and gears is also included. Prerequisite: MAE 202.

MAE 308. Thermodynamics II  
3 credits  
Offered Spring Semester  
Course topics include cycle irreversibility, availability of energy, power and refrigeration cycles, behavior of mixtures and solutions, chemical thermodynamics, and compressible fluids. Prerequisite: MAE 303.

MAE 309. Fluid Mechanics  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Course topics include fluid statics, fluid flow concepts, dynamics of inviscid and viscous fluids, closed and open channel flow, and compressibility effects. Prerequisite: CAE 210, PHY 206.

MAE 310. Heat Transfer  
3 credits  
Offered Fall and Spring Semesters  
Application of elementary methods of solution to heat transfer problems involving steady and unsteady state conduction, radiation, and convection. Introduction of meaningful experimental data is also included. Prerequisite: MAE 303.

MAE 311. Mass Transfer I  
3 credits  
Offered By Announcement only  
Introduction to mass transfer phenomena and mass transfer operations in gas-liquid systems. Derivation and application of mass transfer rate equations and simultaneous heat and mass transfer phenomena are also included. Prerequisite: MAE 303, 309.
MAE 341. Mechanical Design I
3 credits
Offered Fall Semester
Concepts and software for kinematics, solid modeling, and project management. Fundamentals of mechanical design: stresses in and failure of mechanical elements. Individual and group design projects. Prerequisite: MAE 202, 207.

MAE 342. Mechanical Design II
3 credits
Offered Spring Semester
Review of the design process and creativity in design. Topics include design and reliability oars, shafts, etc. Individual and group design projects are included. Prerequisite: MAE 341.

MAE 351. Mechanics Laboratory
2 credits
Offered Spring Semester
Exercises in the experimental determination of the mechanical properties of materials and the static and dynamic characteristics of mechanical and structural elements. Lecture, 1 hour; laboratory, 3 hours. Prerequisite: MAE 202.

MAE 362. Computer Analysis of Mechanical and Aerospace Engineering Problems
3 credits
Offered Spring Semester
Exploration of physical systems behavior using discrete models. Topics include numerical analysis, solid modeling, and software evaluation. Students solve engineering problems using student-developed and existing software. Prerequisite: MAE 111, 341 and MTH 211. Corequisite: MAE 310.

MAE 371. Aerodynamics
3 credits
Offered Spring Semester
Course discusses the history of flight. Topics include fundamental variables, the atmosphere, basic equations, their approximations, compressibility, viscosity, flow regimes potential flow, and aerodynamics of airfoil and wing. Prerequisite: MAE 309.

MAE 399. Cooperative Education
1 credit
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical application of classroom theory through alternating semester or summer employment with firms offering positions consistent with the student's field of study. Course may be repeated.

MAE 404. Experimental Engineering Laboratory
2 credits
Offered Fall Semester
Experimental analysis of problems in fluid mechanics, thermodynamics, and other areas of engineering. Lecture, 1 hour; laboratory, 3 hours. Prerequisite: MAE 303, 309, 310.

MAE 405. Thermal Environmental Engineering
3 credits
Offered Fall Semester
An extension of basic thermodynamics to the design of engineering systems exposed to various thermal environments. Topics include fundamentals of air conditioning, special refrigeration systems, solar radiation, and thermal analysis of engineering components. Prerequisite or corequisite: Prerequisite or corequisite: MAE 308, 310.

MAE 408. Heating, Ventilating, and Air Conditioning
3 credits
Offered Spring Semester
Principles and procedures for the analysis and design of heating, ventilating and air conditioning (HVAC) systems, including moist air properties and conditioning processes, heating and cooling load calculations, building energy consumption, thermal comfort, and indoor air quality. Not available for students having taken MAE 405. Prerequisite: MAE 303.
MAE 410. Engineering Administration  
2 credits  
Offered Fall Semester  
Course topics include engineering economics, cost determination, legal phases of engineering, and engineering procedures. Lecture, 2 hours. Prerequisite: IEN 311 and junior standing.

MAE 412. System Dynamics  
3 credits  
Offered Fall Semester  
Course topics include dynamic modeling of mechanical and thermo-fluid systems. Laplace transforms, transfer functions, energy concepts, causality, linearity, linear graph models, energy transducing system elements, frequency domain methods. Prerequisite: EEN 201 or 205, MAE 202, 309.

MAE 415. Automatic Control  
3 credits  
Offered Spring Semester  
Introduction to system theory, transfer functions, and state space modeling of physical systems. Course topics include stability, analysis and design of PID, Lead/Lag, other forms of controllers in time and frequency domains, root locus Bode diagrams, gain and phase margins, Nichols chart, Nyquist criterion, and systems with time delay. Prerequisite: MAE 412 or EEN 307.

MAE 420. Applied Thermodynamics  
3 credits  
Offered Spring Semester  

MAE 441. Design of Fluid and Thermal Systems  
3 credits  
Offered Fall and Spring Semesters  
Course topics include thermal and fluid systems design fundamentals, piping systems, selection of pumps, piping system design practices, classification of heat exchanges. Basic design methods of heat exchange equipment is also included. Prerequisite: MAE 309, 310.

MAE 442. Capstone Design Project-I  
1 credit  
Offered Fall and Spring Semesters  
Lectures and classroom discussions cover (i) legal, ethical, and societal responsibilities of engineers, (ii) design factors such as product safety, reliability, life cycle costs, and manufacturability, and (iii) other aspects such as global market, contemporary issues, and continuous learning process. Students are required to select group design projects from the breadth of mechanical engineering activity and present project to serve as the basis for MAE 443. Prerequisite: Senior standing in Mechanical and Aerospace Engineering.

MAE 443. Capstone Design Project-II  
2 credits  
Offered Fall and Spring Semesters  
Continuation of the Capstone Design Project-I course. A mechanical system is designed, implemented, documented, and presented. Prerequisite: MAE 442.

MAE 444. Capstone Aerospace Design Project-I  
1 credit  
Offered Fall and Spring Semesters  
Lectures and classroom discussions cover (i) legal, ethical and societal responsibilities of engineers, (ii) design factors such as product safety, reliability, life cycle costs and manufacturability, and (iii) other aspects such as global market, contemporary issues and continuous learning process. Students are required to select group design projects from the breadth of aerospace engineering activity and present project proposals to serve as the basis for MAE 445. Prerequisite: Senior standing in Aerospace Engineering.
MAE 445. Capstone Aerospace Design Project-II  
2 credits  
Continuation of the Capstone Aerospace Design Project-I course. An aerospace system/subsystem is designed, implemented, documented and presented. Prerequisite: MAE 444.

MAE 446. Aircraft Design  
3 credits  
Concepts of aircraft design emphasizing on design layout including the airfoil geometry selection, propulsion integration, configuration layout, payload and landing gear system. Prerequisite: MAE 371. Corequisite: MAE 471.

MAE 470. Introduction to Aerospace Structures  
3 credits  
Course topics include mechanics of thin-walled aerospace structures, load analysis, virtual work, energy principles, stability of aerostructures, and finite element methods. Prerequisite: MAE 207.

MAE 471. Flight Dynamics  
3 credits  
Course topics include aerodynamic performance, stability, control, propulsion systems, and structures. Case Studies of Aerospace Systems are also included. Prerequisite: MAE 371.

MAE 472. Design of Aerospace Structures  
3 credits  
Design Philosophy and principles of aerospace structures. Detailed design of wing box structure, fuselage, landing gear mechanism, fasteners and structural joints. Application of composite materials. Prerequisite: MAE 470.

MAE 501. Methods of Engineering Analysis  
3 credits  
Analysis of engineering systems in equilibrium and motion. Examples considered from mechanical, electrical, thermal and fluids engineering. Mathematical theory and computer methods for obtaining numerical solutions are developed for various cases involving discrete and continuous systems. Lecture, 3 hours. Prerequisite: MAE 412, MTH 311 or permission of instructor.

MAE 502. Vibrations  
3 credits  
Basic theory of free and forced vibrations of mechanical systems with and without damping. Applications to systems with one and several degrees of freedom are included. Prerequisite: MAE 202, 207, 412 or permission of instructor.

MAE 503. Internal Combustion Engines  
3 credits  
Course discusses engine types, characteristics, and operation. Topics include performance factors, fuel combustion, power cycles, knock and engine variables, exhaust emissions, fuel metering, compressors, and turbines. Prerequisite: MAE 303, senior standing, or permission of instructor.

MAE 505. Design for Manufacturability  
3 credits  
Manufacturing concerns at design stage. Design theory and methodology. Statistical considerations in geometric dimensioning, tolerances, reliability-based design, and quality control. Productibility, design for assembly, and value engineering. Life cycle costs and optimum design using nonlinear programming and Taguchi approaches. Hands on projects on machine tools. Prerequisite: MAE 341 and 342 or permission of instructor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE 506</td>
<td>Nuclear Engineering</td>
<td>3</td>
<td>By Announcement only</td>
<td>Course topics include a review of neutron physics, chain reactions, reactor theory, steady state operation, and reactor kinetics. Control, long term reactivity changes, materials, heat transfer, and shielding are also included. Lecture, 3 hours. Prerequisite: Senior standing in Mechanical and Aerospace Engineering or permission of instructor.</td>
</tr>
<tr>
<td>MAE 507</td>
<td>Advanced Mechanics of Solids</td>
<td>3</td>
<td>Spring Semester</td>
<td>Courses discuss the basic elements of elasticity, plasticity, and viscoelasticity. Application to mechanical systems at rest and in motion are included. Prerequisite: MAE 202, 207, senior standing or permission of instructor.</td>
</tr>
<tr>
<td>MAE 508</td>
<td>Intermediate Heat Transfer</td>
<td>3</td>
<td>Spring Semester</td>
<td>Course discusses steady and unsteady heat transfer by conduction, convective heat transfer in laminar and turbulent fluid flow, natural convection, and heat transfer by radiation. Prerequisite: MAE 310.</td>
</tr>
<tr>
<td>MAE 509</td>
<td>Hydrogen Energy</td>
<td>3</td>
<td>Fall Semester</td>
<td>Evaluation of new energy sources, need for an intermediary system, hydrogen energy system, hydrogen as energy carrier, hydrogen production methods, hydrogen storage and distribution, utilization of hydrogen by residential, commercial, transportation, and industrial sectors are discussed as well as environmental, safety, and economical considerations. Prerequisite: Senior standing or permission of instructor.</td>
</tr>
<tr>
<td>MAE 510</td>
<td>Fundamentals of Solar Energy Utilization</td>
<td>3</td>
<td>Spring Semester</td>
<td>Fundamentals basic to the design and performance analysis of thermal systems for the capture and utilization of Solar Energy. Prerequisite: MAE 303, MTH 211 and PHY 207.</td>
</tr>
<tr>
<td>MAE 511</td>
<td>Engineering Fracture Mechanics</td>
<td>3</td>
<td>By Announcement only</td>
<td>Course addresses the consequence of fracture including some illustrative applications of fracture mechanics, Griffith’s fracture theory, review of relevant results from solid mechanics, the three basic modes of fracture, stress intensity factor, introduction to elasto-plastic and dynamic fracture, fatigue crack propagation, fracture and non-destructive evaluation procedures. Prerequisite: MAE 207, senior standing or permission of instructor.</td>
</tr>
<tr>
<td>MAE 512</td>
<td>Intermediate Fluid Mechanics</td>
<td>3</td>
<td>Fall Semester</td>
<td>Course topics include conservation of mass, momentum, and energy, potential flow, viscous laminar and turbulent flows, the Reynolds analogy, and Boundary-layer approximations. Gas dynamics are also discussed. Prerequisite: MAE 309.</td>
</tr>
<tr>
<td>MAE 513</td>
<td>Kinematics for Robotics</td>
<td>3</td>
<td>By Announcement only</td>
<td>Geometry of unconstrained plane motion with applications to linkage design. Topics include type and number synthesis, introduction to 3-D mechanism with applications to robotics, graphical, analytical, and computer techniques, including the use of analysis software. Prerequisite: MAE 202, senior standing or permission of the instructor.</td>
</tr>
</tbody>
</table>
MAE 514. Advanced Internal Combustion Engines Experimental Studies
3 credits
Offered Spring Semester
Experimental mechanical engineering as it pertains to internal combustion
engines. The principal measurements necessary to analyze the operation of an
internal combustion engine are covered. Emphasis is placed on experiment
planning, data interpretation, and error analysis. Prerequisite: MAE 503 or
permission of instructor.

MAE 516. Introduction to Composite Materials
3 credits
Offered By Announcement only
Course provides an introduction to composite materials and terminology. Topics
include advantages offered by composite materials, current aerospace,
avtomotive, and bio-mechanics applications, experimental results, analytical
models, and effects of impact and fatigue loads. The environment’s impact on
composite materials’ performance and design procedures are discussed. Case
studies examining composite materials as efficient replacements are also
included. Prerequisite: MAE 207, senior standing, or permission of instructor.

MAE 517. CAD Applications Using Interactive Computer Graphics
3 credits
Offered By Announcement only
Computer methods and graphics in the engineering design process. Introduction
to available engineering analysis codes, principles of computer graphics, and
interactive graphical methods in problem solving. Mathematics for 2-D and 3-D
graphical manipulation. Programming project work is required. Prerequisite:
Senior standing or permission of instructor.

MAE 518. Chemical and Process Engineering A
3 credits
Offered By Announcement only
Course analyzes single and multi-stage concentration processes in the liquid-solid
systems such as crystallization and drying. Processes apart from equilibrium,
controlled diffusion, mathematical treatment, and equipment design are also
discussed. Prerequisite: MAE 310, 311; Corequisite: MAE 308.

MAE 519. Chemical and Process Engineering B
3 credits
Offered By Announcement only
Stagewise equilibrium separation processes in liquid-liquid systems such as
distillation, rectification, absorption, and extraction. Application of phase
equilibrria and balance equations, mathematical treatment, and equipment design.
Prerequisite: MAE 310, 311, 308.

MAE 520. Air Pollution
3 credits
Offered Spring Semester
Course topics include fundamentals of air pollution, air quality, properties of air
pollutants, effect of pollutants on the environment, analysis and modeling,
diffusion of pollutants, and air pollution control. Prerequisite: MAE 303, 309/CAE
330 or permission of instructor.

MAE 521. Exhaust Emission Control
3 credits
Offered Spring Semester
Course topics include automotive emissions, air pollution, combustion of
homogeneous mixtures, emission control systems, Federal emission standards,
and emission instrumentation and measurement. Lecture, 2 hours; Laboratory, 3
hours. Prerequisite: Senior engineering standing or permission of instructor.
MAE 538. Computer-Aided Air Conditioning Design and Energy Management
3 credits
Offered By Announcement only
Course topics include equipment and components, air conditioning system, all-air systems, air-and-water systems, all water systems, heat recovery systems, cogeneration systems, heat pump systems, central heating and cooling, energy management, and computer applications. Prerequisite: MAE 405 or 408 or permission of instructor.

MAE 539. Heating, Ventilating and Air Conditioning System Design
3 credits
Offered Fall Semester
Course topics include basic HVAC systems, multizone systems, dual-duct systems, terminal reheat systems, variable air volume systems, induction and induction reheat systems, special applications, hydronic systems, unitary and heat pump systems, hydronic heat recovery systems, cooling and heating load calculation duct and piping design, overall system design, and integration. Prerequisite: MAE 405 or 408 or permission of instructor.

MAE 540. Energy Conversion
3 credits
Offered Spring Semester
Course topics include energy conversion, utilization, present and projected consumption of energy, thermodynamic principles, nuclear energy, fission and fusion reactions, hydroelectric power, and solar energy. Alternative energy sources, the hydrogen economy, and the energy-environment-economy system are also discussed. Prerequisite: Senior standing in Mechanical and Aerospace Engineering or permission of instructor.

MAE 541. Two-Phase Flow Fundamentals and Design
3 credits
Offered By Announcement only
Course topics include two-phase flow fundamentals for thermal design, heat transfer, pressure drop analysis of two-phase flows in tube and around tube bundles, heat transfer design correlations in boiling, evaporation, and condensation. Classifications of heat vapor generation and vapor condensation, heat exchangers for air-conditioning and refrigeration, enhancement of boiling, condensation, evaporation heat transfer, and fouling of heat exchangers are also discussed. Design examples are included. Prerequisite: MAE 303 and 310 or permission of instructor.

MAE 550. Product Safety Engineering
3 credits
Offered By Announcement only
Product safety for the designer and the design review process. Topics include hazard analysis of products including use of regulatory and voluntary standards and analytical tools such as fault tree analysis. Constraints imposed by product liability law, design techniques, and process requirements to minimize hazards are also discussed. Prerequisite: Senior standing in Engineering or permission of instructor.

MAE 551. Special Problems
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

MAE 552. Special Problems
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.
MAE 570. Aero Propulsion  
3 credits  
Definition of the atmosphere, propulsion basics, rocket fundamentals, turbine fundamentals, gas turbine cycles, component matching, math and computer models, aircraft missions, cycle section, reliability, and durability are analyzed. Prerequisite: MEN 303, 309. Computer models, aircraft missions, cycle section, reliability, and durability are analyzed. Prerequisite: MAE 303, 309.

MAE 571. Introduction to Aerospace Control  
3 credits  
Offered Spring Semester  
Course topics include modeling of Aerospace systems, properties of state space realizations, coordinate transforms solution of state equations, controllability, observability, equivalent realizations, model reduction, stability, optimal control, and estimation. Prerequisite: MAE 412 or EEN 308, or permission of instructor.

MAE 590. Special Topics  
1-4 credits  
Offered Fall Semester  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 591. Special Topics  
1-4 credits  
Offered By Announcement only  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 592. Special Topics  
1-4 credits  
Offered By Announcement only  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 593. Special Topics  
1-4 credits  
Offered By Announcement only  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 594. Special Topics  
1-4 credits  
Offered By Announcement only  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 595. Special Topics  
1-4 credits  
Offered By Announcement only  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 596. Special Topics  
1-4 credits  
Offered By Announcement only  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 597. Special Topics  
1-4 credits  
Offered By Announcement only  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 598. Special Topics  
1-4 credits  
Offered By Announcement only  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.
MAE 599. Cooperative Education
1 credit

Offered Fall and Spring Semesters and First and Second Summer Sessions

Practical application of classroom theory through alternating semester or summer employment with industries offering positions consistent with the student’s field of study. Course may be repeated. Periodic reports and conferences are required. Prerequisite: Permission of Department Chairman.
**Interdisciplinary Graduate Studies**

**IDS 500. Research Methods and Topics**
4 credits

*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Disciplined laboratory experiences for selected undergraduate students placed in various laboratories on the medical, main and marine campuses under the mentorship of faculty researchers. Includes a series of class lectures and demonstrations of scientific equipment. Prerequisite: Permission of Program Director.

**IDS 715. Research Activities**
0 credits

*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Students conducting research, practica, field experience or special projects as part of their graduate experience. Regarded as full-time residence. May be repeated. Prerequisite: Permission of the program director.

**IDS 730. Doctoral Dissertation**
1-12 credits

*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of IDS 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

**IDS 750. Research in Residence**
0 credits

*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
RSM 500. Research Diving Techniques
3 credits
Offered By Announcement only
This course is designed to introduce students to the practices and policies of scientific diving. The object is to prepare students to use SCUBA as a research tool for the marine sciences. The course content will qualify students as RESEARCH DIVERS under the UM/RSMAS Scientific Diving Program and will meet the standards set by the American Academy of Underwater Sciences (AAUS).

RSM 510. Environmental Ethics
3 credits
This course will introduce students to a variety of key issues and concepts in environmental ethics. The course will be a joint scientific and philosophic collaboration, exploring the ethical dimensions of controversial and emerging issues in biotechnology and the environment. After students are exposed to the scientific background of various actual case studies focusing on current environmental and social impact, the ethical and philosophical issues raised by the discussions will be explored using the tools and methods of analytic philosophy. The course will develop the student’s ability to construct and evaluate philosophical arguments in the field of environmental ethics, and to reason philosophically on numerous questions in contemporary applied ethics. Prerequisite: Although there are no philosophy prerequisites for this course, permission of instructor is required.

RSM 520. Climate and Society
3 credits
Offered Spring Semester
This course is designed to provide students from different disciplinary backgrounds with an overview of physical processes, general concepts and policy debates surrounding climate issues.

RSM 560. Investigating Nature through Science Teacher Active Research (INSTAR) in Physical Science
2 credits
Offered First and Second Summer Sessions
This is a graduate level marine science course that provides a hands-on approach to education focused on geological and meteorological research in South Florida environment. The course provides training in marine science content, field techniques, state-of-the-art field, computer technology, and science educational reform measures. Participants work collaboratively with marine and atmospheric scientists to bring cutting edge marine science content and research to the classroom focusing on the following coastal themes: geology, hydrology and meteorology. The course will be applicable to all graduate and qualified undergraduate marine science students, per-service teachers in colleges of education, and in-service teachers in school systems throughout the country.

RSM 561. INSTAR for Physical Sciences Follow-up
1 credit
Offered First and Second Summer Sessions
This is a follow-up course for participants in MGG 560 and is designed to test the application of the methods learned in MGG 560 to the teaching of high school students. Participants are expected to show evidence of teaching material learned in MGG 560. Prerequisite: RSM 560.
RSM 562. Investigating Nature through Science Teacher Active Research in Biological Science
2 credits
Offered First and Second Summer Sessions
This is a graduate level marine science course that provides a hands-on approach to education focused on marine science research and technology in South Florida coastal environments. The course provides training in marine science content, field techniques, state-of-the-art field and computer technology, and science educational reform measures. Participants work collaboratively with marine scientists to bring cutting edge marine science content and research to the classroom focusing on the following coastal themes: coral reefs and marine fisheries. The course will be applicable to all graduate and qualified undergraduate marine science students, per-service teachers in colleges of education, and in-service teachers in school systems throughout the country.

RSM 563. INSTAR Biological Sciences Follow-up
1 credit
Offered First and Second Summer Sessions
This is a follow-up course for participants in RSM 562 and is designed to test the application of the methods learned in RSM 562 to the teaching of high school students. Participants are expected to show evidence of teaching material learned in RSM 562. Prerequisite: RSM 562.

RSM 571. Special Topics
1-4 credits
Offered By Announcement only
Lectures and research projects in special topics related to Marine and Atmospheric Science. Prerequisite: Permission of instructor.

RSM 572. Special Topics
1-4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Lectures and research projects in special topics related to Marine and Atmospheric Science. Prerequisite: Permission of instructor.

Applied Marine Physics

AMP 402. Introduction to Ocean Engineering
3 credits
Offered Fall Semester
History and development of major fields within Ocean Engineering. Introduction to analytical and experimental techniques in coastal and harbor engineering, offshore structures, ships and ship dynamics, underwater technology, and underwater acoustics. Lectures will be supplemented by films. Prerequisite: MTH 311, or permission.

AMP 509. Coastal Physics and Engineering
3 credits
Offered Spring Semester
Course addresses linear wave theory, wave statistics, wave generation, tides, wind-driven currents, nearshore circulation, sediment transport by waves and currents, bedforms, bedload, and suspended load. Other topics include longshore and cross-shore transport, equilibrium beach profiles, coastal processes models, Pelnard-Considere model for shoreline change, and Escoffier model for inlet stability. Prerequisite: CAE 330 or AMP 575.

AMP 515. Environmental Hydrology
3 credits
Offered Fall Semester
An introduction to the physical processes of hydrological science. The principles of evapotranspiration, precipitation, infiltration, groundwater flow, seepage, overland flow, and stream flow are expounded. Areas of interrelation with environmental, marine, and geophysical sciences are emphasized. Measurement techniques for hydrological variables and the statistical analysis of hydrological data time series for runs and extremes are also described. Prerequisite: Permission of instructor.
AMP 531. Ocean Measurements
3 credits
Offered Spring Semester
Course topics include instrumentation, automatic data acquisition and analysis, time series analysis, signals and noise, filtering, and applied statistics. Prerequisite: MTH 311.

AMP 535. Introduction to Underwater Acoustics
3 credits
Offered Spring Semester
Course topics include sound waves and pulses, harmonic analysis, sound propagation in the ocean, sonar systems, scattering and absorption, acoustic measurement of marine life and sea-floor properties, sound transmission in waveguides, ambient noise, transducers, and hydrophones. Prerequisite: MTH 311.

AMP 542. Physics of Remote Sensing
3 credits
Offered By Announcement only
This course discusses basic physical principles of remote sensing. The main topics are (1) Introduction, (2) Sampling issues, (3) Fundamental laws of electromagnetic waves, (4) Passive sensing, (5) Active sensing, and (6) Brief survey of satellite sensors. Prerequisite: Permission of instructor.

AMP 551. Special Topics
1-3 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 552. Special Topics
1-3 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 553. Special Topics
1-3 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 554. Special Topics
1-3 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 555. Special Topics
1-3 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 575. Applied Ocean Hydrodynamics
3 credits
Offered Fall Semester
The equations governing the dynamics of homogeneous fluids are derived. The concepts of deformation rates, vorticity, stream function, and ideal fluid flow are introduced and demonstrated in applications describing flows in the marine environment. Semi-empirical methods for analyzing viscous flows, boundary layers, and turbulence are presented. Eddy viscosity and more advanced turbulence closure schemes are discussed in the context of coastal circulation, bottom boundary layers and sediment transport. Prerequisite: Permission of instructor.

AMP 576. Wave Propagation in the Ocean Environment
3 credits
Offered Fall Semester
Wave equation models, acoustic and other elastic waves, surface gravity waves, boundary conditions, ray tracing, dispersion, diffraction, reflection attenuation, and radiation transport laws are discussed. Prerequisite: MTH 311.
AMP 577. Marine Soil Mechanics
3 credits
Course topics include principles of soil and rock mechanics and dynamics, theories of poro-elasticity, sea-seabed and interactions, and measurement methods of physical properties of sediments. An introduction to wave propagation through porous media is included. Prerequisite: AMP 576 and 575 or permission of instructor.

AMP 590. Sustainable Fisheries - Assessment and Conservation
3 credits
This is the second of a three course series. This course will focus on advanced stock assessment techniques using acoustics and optics. It will cover, for example: - History of sampling fish stocks - “from catching to measuring fish” - Measuring with underwater sound and light - Sounds and echoes in marine ecosystem - Survey of fish stocks and their habitat. Prerequisite: MSC 471, or equivalent.

Marine and Atmospheric Chemistry

MAC 503. Principles of Marine and Atmospheric Chemistry
3 credits
Introduction to the chemical aspects of the sea and atmosphere chemical composition, physico-chemical properties and relationships, methodology of study, fundamental aspects of marine and atmospheric chemistry. Prerequisite: CHM 111 or permission of instructor.

MAC 504. Analytical Methods in Marine and Atmospheric Chemistry
1 credit
A survey of analytical methods as applied to oceanographic and atmospheric chemistry. Course is taught in a multi-instructor format. Topics include trace organic analysis by HPLC, GC, and GC-MS, laser induced fluorescence detection of gas phase atoms, differential absorption detection of atmospheric species, aerosol sampling, ion chromatography, photochemical techniques, oceanographic tracers, microbiological techniques, and computational resources. Course is designed to be taught in conjunction with MAC 503. Prerequisite: Permission of instructor.

MAC 560. Tropospheric Chemistry I
3 credits
Process-Oriented lower atmospheric chemistry. Topics include photochemical oxidant formation, nighttime chemistry, air-sea exchange, cloud droplet and aerosol reactions, physical properties of aerosols, and transport properties of the troposphere. Prerequisite: MPO 552 or an undergraduate meteorology course, or permission of instructor.

MAC 581. Special Topics in Marine and Atmospheric Chemistry
1- 4 credits
Lectures, research projects or direct readings in special topics of marine and atmospheric chemistry. Prerequisite: Permission of instructor.

MAC 582. Special Topics in Marine and Atmospheric Chemistry
1- 4 credits
Lectures, research projects or direct readings in special topics of marine and atmospheric chemistry. Prerequisite: Permission of instructor.

MAC 583. Special Topics in Marine and Atmospheric Chemistry
1- 4 credits
Lectures, research projects or directed readings in special topics of marine and atmospheric chemistry. Prerequisite: Permission of instructor.
MAC 584. Special Topics
1-4 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics of Marine and Atmospheric Chemistry. Prerequisite: Permission of instructor.

MAC 585. Special Topics in Marine and Atmospheric Chemistry
1-4 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics of marine and atmospheric chemistry. Prerequisite: Permission of instructor.

Marine Affairs and Policy

MAF 501. Political Ecology of Marine Management
3 credits
Offered Spring Semester
Course provides a grounding in political ecology as an important theoretical approach to resource policy and management. The social analysis of resource use, social change, and development are discussed. Models of development and concepts of nature relate to resource use and policy formation are also included. Within this framework, ethnicity, class, and the politics of conservation are explored. Prerequisite: MAF 505.

MAF 502. Economics of Natural Resources
3 credits
Offered Fall Semester
Course brings together the approaches of natural resource and environmental economics to provide a comprehensive overview of the economics of national, international, and global environmental problems. A unifying theme throughout the course is the concept of sustainable development, defined as maximizing the net benefit to economic development while maintaining the services and quality of natural resources over time. Economic reasoning is used to examine the causes and consequences of environmental and resource problems and measures for dealing with them. Prerequisite: Permission of instructor. Intermediate level statistics (including multiple regressions) and a minimal working knowledge of calculus is useful but not required. All models are presented in graphical as well as mathematical forms.

MAF 503. Marine Resource Economics
3 credits
Offered By Announcement only
This course surveys the economics of international and global marine resource problems, with particular emphasis on biodiversity loss and climate change. The mainstream economics focus on efficiency—getting the most welfare out a given endowment of resources—in complemented with a range of social science and natural science interdisciplinary linkages. Three themes stand out. First, economic efficiency may not be the only or even dominant concern in the provision of environmental assets. Issues of fairness and access to those assets, both within a time frame period and over time, may be of greater importance to both individuals and societies. Second, if habitats and their non-human occupants have some form of “intrinsic” value unrelated to human preferences, then we face the problem of how to account for those values. Third, economics lacks a “sustainability” theorem that would ensure whatever economy we might devise would be ecologically sustainable. To be sure of sustainability, economic models must have sustainability conditions build into them. Prerequisite: MAF 502, ECO 345, or permission of instructor.

MAF 505. Fieldwork in Coastal Cultures
3 credits
Offered Spring Semester
Field course in which the student participates in a social and economic analysis of a coastal culture (i.e., stone crab fishermen in Everglades City, spiny lobster fishermen in Key West, boat builders and commercial divers in the Abacos, Bahamas). Preliminary lectures and reading introduce the theory and method which the student then practices during a week-long field trip. Prerequisite: MSC 310 or permission of instructor.
MAF 506. **Advance Fieldwork in Coastal Cultures**  
**3 credits**  
Offered Spring Semester  
Advanced field course in which the students participate in the social and economic analysis of a coastal culture (e.g., Louisiana bayou fishermen, Abacos boat builders, Tarpon Spring spongers). Students utilize field research techniques learned in MAF 505 and develop skills in framing a research problem. Students examine a coastal issue from an anthropological perspective, structuring a field research paper. Prerequisite: MAF 505.

MAF 510. **Environmental Planning and the Environmental Impact Statement**  
**3 credits**  
Offered Spring Semester  
Course takes a broad view of environmental planning and analysis while focusing specifically on the preparation of environmental impact statements. Statutory requirements and procedures at the federal level are examined. Judicial opinions are studied that reflect environmental disputes and controversies. The course also considers some of the substantive requirements of environmental impact analyses such as the assessment of physical and biological environment and socioeconomic impacts.

MAF 512. **Aquaculture Management**  
**3 credits**  
Offered Fall Semester  
Course examines the various strategies of resource exploitation and utilization in developing aquaculture projects. Resources include environmental, technological, social, economical, and administrative aspects encountered in commercial aquaculture development. The course covers all stages of planning and development, with emphasis on determining the technical and economic feasibility of aquaculture projects.

MAF 513. **Aquaculture Management II**  
**3 credits**  
Offered Spring Semester  
Course is a complement to Aquaculture Management (MAF 512) and examines advanced aquaculture management techniques and strategies with emphasis on commercial operations. Course requires a background in either aquaculture or business. Prerequisite: MAF 512 or permission of instructor.

MAF 514. **Field Techniques in Prehistoric Underwater Archaeological Excavation**  
**3 credits**  
Offered First Summer Session  
An introduction to specialized techniques of underwater excavation applicable to the excavation of Little Salt Spring (LSS), a prehistoric site owned and operated by Rosenstiel School of Marine and Atmospheric Science. All students participate in a one-week intensive lecture course in the prehistory of Florida and general techniques of underwater excavation. The field course begins after that. All students must be present for all of the field course in order to complete the basic requirements. Activities include daily underwater excavation in depths of 10-30 feet of water, as well as surface support activities relating to diving and the recording and basic conservation of recovered ecofacts and artifacts dating before 9,000 radiocarbon years before present. Prerequisite: Students who intend to dive (not required) must have already been qualified as RSMAS scientific divers (basic), under guidelines established by the American Academy of Underwater Sciences (AAUS) in order to participate in course-related SCUBA-diving activities.
MAF 515. Techniques of Marine Archaeological Survey and Recording
3 credits
Offered By Announcement only
The location and study of underwater archaeological sites is undergoing fundamental changes because of application of advanced technologies developed for other fields, notably remote sensing, and the general availability of computer power for individual users. This course introduces the student to the latest techniques of survey and recording, focusing on hardware and software that can greatly increase the efficiency of any underwater excavation. Prerequisite: Previous course in archaeology or marine archaeology or permission of instructor.

MAF 516. Ocean Policy and Development and Analysis
3 credits
Offered Fall Semester
Ocean policy development and analysis of issues such as: offshore oil drilling, fisheries resource conflicts, marine mammal protection, ocean dumping and incineration, multiple use conflicts in marine protected areas, pollution from land based sources, and oil spill contingency planning.

MAF 517. Aquaculture and the Law
3 credits
Offered By Announcement only
This course examines the substantive legal issues concerning Aquaculture and the Coastal Zone. Legal aspects of Aquaculture related to ownership and boundaries in the coastal zone, legal and regulatory constraints, international consideration private and public rights, risks and incentives. Fish and shellfish as personal property and conservation laws affecting the fish farmer.

MAF 518. Coastal Zone Management
3 credits
Offered Fall Semester
Development of a framework for formulation and assessment of coastal zone policy. Analysis of issues and conflicts in coastal zone management (CZM), such as: zoning and planning, coastal and beach protection, ecosystem protection, the federal flood insurance program, adaptations to sea level rise, coastal pollution from land-based sources, and tourism impacts.

MAF 519. Aquaculture Management III (Fieldwork)
3 credits
Offered First Summer Session
Students will conduct fieldwork on environmental, technological, social, economical, and administrative aspects encountered in commercial aquaculture operations. This fieldcourse will complement Aquaculture Management I and II. They will participate in all stages of the production process, including maturation, spawning, larval husbandry, nursery and growout techniques, as well as harvesting, processing and exporting. Students will visit several large commercial hatcheries, farms and processing plants currently producing processing, packing and exporting shrimp and fish (both marine and freshwater) for US and European and Asian markets. Prerequisite: MAF 512, 513 or permission from the instructor.

MAF 520. Environmental Law
3 credits
Offered Fall Semester
An introductory course focusing on environmental problems. The study of Regulatory legislation, common law, and administrative law. Topics include toxic substances, air and water pollution, and habitat and species protection. Prerequisite: Permission of instructor.

MAF 525. Fisheries Socioeconomics and Management
3 credits
Offered Fall Semester
This course applies microeconomic theory to fisheries resource problems and policies. Economic models with the value of production as their objective, will contrast economists’ and biologists’ definitions of maximum yield and show why an unregulated fishery will not operate at either level. We will use economic reasoning to examine causes and consequences of fisheries problems and measures for dealing with them.
MAF 526. Marine Cultural Resource Management
3 credits
Offered Spring Semester
Submerged archaeological sites as exhaustible resources of a country’s cultural heritage. Policies and procedures for their protection or mitigation will be surveyed using as examples the statutes and regulations of foreign states, the federal government, and the US states. Prerequisite: APY 340.

MAF 530. Port Operations and Policy
3 credits
Offered By Announcement only
The course will include: Introduction to ports; port geography; port operations; port administration; Federal port policy; free ports/free zones; port investment/tariffs; port marketing; Coastal Zone Management and ports; case studies, CZM; fostering economic development; and Port planning and development. Prerequisite: Junior standing.

MAF 560. Introduction to Marine Geographic Information Systems
3 credits
Offered Fall Semester
Marine Geographic Information Systems are emerging as a distinct subset of GIS, due to fundamental differences between terrestrial and underwater spatial information (2-D vs. 3-D, multiresolution, synoptic data collection, time depth (4-D) modeling). Approximately the first half of this course is a brief review of basic GIS, and the second half concentrates on aspects of marine data acquisition and manipulation in the GIS context.

MAF 561. Introduction to Marine Geographic Information Systems - Laboratory
1 credit
Offered Fall Semester and First Summer Session
Introduction to Marine Geographic Information Systems - Laboratory introduces students the basic methods and technology in Marine Geographic Information Systems. The course is taught with hands-on laboratory exercises following the evolution of Marine Geographic Information Systems, from basic cartography to topological and network modeling to internet access and application.

MAF 562. Spatial Analysis: Intermediate Course in Marine GIS
3 credits
Offered Spring Semester
Course provides a general survey of available quantitative methods for spatial analysis using Geographic Information Systems (GIS). Although GIS has been widely used for mapping and database management, this course is focused on the functionality of GIS as an effective tool for modeling and analyzing complex spatial relationships. Quantitative methods suitable for analyzing different features types are discussed. Applications for such methods are also presented. Prerequisite: MAF 560, 561 or permission of the instructor.

MAF 570. Conservation and Management of Large Marine Vertebrates
3 credits
Offered Fall Semester
This course emphasizes on the notion that proper conservation and management of large marine vertebrates (i.e., marine mammals, sea turtles, sharks and rays) require the understanding and integration of some important aspects of the (comparative) biology and ecology of these groups of animals with the multifaceted nature (e.g., social, economical, ethical and cultural dimensions) of these concerns.

MAF 576. Special Topics
1- 4 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.

MAF 577. Special Topics
1- 4 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.
MAF 578. Special Topics  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.

MAF 579. Special Topics  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.

MAF 580. Special Topics  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.

Marine Biology and Fisheries

MBF 508. Biometrics in Marine Science  
3 credits  
Offered Fall Semester  
Applied statistical analysis in marine biology and biological oceanography. Descriptive statistics, probability distributions, and hypothesis testing are discussed. Concepts of analysis of variance, simple linear regression, and computer statistical distribution-free methods are also included as well as principles and procedures with computer statistical packages for data analysis. Lecture and laboratory. Prerequisite: Permission of instructor.

MBF 511. Aquaculture  
3 credits  
Offered By Announcement only  
Focus on techniques to culture marine organisms. The growth and physiology of early life stages, the culture of food organisms for larval stages, food requirements of larval and juvenile stages, water quality measurement, disease control, tank design, grow out, composition of artificial feeds and artificial spawning are discussed in detail. Applications of these techniques in commercial aquaculture, culture of animals for research, and for stock enhancement programs are examined. Practical examples are presented for laboratory and hands on rearing of fish larvae. Commercial aquaculture facilities are visited in field trips during the laboratory. Lecture, 2 hours; laboratory, 2 hours.

MBF 512. Aquaculture Laboratory  
2 credits  
Offered By Announcement only  
Determining and monitoring water quality, culturing food organisms, larval rearing of shrimp and fish, feeding techniques, identifying parasites and diseases, and avoiding causes of mortality are discussed. Visits to local fish and shrimp hatcheries and farms is included. Corequisite: MBF 511.

MBF 513. Biology and Ecology of Mangroves  
3 credits  
Offered Spring Semester  
Recent research advances in the study of mangroves as a dynamic interface between terrestrial and marine systems. Topics include taxonomy, biogeography, morphology and physiognomy, water relations and mineral nutrition, and physiology and reproduction with emphasis on how mangroves modify tropical coastal environments and how they are affected by external stressors including global climate change. Lecture, 2 hours; field trips, 1 hour; field and laboratory work, minimum 2 hours. Prerequisite: Permission of instructor.
MBF 514. Tropical Marine Biology: A Field Course
3 credits
Offered Spring Semester
General survey of marine flora and fauna of tropical marine ecosystems. Inhabitants and communities of the sandy shore, rocky shore, seagrass meadows, mangrove shoreline, coral and artificial reefs are collected, identified, maintained. Life histories of representatives are presented. Concepts of island biology and geology such as shore zonation, local reef formation, and the geological history of the lagoon are also discussed. The 10-day course involves 90 contact hours and approximately 40 hours of formal lectures. Grades are based on a laboratory practicum and written final exam. The course is given in its entirety at the University’s field station at Bimini, Bahamas. Prerequisite: By permission of instructor.

MBF 515. Tropical Marine Ecology
3 credits
Offered By Announcement only
Marine ecology with emphasis on tropical ecosystems and local habitats. Physical environmental and biotic adaptations, population, and community ecology are discussed. Field exercises in mangrove, sea grass, and coral reef ecosystems are also included. Prerequisite: Invertebrate Zoology and Ecology or permission of instructor.

MBF 518. Ecology and Physiology of Coral Reef Systems
3 credits
Offered By Announcement only
Coral reefs as integrated systems are examined from geological, ecological, and biological perspectives. The roles of global and local environmental fluctuations, physical disturbance, and biotic interactions in controlling reef formation and community structure is emphasized. The physiology of scleractinian corals and their algal symbionts is described and the prevalence of algal-invertebrate symbiosis on coral reefs related to nutrient cycling, productivity, and food webs on coral reefs. Prerequisite: Permission of instructors.

MBF 519. Tropical Marine Ecology Lab
1 credit
Offered By Announcement only
Combined field-laboratory exercises in mangrove, sea grass, and coral reef ecosystems.

MBF 520. Tropical Marine Ecology: A Short Course
2 credits
Offered Spring Semester
This tropical Marine Biology course established primarily for Florida high school marine biology teachers is taught from an interactive point of view where students are afforded the opportunity to both learn in the conventional way of classroom lectures, and more importantly to learn by involvement and participation. Students are exposed to the major marine communities found in Bimini and South Florida such as: 1) coral reef; 2) artificial reef; 3) mangrove; 4) seagrass flats; and intertidal zones. Students learn about the uniqueness of each of these ecosystems and the plants and animals which inhabit them. Lectures are divided up by habitat and are given in the morning. In the afternoon students go into the field and traverse on foot or snorkel in each ecosystem. Specimens are collected and identified at night and students are required to learn and identify 50 organisms found in six ecosystems. Field guides are used as reference material. A written exam and laboratory practical is given on the last day of class. Prerequisite: College Biology.
**MBF 525. Biology of Elasmobranch Fishes: A Field Course**  
2 credits  
Offered By Announcement only  
Course discusses the first aspects of elasmobranch biology including systematics of the major taxa, paleontology, and the evolutionary history of sharks as well as anatomical aspects. Course also addresses the physiology and biochemistry of sharks, circulatory, respirative, developmental, skeletal, and sensory systems involving behavior, ecology, and life history strategies. Factors such as feeding, reproduction, and social and swimming behavior are also discussed. The relation between man and shark: overexploitation as it affects shark conservation, survival, and biodiversity is included. Course is given in its entirety at Bimini, Bahamas. Prerequisite: By permission of instructor.

**MBF 531. Plankton**  
3 credits  
Offered Spring Semester  
Course topics include the drifting organisms, their central role in the economy of the sea, the influence of the environment, and their adaptations to it. The dynamic and productivity of the plant and animal plankton, the ecology and physiology of animal plankton, especially in connection with special distribution and nutrition, and an introduction to the taxonomy, and quantitative enumeration of the animal plankton is included. Lecture, 3 hours. Prerequisite: Permission of the instructor.

**MBF 540. Introduction to Ecological Modeling**  
3 credits  
Offered By Announcement only  
An introduction to conceptual and mathematical model building methods for ecological processes at population, community, ecosystem, and landscape/seascape-level scales. Other topics include mathematical foundations, numerical modeling, holistic and structured population models, demography, density-independent and -dependent models, linear and nonlinear systems, community composition, competition, succession, and ecosystem structure and function are discussed. Gap-phase, process-based, compartmental, and coupled biological-physical ecosystem models at landscape scales are also examined. Prerequisite: Calculus and permission of instructor.

**MBF 550. Analytical Techniques in Marine Biology**  
2 credits  
Offered By Announcement only  
Theory and applications of selected analytical techniques necessary to conduct quantitative research in marine biology (e.g., electrophoresis, metabolite assays, enzyme assays, radioisotope methodology). One hour lecture followed by three hour laboratory per week.

**MBF 570. Special Topics**  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.

**MBF 571. Special Topics**  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.

**MBF 572. Special Topics**  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.

**MBF 573. Special Topics**  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.
MBF 574. Special Topics
1-4 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.

MBF 575. Current Applications of Ecological Theory
3 credits
Offered By Announcement only
Course examines current applications of ecological theory. Topics include issues of stress ecology, methodologies for evaluating stress responses, methodologies for ecological risk assessment, general systems theory, and human/environmental interactions. Lecture, 3 hours. Prerequisite: Permission of the instructor.

MBF 576. Diseases of Marine Organisms
3 credits
Offered By Announcement only
Infectious, genetic, and environmentally induced diseases of marine fishes and invertebrates as well as diagnostic methods, cellular, and molecular pathology. Lecture, 3 hours. Prerequisite: Graduate standing, or BIL 150, 160, 255 and permission of the instructor.

MBF 586. Environmental Biology of Fishes
3 credits
Offered By Announcement only
Ecology, dispersal, and modes of life of fishes. Adaptations by larvae and adults to various habitats are covered as well as the effects of man on fish faunas and the importance of fishes to various ecological systems. Lecture, 3 hours.

MBF 590. Sustainable Fisheries - Assessment and Conservation
3 credits
Offered Spring Semester
This is the second of a three course series. This course will focus on advanced stock assessment techniques using acoustics and optics. It will cover, for example: - History of sampling fish stocks - “from catching to measuring fish” - Measuring with underwater sound and light - Sounds and echoes in marine ecosystem - Survey of fish stocks and their habitat. Prerequisite: MSC 471, or equivalent.

Marine Geology and Geophysics

MGG 501. Oceanography I (Geological)
2 credits
Offered Fall Semester
The first section of the core course curriculum designed as an integrated and multidisciplinary view of ocean processes, covering the major disciplines of marine science and their applications to the study of the marine environment. To be taken in sequence with Oceanography II - Physical (MPO 502), Oceanography III - Chemical (MAC 501), and Oceanography IV - Biological (MBF 502). This course is for non-MGG majors only. Prerequisite: Undergraduates require permission of instructor.

MGG 511. Earth Surface Systems
3 credits
Offered Fall Semester
An introduction to the elements of the earth surface environment and their interactions with an emphasis on the application to understanding the geologic record. Course includes discussions of the processes and agents that influence and shape the character of the earth’s surface, the attributes of the resultant sedimentary features, and the use of these features to unravel geologic and geomorphic history. Focus is placed on systems dynamics and interactions among sedimentologic, geomorphic, biotic, and hydrologic processes. Prerequisite: Permission of instructor.
MGG 512. Marine Micropaleontology
3 credits
An introduction to the field of marine micropaleontology with an emphasis on applications in biostratigraphy, biochronology, paleoecology, and paleoceanography. Topics include morphology, taxonomy, ecology, and geologic record of the major microfossil groups, methods of environmental inference, and stable isotope and trace element geochemical studies. Lab work includes a survey of the most important taxonomic groups. Lecture, 3 hours; laboratory, 2 hours. Prerequisite: Permission of instructor.

MGG 513. Introductory Geochemistry
3 credits
Fundamentals of atomic structure and quantum mechanics applied to Chemistry. Topics include origin and distribution of the elements, chemical bonding and substitution, basic thermodynamics of solids, liquids, and gases. Applications of these concepts to such geochemical processes as magmatic differentiation, rock-water interactions, low temperature aqueous geochemistry, and the geochemical cycling of the elements is also included.

MGG 514. Geophysics
3 credits
Course topics include seismology, gravity, heat flow, thermal history, geomagnetism, plate tectonics, and their importance in understanding the Earth’s crust, mantle, and core. Prerequisite: One year of calculus and one year of physics.

MGG 515. Environmental Hydrology
3 credits
Course offers an introduction to the physical processes of hydrological science. The mechanisms of evaporation, condensation, precipitation, infiltration, groundwater flow, overland flow, and stream flow are described. Areas of interrelation with environmental science, marine science, and geophysical science is emphasized. Description of appropriate measurement techniques and data interpretation methods are important parts of the course. Prerequisite: Physics.

MGG 520. Igneous Petrology
3 credits
Origin and differentiation of magmas in oceanic and continental settings. Igneous systems traced from the mantle and magma chambers to the eruptive of stage. What we can tell from textures and mineralogy of igneous rocks. Use of trace-element and isotopes to understand igneous processes and magma source compositions. Magma types and the plate-tectonic cycle. Magmatism when the Earth was young. Extra-terrestrial igneous rocks.

MGG 525. Applied Environmental Geophysics
3 credits
Application of subsurface geophysical tools to environmental problems. Course includes the theory and application of shallow refraction and reflection seismology, conducting field experiments and processing both marine and land seismic data, other marine survey techniques such as side-scan sonar surveying, potential field techniques (gravity, magnetics, EM), ground penetrating radar, and borehole geophysics. Prerequisite: Permission of instructor.

MGG 533. Environmental Geology
3 credits
MGG 541. Field Evaluation of Fossil Platforms, Margins, and Basins
2 credits Offered By Announcement only
Field investigation of classic rock sequences formed within ancient platform, margin, and basin environments. The use of ancient exposures as a guide to the interpretation of modern marine environments. Prerequisite: Permission of instructor.

MGG 550. Mathematical Methods for Geoscientists
3 credits Offered Fall Semester
Background mathematics needed to solve problems in the geosciences. Applications in tectonics, geodynamics, structural geology, seismology, and hydrology. Topics include linear inverse problems, least squares, linear algebra, matrix theory, vectors, dimensional analysis, probability and scientific inference, continuum mechanics, transform and numerical methods to solve differential, and partial differential equations. Prerequisite: One year of calculus and one year of physics.

MGG 570. Continental Tectonics
3 credits Offered Spring Semester
Reviews major research techniques used in the study of the structure and evolution of continental crust and topical discoveries, with an emphasis on the Neogene to Recent time. The course begins with brief introductions to the fields of structural geology, seismology, and geodesy as they relate to continental tectonics. New research in areas such as the rheology of the lithosphere, plate motion models, deformation of continental crust in plate boundary zones, oblique subduction, and earthquake hazard assessment are also discussed. Prerequisite: Permission of instructor.

MGG 580. Geological and Environmental Remote Sensing
3 credits Offered Spring Semester
This one semester course will cover major remote sensing techniques used in the geological and environmental sciences. The course will begin with an introduction to the basic physics of remote sensing, followed by a review of major remote sensing techniques used in aircraft and satellite platforms, including IR and near IR, optical and microwave systems. We will then discuss specific terrestrial and coastal applications using a case history approach, including geologic, soil and biomass mapping, environmental monitoring, and natural hazard assessment. The course is aimed at graduate students and senior undergraduates with some background in math and physics. Grades are based on problems sets (a minimum of three), a mid-term test, and a report or lab exercise involving image processing, due at the end of the semester. Prerequisite: Calculus and Physics.

MGG 581. Image Analysis and Interpretation
3 credits Offered By Announcement only
Course provides a hands-on approach to learning how to use aerial photography, satellite imagery, and other remotely sensed data to derive information about the physical environment. This course enables the student to process, interpret, and analyze remotely sensed data for use in environmental research. Image Analysis and Interpretation complements the course, MGG 580.

MGG 583. Scanning Electron Microscopy
2 credits Offered Spring Semester
Theory and practical application of the SEM and the electron probe to research problems. Lectures and laboratory with emphasis on independent operation of the SEM, special preparation techniques, and interpretation of results are included. Course is designed to provide students with a broad and thorough background in scanning electron microscopy. Prerequisite: Permission of instructor.
MGG 584. Special Topics
1- 4 credits
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.

MGG 585. Special Topics
1- 4 credits
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.

MGG 586. Special Topics
1- 4 credits
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.

MGG 587. Special Topics
1- 4 credits
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.

MGG 588. Special Topics
1- 4 credits
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.

Marine and Physical Oceanography

MPO 502. Oceanography II (Physical)
2 credits
The second section of the course core curriculum designed as an integrated and multidisciplinary view of ocean processes, covering the major disciplines of marine science and their applications to the study of the marine environment. To be taken in sequence with Oceanography I - Geological (MGG 501), Oceanography III - Chemical (MAC 501), and Oceanography IV - Biological (MBF 502). This course is for non-MPO majors only. Prerequisite: Undergraduates require permission of instructor.

MPO 503. Physical Oceanography
3 credits
Introduction to properties of seawater, instruments and methods, heat budget, general ocean circulation, formation of water masses, dynamics of circulation, regional oceanography, waves, tides, and sea level. A mathematical and problem solving course for majors in MPO. Prerequisite: PHY 202 or 206, MTH 310 or 311, or permission of instructor.

MPO 511. Geophysical Fluid Dynamics I
3 credits
The basic equations of state, continuity, and motion. Topics include wave motions, group velocity, theory of stratified fluids and internal waves turbulence. Prerequisite: MPO 551, or permission of instructor.

MPO 518. Remote Sensing of the Atmosphere
3 credits
Methods and techniques for remote sensing of the earth’s atmosphere. Absorption and scattering of radiation by atmospheric constituents, molecular line or band absorption, and radiative transfer equation are discussed. Application to microwave radar, laser, and optical radar, ground and satellite and optical radar and radiometry, scattering of acoustic waves by turbulence, and to acoustic echo sounding methods are also included. Prerequisite: EEN 533 and/or permission of instructor.
MPO 531. **Physical Meteorology**

3 credits  
Offered By Announcement only  
Electromagnetic and acoustic wave propagation, absorption, and emission. Application to remote sensing, basic physics of dry aerosols, clouds and precipitation, fundamentals of atmospheric electricity, charge separation processes, and electrical field effects are also discussed. Other topics include air pollution physics, dispersal, and removal of particulate and gaseous materials from natural and anthropogenic sources. Prerequisite: Basic calculus and ordinary differential equations.

MPO 542. **Physics of Remote Sensing**

3 credits  
Offered Spring Semester  
Course discusses basic physical principles of remote sensing. Topics include an introduction, sampling issues, fundamental laws of electromagnetic waves, passive sensing, active sensing, and a brief survey of satellite sensors. Prerequisite: Permission of instructor.

MPO 551. **Introduction to Atmospheric Science**

3 credits  
Offered Fall Semester  
Thermodynamics of dry and moist processes; elementary dynamical meteorology; description of weather systems and phenomena on all scales; structure and mechanics of the general circulation. Corequisite: MPO 552. Prerequisite: PHY 206, MTH 310 or 311, or permission of instructor.

MPO 552. **Synoptic Meteorological Laboratory**

1 credit  
Offered Fall Semester  
Analysis of the structure of atmospheric systems. Prerequisite: PHY 206, MTH 310 or 311, or permission of instructor.

MPO 561. **Tropical Meteorology**

3 credits  
Offered Spring Semester  
Observed structure of large-scale tropical circulations, including the Trades, the Intertropical Convergence Zone, the Walker circulation, and equatorial wave disturbances. An overview of tropical climate, including El Nino/Southern Oscillation, and tropical monsoons is included as well as the formation, structure, and dynamics of tropical cyclone interactions between tropical convection and large-scale circulations, equatorial waves, and flow instabilities. Prerequisite: MPO 511, 551, or permission of instructor.

MPO 562. **Synoptic Scale Meteorology**

3 credits  
Offered By Announcement only  
Course topics include the structure and behavior of cyclones, anticyclones, and other temperate latitude synoptic scale disturbances. Objective analysis of synoptic observations, perturbation, stability analysis of large scale synoptic motions, and barotropic and baroclinic waves are also analyzed. Prerequisite: MSC 405 or MPO 551 and permission of instructor.

MPO 563. **Mesoscale Meteorology and Severe Storms**

3 credits  
Offered By Announcement only  
Course topics include the structure and dynamics of clouds, thunderstorms, and mesoscale convective systems, radar and satellite observations of clouds and precipitation, severe storm forecasting, mesoscale disturbances, frontal and orographic clouds, and precipitation. Prerequisite: MSC 405 or MPO 551 and permission of instructor.

MPO 581. **Special Topics**

1- 4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.
MPO 582. Special Topics  
1- 4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.

MPO 583. Special Topics  
1- 4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.

MPO 584. Special Topics  
1- 4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.

MPO 585. Special Topics  
1- 4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.
MEDICINE

Epidemiology and Public Health

EPH 501. Medical Biostatistics I
3 credits
Offered Fall Semester
Introduction to probability and statistics including descriptive statistics, tests of hypothesis, regression analysis, contingency tables, nonparametric tests, and life tables. Students gain hands-on experience in the analysis of medical data using several computer systems and at least one of the different statistical packages such as: BMDP, SAS, PSTAT, SYSTAT, and Minitab. Prerequisite: Ability to use a spreadsheet program on a personal computer. Open only to EPH majors.

EPH 502. Biostatistics II
3 credits
Offered Spring Semester
Continuation and elaboration of EPH 501. Topics include design of factorial experiments, analysis of variance and variance components, multiple linear regression, and life tables. Prerequisite: EPH 501 or permission of instructor. Open only to EPH majors.

EPH 512. Global Health
3 credits
Offered Fall Semester
This seminar examines current global public health issues, governance and decision-making challenges for the 21st Century across developing, transitioning, and developed countries. Topics of discussion include new actors for world health in the era of globalization; linking human development, poverty and health inequities; social, cultural and ethical considerations for health planning; role of industry, trade and public health; evidence based research for improved global health initiatives; foreign policy and health security challenges associated with emergence and re-emergence of infectious diseases and public and private partnerships in global health. Open only to EPH majors.

EPH 514. Mental Health and Mental Illness: Public Health Perspective
3 credits
Offered Fall Semester
The purpose of this course is to give an overview of mental health and illness as a public health issue. This will include an analysis of how mental illness became a major public health concern both in the United States and Globally. The use of population-based epidemiological studies to inform the development of public policy will also be explored. In addition, an analysis of mental health programs in various community settings such as schools, the workplace and in the context of disasters will provide an opportunity to understand how theories regarding the etiology of mental illness are applied in the development of prevention and intervention programs. Prerequisite: Permission of Program Director for non-EPH majors.

EPH 520. Health Education and Behavior
3 credits
Offered Spring Semester
Educational processes with special emphasis on the social and cultural determinants of health behavior, health education as a process of social change, and community based health education organizations. Open only to EPH majors.

EPH 521. Fundamentals of Epidemiology
3 credits
Offered Fall Semester
Principles and methods of epidemiology. Descriptive epidemiology, environmental and other risk factors, detection of outbreaks, basic demography, and etiologic studies. Prerequisite: Permission of the instructor. Open only to EPH majors.
EPH 522. Applied Health Education
3 credits  Offered Fall Semester
The goal of this course is to introduce students to the principals of Applied Health Education utilizing the theoretical background they received in the course prerequisite, EPH 520. Means of affecting health behavior change will be examined as well as methods of health communication, needs assessment and issues of cultural competency. Students will explore various settings in which health educational material is distributed including clinical settings, the Internet and through the mass media. Students will develop their own binder of high quality health educational information and develop their own educational material on a topic of their choice. Prerequisite: EPH 520. Open only to EPH majors.

EPH 525. Ethical Issues in Epidemiology
3 credits  Offered Fall Semester
The course identifies and analyzes ethical issues in epidemiologic practice and research. Issues include data acquisition and management, confidentiality, valid consent, advocacy, public policy, subgroup stigma, research sponsorship, conflicts of interest, communication of risk, and international and intercultural difference. Prerequisite: EPH 501 and 521 or permission of instructor. Open only to EPH majors.

EPH 541. Integrated Aspects of Environmental Health
3 credits  Offered Spring Semester
Interdisciplinary scope of environmental health problems. Development of a practical, dynamic model for integrating fundamental concepts from a variety of environmental disciplines. Open only to EPH majors.

EPH 561. Public Health Nutrition
3 credits  Offered Spring Semester
This course provides a dynamic, interactive approach to public health designed to prepare students in basic policy, epidemiology, and health education related to nutrition. Recognizing the multiple social, cultural, environmental, and physiological factors leading to nutritional disease. The course includes experts from a variety of disciplines. Public health nutrition addresses issues germane to the public’s health by elucidating their extent, determinants and consequences, and the policies and programs to address them. Open only to EPH majors.

EPH 570. Bioterrorism: The Public Health Challenge
3 credits  Offered Fall Semester
Studies the key elements of bioterrorism and the challenges to effective public health response. A principal focus of the course is the epidemiologic triad of agent, host, and environment applied to bioterrorism. The course explores the roles of epidemiologists and public health professionals working in tandem with medical, first-responder, law enforcement, Department of Defense and volunteer participants in prevention and response to bioterrorist attacks. This course is intended for graduate students in public health and social sciences, medical, and health care professionals. Prerequisite: Permission of the instructor/program.

EPH 571. Maternal and Child Health
3 credits  Offered Spring Semester
Preventative and therapeutic concepts pertinent to the reduction of morbidity and mortality among mothers and their children. Prerequisite: EPH 521 or permission of the instructor. Open only to EPH majors.
EPH 572. Public Health Law
3 credits
Offered Fall and Spring Semesters
This course is designed for non-law students studying in epidemiology and public health. The course will begin with a general overview of the fundamental principles and processes of the US legal system, focusing on public health law and ethics. Topics will include privacy, communications, screening and vaccinations, economic regulations and public health reform. Prerequisite: Permission of instructor(s). Open only to EPH majors.

EPH 581. Advanced Topics
0-4 credits
Offered By Announcement only
Subject matter offering based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule following the title “Advanced Topics”. Prerequisite: Core requirements for MPH program or permission of instructor. Open only to EPH majors.

EPH 583. AIDS as a Public Health Issue
3 credits
Offered First Summer Session
Course examines AIDS as a public health issue, including material on HIV epidemiology, etiology, treatments, co-factors, transmission, behavioral change, psychological factors, sociocultural factors, political aspects, legal issues, policy formulation, and medical ethics. The course primarily covers AIDS in North America and Africa, with some attention to other geographical areas. Open only to EPH majors.

EPH 585. Perinatal Epidemiology
3 credits
Offered Fall and Spring Semesters
This survey course includes vital statistics data and sources, prenatal care, the influence of maternal and paternal age, maternal obesity, smoking, and alcohol use in pregnancy outcomes, infertility and assisted conceptions - including multiple births, birth defects, cerebral palsy, prematurity, preeclampsia and maternal and infant mortality. Prerequisite: EPH 521 and permission of instructor.

EPH 590. Adolescent Substance Abuse: Etiology, Prevention, and Treatment
3 credits
Offered Spring Semester
This course covers the specialty of adolescent substance abuse. Approached from a systemic and multidisciplinary perspective, the course first provides an historical exploration of teen alcohol and drug abuse in the U.S. and other cultures. Next we focus on the etiology or causes of teen alcohol and drug problems with a highlight-oriented review and summary of twenty years of research on the basic science aspects of adolescent substance misuse. Using this foundation, the focus shifts to more applied aspects of the field. The middle and last third of the course cover prevention and treatment. Here we cover contemporary prevention and treatment theory, how research has informed intervention thinking, philosophy, design and evaluation, and how prevention and treatment studies are influencing public policy in substance abuse and related areas such as juvenile justice and child welfare. Prerequisite: Junior, senior or graduate standing.
**Physiology and Biophysics**

**PHS 510. Cell Physiology Biophysics**

2 credits  
*Offered Fall Semester*

This course is designed as preparation for the study of mammalian physiology. Course is usually intensive, adapted to the schedule of the medical curriculum and occupying the equivalent of two to three days per week for two-three weeks. The student is introduced to general principles of cell physiology, chemical and physical structure of membranes, membrane transport, and electrical membrane phenomena. Topics include excitation, contraction, energy transduction, nerve impulse conduction, and synaptic transmission. Course utilizes lecture and laboratory. Prerequisite: Permission of the Departmental Graduate Studies Committee.

**PHS 511. Neurophysiology**

3 credits  
*Offered Spring Semester*

Physiology of the mammalian nervous system. Course is intensive, adapted to the schedule of the medical curriculum and comprising roughly five hours of lecture and four hours of conference weekly for five to six weeks. A lecture course coordinated with neuroanatomy. Prerequisite: PHS 510 or 641, or an equivalent; Permission of the Departmental Graduate Studies Committee. Prerequisite or corequisite: MDB 505.

**PHS 512. Systemic Physiology**

5 credits  
*Offered Spring Semester*

Physiology of the mammalian cardiovascular, respiratory, renal, digestive, endocrine, and reproductive systems. Course is intensive and adapted to the schedule of the medical curriculum, occupying the equivalent of about two days a week for most of semester. Lecture and laboratory are included. Prerequisite: Permission of the Departmental Graduate Studies Committee, including endocrinology.

**Physical Therapy**

**PTS 501. Therapeutic Rehabilitation of Athletic Injuries**

2 credits  
*Offered Spring Semester*

Basic principles of rehabilitation of athletic injuries including, but not limited to, range of motion, strengthening, edema and pain control, balance, proprioception, endurance, and skill acquisition. Prerequisite: For Athletic Training majors only, or with permission of the instructor. Corequisite: PTS 502.

**PTS 502. Therapeutic Rehabilitation of Athletic Injuries Clinical Laboratory**

1 credit  
*Offered Spring Semester*

Application of basic principles of rehabilitation of athletic injuries including, but not limited to range of motion, strengthening, edema and pain control, balance, proprioception, endurance, and skill acquisition. Prerequisite: For Athletic Training majors only, or with permission of the instructor. Corequisite: PTS 501.

**PTS 503. Therapeutic Modalities in Athletic Training**

2 credits  
*Offered Fall Semester*

Basic principles of theory and application of various modalities encountered in athletic training practice, including but not limited to: infrared modalities, ultrasound, electrical stimulation, mechanical modalities, and hydrotherapy. Prerequisite: For Athletic Training majors only, or with permission of the instructor. Corequisite: PTS 504.
PTS 504. **Therapeutic Modalities in Athletic Training Clinical Laboratory**  
1 credit  
Offered Fall Semester  
Basic principles of application of various modalities encountered in athletic training practice, including but not limited to: infrared modalities, ultrasound, electrical stimulation, mechanical modalities, and hydrotherapy. Prerequisite: For Athletic Training majors only, or with permission of the instructor. Corequisite: PTS 503.

PTS 505. **Physical Therapy Private Practice Management**  
1 credit  
Offered Fall Semester  
Course focuses on establishing a private physical therapy practice, including initial development through marketing and management. Prerequisite: For Physical Therapy majors. only or with permission of the instructor.

PTS 506. **Issues in Women’s Health: Gynecology**  
1 credit  
Offered Spring Semester  
Introduction to physical therapy practice for evaluation and treatment of pelvic floor dysfunction. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 507. **Issues in Women’s Health: Obstetrics, Osteoporosis and Breast Health**  
1 credit  
Offered Spring Semester  
Introduction to physical therapy practice for evaluation and treatment of problems related to pregnancy, osteoporosis, and other disorders specific to women. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 508. **Rape Aggression Defense for Women (RAD)**  
1 credit  
Offered Spring Semester  
A comprehensive self defense course for women including awareness, prevention, risk reduction and avoidance, and the basics of hands-on defense training. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 509. **Exercise for Persons with Spinal Cord Injuries**  
1 credit  
Offered Spring Semester  
Course provides a review of etiology and pathology of spinal cord injury as well as current methods of exercise and electrical stimulation systems and their physiological effects on the individual. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 510. **Balance for the Neurologic Patient**  
1 credit  
Offered By Announcement only  
Introduction to balance evaluation and treatment concepts for patients with neurological deficits. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 511. **Positioning as a Pediatric Therapeutic Modality**  
1 credit  
Offered By Announcement only  
Introduction to adaptive seating and positioning in pediatric physical therapy, neurophysiological, biomechanical, and functional rationale. Prerequisite: For Physical Therapy majors or with permission of the instructor.

PTS 512. **Sports Physical Therapy**  
1 credit  
Offered By Announcement only  
Prerequisite: For Physical Therapy majors only or with permission of the instructor.
PTS 513. Clinical Instructor Training
1 credit  
Offered Spring Semester
Introduction to the roles and responsibilities of being a clinical instructor to physical therapy students. Course material is adapted from the Clinical Instructor Workshop of the Florida Consortium of Clinical Educators. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 516. Clinical Research I
3 credits  
Offered Fall Semester
Principles, concepts, and basic skills required to conduct clinical research in physical therapy. Topics include research design, sampling, bias, reliability and validity, questionnaire design, statistical computing, conceptual review of literature, and the preparation of a research proposal. Prerequisite: For Physical Therapy majors only.

PTS 517. Abdominal Anatomy
1 credit  
Offered Spring Semester
Course analyzes abdominal anatomy emphasizing structure and function. Cadaver dissection is included. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 518. Cross-sectional and Radiologic Anatomy
1 credit  
Offered Spring Semester
Cross-sectional and radiologic anatomy of major joints of the body with emphasis on normal and abnormal images. Cadaver dissection is included. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 519. Pelvic Anatomy
1 credit  
Offered Spring Semester
Course analyzes the anatomy of the human pelvic area. Cadaver dissection is included. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 523. Myofascial Release
1 credit  
Offered Spring Semester
Introduction to Myofascial Release technique in rehabilitation. Prerequisite: Open to physical therapy majors only, with permission of instructor.

PTS 524. Interdisciplinary Fundamentals for Assertive Technology
3 credits  
Offered Fall Semester
Interdisciplinary assistive technology course for professionals. Comprehensive assistive technology services for individuals with disabilities is included. Course is taught with Department of Pediatrics. Prerequisite: With consent of instructor only.

PTS 525. Human Development through the Lifespan
2 credits  
Offered First Summer Session
Course analyzes the stages of development of the motor, cognitive, sensory/perception, and behavioral systems from conception to old age. Prerequisite: Open to Physical Therapy majors only; others with permission of instructor.

PTS 526. Introduction to Pilates Rehabilitation I
1 credit  
Offered First and Second Summer Sessions
Course provides historical development, and evidence-based approach to Pilates rehabilitation. Prerequisite: For Physical Therapy majors only; others with permission of instructor.

PTS 527. Introduction to Pilates Rehabilitation II
1 credit  
Offered First and Second Summer Sessions
Introduction to the Pilates Environment. Prerequisite: Open to physical therapy majors only; others with permission of instructor.
PTS 530. Foundations of Physical Therapy
2 credits
Offered Spring Semester
Foundations, historical development, and contemporary practice of physical therapy in the United States. Traditional and emerging roles and responsibilities of the physical therapist in the spectrum of health care. Examination of current professional issues affecting future roles is discussed. Terminology and a treatment cycle model is also introduced. Prerequisite: Open to Physical Therapy majors only.

PTS 531. Gross Anatomy for Physical Therapy
3 credits
Offered First Summer Session
Gross anatomy with emphasis on the musculoskeletal systems and a survey of other systems that are relevant to physical therapy practice. Prerequisite: For Physical Therapy majors only.

PTS 532. Gross Anatomy for Physical Therapy
3 credits
Offered Spring Semester
Gross Anatomy with emphasis on the musculoskeletal systems and a survey of other systems that are relevant to physical therapy practice. Prerequisite: For Physical Therapy majors only.

PTS 533. Communications in Physical Therapy Practice
3 credits
Offered Spring Semester
Course provides an analysis of communication skills in physical therapy clinical practice. Emphasis is placed on instruction of patients and their families, supportive staff, and health care team members. In-depth examination of patient-therapist interactions is included. Prerequisite: For Physical Therapy majors only.

PTS 540. Neuroscience I
3 credits
Offered Fall Semester
The human central nervous system with emphasis on structure-function relationships, and clinical applications. The brain, spinal cord, cranial nerves, tracts, and nuclei of major systems. Central nervous systems lesions and their clinical significance are discussed. Lecture and human dissection are included. Prerequisite: For Physical Therapy majors only.

PTS 541. Neuroscience II
3 credits
Offered Spring Semester
The central, peripheral, and autonomic nervous systems and their physiological responses to environmental stimuli. Normal systems are contrasted with abnormal systems. The clinical significance of altered neurophysiological states is discussed. Prerequisite: For Physical Therapy majors only.

PTS 542. Electrotherapy
3 credits
Offered Spring Semester
Course provides an evaluation of nerve and skeletal muscle by classical electrical means. The therapeutic application of selected modalities is discussed. Prerequisite: For Physical Therapy majors only.

PTS 543. Medical Pathology Seminar I
1 credit
Offered Fall Semester
Lectures and seminar discussion of pathological conditions with particular emphasis on musculoskeletal disorders. Prerequisite: Open to Physical Therapy majors only.

PTS 544. Medical Pathology Seminar II
1 credit
Offered Spring Semester
Lectures and seminar discussion of pathological conditions with particular emphasis on neuromuscular disorders. Prerequisite: Open to Physical Therapy majors only.
PTS 545. Medical Pathology Seminar III
1 credit
Lectures and seminar discussion of pathology conditions with particular emphasis on integumentary disorders. Prerequisite: Open to Physical Therapy majors only.

PTS 546. Medical Pathology Seminar IV
1 credit
Lectures and seminar discussion of pathological conditions with particular emphasis on cardiorespiratory disorders. Prerequisite: Open to Physical Therapy majors only.

PTS 550. Pharmacology
2 credits
Basic principles of pharmacology and pharmacotherapeutics. Contemporary drug therapies and their effects on patients undergoing rehabilitation are discussed. Prerequisite: For Physical Therapy majors only.

PTS 570. Clinical Skills
3 credits
Skills essential to the practice of physical therapy, including clinical decision making methodology, theory, and techniques. Students will have initial exposure to clinical education. Prerequisite: Physical Therapy majors only.

PTS 571. Therapeutic Physiology
2 credits
Physiological effects of exercise and training for the healthy and diseased individual. The use of exercise for joint and muscle mobility, muscle strength, and cardiopulmonary function is included. Prerequisite: For Physical Therapy majors only.

PTS 572. Clinical Kinesiology and Biomechanics
4 credits
A study of musculoskeletal structure and function, physiological and biomechanical factor, and principles underlying the kinematics and kinetic of normal and abnormal human motion. Prerequisite: Open to Physical Therapy majors only.

PTS 574. Clinical Evaluation
3 credits
Basic evaluation skills for patients with various diseases and dysfunctions. Skills include clinical decision making, history taking, postural and functional assessment, surface palpation, manual muscle testing, and goniometric measurement. Classroom instruction and laboratory practice is included. Prerequisite: Physical Therapy majors only.

PTS 575. Clinical Decision Making I
3 credits
Introduction to physical therapy diagnosis, the disablement model, measurement of function screening, and the Physical Therapy Guide to Practice. Prerequisite: For Physical Therapy majors only.

PTS 595. Selected Topics in Physical Therapy
1-3 credits
Topics in contemporary physical therapy clinical practice with focus on specialty areas such as neonatal pulmonary care, balance/vestibular dysfunction, geriatrics, pediatrics, obstetrics, and gynecology.

PTS 599. Independent Study in Physical Therapy
1-3 credits
Each course is designed to meet special interest demands of students. Prerequisite: For Physical Therapists; permission of the instructor.
DAN 101. Aerobic Dance
1 credit  
Offered Fall and Spring Semesters
The use of dance movement as a cardiovascular fitness activity.

DAN 102. Stretching and Body Work
1 credit  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Stretching techniques and examination of various body therapy concepts.

DAN 103. Fitness Dance: Low Weight/High Rep
1 credit  
Offered Fall and Spring Semesters and First Summer Session
Use of wrist and ankle weights and high repetition through dance movements to increase muscular strength.

DAN 104. Fitness Dance Level 2
1 credit  
Offered Fall and Spring Semesters
A Personal approach to fitness through the use of low impact aerobic dance movements to condition, tone, and shape the body.

DAN 111. Modern Dance, Level One
2 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Introduction to the discipline of modern dance designed to develop understanding and skill in the basic vocabulary. Open to all students. (Repeatable up to four times).

DAN 121. Ballet, Level One
2 credits  
Offered Fall and Spring Semesters
Introduction to the discipline of classical ballet designed to develop understanding and skill in the basic vocabulary. Open to all students. (Repeatable up to four times).

DAN 130. Orientation to Dance
2 credits  
Offered By Announcement only
Introduction to dance as an art form for those interested in career opportunities in dance education. Required for prospective dance minors. Open to all students.

DAN 140. Theatre Dance Forms
2 credits  
Offered Fall Semester
Introduction to movement skills and stylistic elements of theatrical forms of dance. (Repeatable).

DAN 190. Improvisation
2 credits  
Offered By Announcement only
Experience in selective and basic processes of movement involvement both individual and group. Course may be repeated.

DAN 211. Modern Dance, Level Two
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Continuing exploration of modern dance techniques and theoretical concepts. Open to all students. Course may be repeated up to 4 times.

DAN 221. Ballet, Level Two
3 credits  
Offered Fall and Spring Semesters
Study of ballet designed to extend technical skill and prepare student for advanced level work. Open to all students. Course may be repeated up to 4 times.
DAN 235. Folk Dance  
2 credits  
Beginning study of folk and ethnic dance forms.  

DAN 240. Cultural Dance Forms  
2 credits  
Introduction to movement skills and stylistic elements of dance forms from various cultures. Course may be repeated.  

DAN 250. World History of the Dance  
3 credits  
Introductory exploration of dance history in relation to life, thought, and culture.  

DAN 285. Creative Dance for Children  
2 credits  
Introduction to theories and methods of teaching dance to children of elementary school age.  

DAN 286. Teaching Dance to Children  
2 credits  
Theory and practice of teaching dance to preschool and school age children.  

DAN 290. Introduction to Dance-Movement Therapy  
2 credits  
Introduction to dance-movement therapy theory and practice.  

DAN 311. Modern Dance, Level Three  
3 credits  
Study of modern dance techniques and theoretical concepts. Course may be repeated for credit.  

DAN 321. Ballet Level Three  
3 credits  
Study of classical ballet at intermediate/advanced level. Open to all students. Course may be repeated for credit. Prerequisite: DAN: 221 or permission.  

DAN 335. Folk and Ethnic Dances: Forms and Teaching Methods  
2 credits  
Beginning study of folk and ethnic dance forms and teaching methods.  

DAN 340. Specialized Ballet Forms  
2 credits  
Introduction to movement skills and stylistic elements of specialized ballet forms. Course may be repeated. Prerequisite: Consent of instructor.  

DAN 385. Methods of Teaching Dance (K-12)  
3 credits  
Content for teaching dance in a variety of settings including public school grades K-12. Prerequisite: Permission.  

DAN 411. Modern Dance; Level Four  
3 credits  
Study of modern dance technique and theoretical concepts. Open to dance minors and by permission. Prerequisite: DAN 311 or permission.  

DAN 421. Ballet, Level Four  
3 credits  
Study of classical ballet at an advanced level. Course may be repeated for credit. Prerequisite: Permission of instructor.
DAN 450. History of Modern Dance
3 credits
Offered By Announcement only
Study of development, philosophies, and theories of American and European modern dance. Prerequisite: DAN 250.

DAN 550. Women in Theatrical Dance
3 credits
Offered By Announcement only
Women in Dance; the most prominent dancers and choreographers from the 19th and 20th centuries who helped shape western theatrical dance art. Prerequisite: DAN 250 or 450 or graduate student.

DAN 585. Methods of Teaching Dance K-12 (Advanced)
3 credits
Offered By Announcement only
An advanced study of the Dance curriculum content in a variety of settings including public schools, grades K-12. Prerequisite: DAN 411 or 450 and permission.

Music Education and Therapy

MED 010. Music Therapy Forum
0 credits
Offered Fall and Spring Semesters
The course provides a weekly forum for sharing information about issues, current developments, and other matters related to music therapy as a field of study and as a profession.

MED 015. Music Education Forum
0 credits
Offered Fall and Spring Semesters
The course provides a weekly forum for sharing information about issues, current developments, and other matters related to music education as a field of study and as a profession. The course is required for all undergraduate MED majors during each semester, except during the semester of the internship.

MED 149. Functional Techniques in Music Therapy I
1 credit
Offered Fall and Spring Semesters
Students acquire functional guitar and piano skills while learning repertoire and techniques for leading and accompanying music therapy experiences. Prerequisite: MKP 104, MED 245; Music Therapy majors only.

MED 159. Introduction to Music Therapy
2 credits
Offered Fall Semester
An overview of the field of music therapy, including history, theory and clinical practice. Includes field observations. Prerequisite: None - open to all majors.

MED 180. Music in Contemporary Life and Society
3 credits
Offered By Announcement only
Examines music as a biopsychosociological force. Focus is placed on music’s influences on individuals—physiologically, psychologically, and their health and well being—and on people collectively. It also examines how music is used as a tool to persuade and control.

MED 240. Woodwind Techniques
1 credit
Offered Fall and Spring Semesters
Course provides group instruction in woodwind instruments with emphasis on basic skills of performance as well as the appropriate teaching techniques, methods, and materials necessary for public school pedagogy. Course may be repeated for credit. Prerequisite: Permission of instructor.
MED 241. Brass Techniques  
1 credit  
Offered Fall and Spring Semesters  
Group instruction in brass instruments with emphasis upon basic skills of performance as well as the appropriate teaching techniques, methods, and materials necessary for public school pedagogy. Course may be repeated for credit. Prerequisite: Permission of instructor.

MED 242. Percussion Techniques  
1 credit  
Offered Spring Semester  
Group instruction in percussion (snare drum, mallet-keyboard percussion, timpani, drum set, and small accessory instruments) with emphasis upon basic skills of performance as well as the appropriate teaching techniques, methods, and materials necessary for public school pedagogy. Course may be repeated for credit.

MED 243. String Techniques  
1 credit  
Offered Fall and Spring Semesters  
The study of stringed instruments (violin, viola, cello, bass) in a heterogeneous class with emphasis on general principles of string playing and teaching methods for use in beginning and intermediate instruction in the schools. Course may be repeated for credit. Prerequisite: Permission of instructor.

MED 244. Vocal Techniques  
1 credit  
Offered Fall and Spring Semesters  
Class instruction in fundamentals of singing, breath control, tone production, and solo singing for music majors. Prerequisite: Permission of instructor.

MED 245. Functional Music Techniques  
1 credit  
Offered Fall and Spring Semesters  
Group instruction in the functional use of the guitar, autoharp, and recorder for classroom or music therapy uses. Functional skills, teaching methods, and materials are emphasized. Prerequisite: Permission of instructor.

MED 249. Functional Techniques in Music Therapy II  
1 credit  
Offered By Announcement only  
Students acquire functional piano skills while learning repertoire and techniques for leading and accompanying music therapy experiences. Vocal skills are also emphasized. Prerequisite: MKP 104, MED 149, 245; Music Therapy majors only.

MED 252. Percussion Instrument Survey  
1 credit  
Offered Fall Semester  
This course will provide percussion principals and majors with a survey of the techniques and performance practices of available percussion instruments. Prerequisite: Open to percussion principals and majors or to others by permission of the instructor.

MED 259. Music Therapy Pre-Practicum  
2 credits  
Offered Spring Semester  
Students will learn a treatment-planning model for clinical practice. Topics include: assessment, goal setting, intervention design and data collection. Prerequisite: MED 159.

MED 340. Marching Band Fundamentals  
1 credit  
Offered Fall Semester  
A study of all types of marching band activities and methods of presentation. Prerequisite: Junior standing.

MED 341. Choral Music for School Teachers  
1 credit  
Offered Fall Semester  
A study of choral music appropriate for elementary, junior high, and senior high school 2-part, 3-part, and 4-part training, show-pop, and concert choirs. Prerequisite: Junior standing.
MED 359. Clinical Orientation in Music Therapy
1 credit
Offered Fall and Spring Semesters
Structured clinical experience in music therapy under supervision of a music therapist in varying health-related settings. Course is required each semester for Music Therapy Majors, except during the freshman year. Prerequisite: MED 259; Music Therapy majors only.

MED 430. Teaching Jazz/Popular Music in Secondary Schools
2 credits
Offered Fall Semester
A survey of materials, methods, and techniques for instructing jazz and popular music in secondary schools. Review of standard literature, program organization, and in-class performance is emphasized. Designed specifically for music education majors. Prerequisite: Senior standing in MED Program.

MED 433. Senior Seminar in Music Education
1 credit
Offered Fall and Spring Semesters
Discussion of teaching, rehearsal techniques, and the organization and presentation of music materials related to the internship experiences. Course is required of all Music Education majors. To be taken in conjunction with Internship, TAL 471. Prerequisite: MED 543.

MED 450. Introduction to Research Methods in Music
3 credits
Offered By Announcement only
This course is designed to help undergraduate students integrate research findings into their clinical and/or educational practice, implement research techniques into their work (e.g. through data collection or scholarly writing) and gain exposure to research if needed for future graduate students. Prerequisite: MED 562.

MED 471. Associate Teaching in Elementary School Music
6 credits
Offered Fall and Spring Semesters
A comprehensive program in observation and supervised teaching in elementary school music. The student spends full time for one half a semester in an elementary school, participating in all activities of the music teacher under the guidance of school and university personnel. Prerequisite: Admission to Teacher Candidacy and approval of the Committee on Field Experiences.

MED 473. Associate Teaching in Secondary School Music
6 credits
Offered Fall and Spring Semesters
A comprehensive program in observation and supervised teaching in secondary school music. The student spends full time for one half a semester in a secondary school, participating in all activities of the music teacher under the guidance of school and university personnel. Prerequisite: Admission to Teacher Candidacy and approval of the committee on Field Experiences.

MED 490. Senior Honors Thesis I
3 credits
Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MED 491. Senior Honors Thesis II
3 credits
Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MED 493. Special Projects
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised readings and other activities in specific areas of Music Education. Prerequisite: Permission of department chairman and dean required.
MED 540. Band Workshop  
2 credits  
Offered Spring Semester  
A workshop designed specifically for instrumental conductors. Sessions are devoted to a survey of skills necessary for teacher effectiveness in ensembles, including diagnosing and correcting problems in instrumental performance. Conducting and score analysis is emphasized.

MED 541. Musical Instrument Maintenance  
1 credit  
Offered Fall Semester and First Summer Session  
Mechanical development, care, and maintenance of musical instruments. Separate sections for wind, percussion, string, and keyboard instruments. Prerequisite: Advanced standing in the department and permission of the instructor.

MED 542. Teaching Elementary General Music (K-5)  
3 credits  
Offered Fall Semester  
Curriculum, methods, and materials designed for elementary music, K-6. Observation, planning, and teaching experience are emphasized. Prerequisite: Junior standing in MED program.

MED 543. Teaching Elementary and Secondary Instrumental Music  
3 credits  
Offered Spring Semester  
A study of elementary and secondary instrumental music instruction including program organization, teaching techniques, materials, and field experiences of music instruction in schools. Prerequisite: Junior standing in MED Program.

MED 544. Teaching Secondary General Music (7-12)  
2 credits  
Offered Spring Semester  
Curriculum, methods, and materials designed for junior/senior high school general music programs. Prerequisite: Junior standing in MED Program.

MED 545. Music in Rehabilitation  
3 credits  
Offered Spring Semester  
Review of development and functioning for neurologically-based sensorimotor behavior. Survey of disabilities and diseases that typically result in sensorimotor deficits is included. Demonstration and practice of therapeutic techniques for sensorimotor deficits are also covered. Prerequisite: Music Therapy majors only.

MED 546. Music Psychotherapy  
3 credits  
Offered Spring Semester  
Survey and practical application of music as therapy in the treatment of psychiatric disorders and in promoting mental health. Prerequisite: Music Therapy majors only.

MED 548. Music for Special Learners  
2-3 credits  
Offered Fall Semester and First and Second Summer Sessions  
This course is designed for music educators who will be working in schools with children and youth who have various disabilities. The purpose of MED 548 is to acquaint students with the characteristics of children and youth with disabilities, and introduce adaptive strategies in music education, K-12, for instructing children and youth with disabilities.

MED 549. Teaching Secondary Choral Music  
3 credits  
Offered Fall Semester  
Course covers curriculum, vocal/rehearsal techniques, and literature. Teaching music in secondary schools through the medium of choral performance. Prerequisite: Junior standing in MED Program.
MED 555. **Elementary Music Workshop**  
3 credits  
*Offered First Summer Session*  
Course is designed for in-service elementary school classroom teachers and music supervisors. Survey and experience with contemporary methodology and materials in elementary school music education is emphasized.

MED 556. **Secondary General Music Workshop**  
3 credits  
*Offered First Summer Session*  
Course is designed for teachers of general music classes in middle, junior high, and senior high schools. Practical experience with methods and materials designed for non-performance music classes, grades 7-12 is emphasized.

MED 557. **Choral Music Workshop**  
2 credits  
Course is designed for teachers, and covers a wide variety of topics related to the choral music experience, such as choral tone, diction, vocal health, and new literature for all voicings helpful for various age levels, elementary through high school. Technical aspects of conducting and performance include the conducting gesture, musical style, and sightreading in the choral rehearsal, utilizing appropriate literature. Each summer, guest artists are featured with a specific focus for the week-long course.

MED 559. **Internship in Music Therapy**  
3 credits  
*Offered Fall and Spring Semesters*  
Course provides students with a six month opportunity as a music therapy intern in an approved training facility. Prerequisite: Completion of all other coursework requirements for music therapy certification.

MED 560. **Internship in Music Therapy II**  
0 credits  
Prerequisite: MED 559.  
*Offered Fall and Spring Semesters*

MED 562. **Psychology of Music I**  
3 credits  
*Offered Spring Semester and Second Summer Sessions*  
Psychological foundations of music with an emphasis on problems of perception, experimental esthetics, functional music, and measurement and diagnosis of musical ability and achievement. Related literature of experimental investigation is reviewed.

MED 570. **Technology in Music Education**  
3 credits  
*Offered Fall Semester*  
Overview of technology in music teaching. Topics include approaches to computer-aided instruction, the internet, business software uses for music teachers, music printing, sequencing and sampling in performance and teaching, authoring systems and webpage design, and the design of studio and lab environments. Students complete an original research-based or application-based music teaching technology project.

MED 571. **Computer Applications in Music Education I**  
2 credits  
*Offered First Summer Session*  
Introduction to music software for personal computers. Hands on experience with CAI software as well as other software for program and instructional management is included.

MED 572. **Computer Applications in Music Education II**  
2 credits  
*Offered Spring Semester*  
Incorporation of computer software into curricular management and instruction. Course is project oriented and may involve computer in development of administrative systems, instructional programs, grading, testing, and other aspects of music education. Prerequisite: MED 571 or permission of instructor.
MED 573. Teaching Music of World Cultures  
2-3 credits  
Offered Spring Semester  
The purpose of this course is to acquaint the student with the musical life and culture of the Middle East, India, China, Japan, Africa, and a few of the cultures in the Caribbean Islands; to emphasize the elements of music (melody, rhythm, texture, form, timbre, and dynamics), and familiarize the student with the musical instruments characteristic to the musical life of the countries under discussion; and to select materials and develop strategies appropriate for elementary and secondary school music programs. Prerequisite: Permission of instructor.

MED 575. Preschool Music Workshop  
1-3 credits  
Offered First Summer Session  
Workshop is designed to prepare class members to initiate, administer, and teach music programs for preschool children. Materials which address the teacher, the child, and the parent are used. The daily schedule includes demonstration classes with children, lectures, and active participation of and discussion with class members. Emphasis is placed on working with a planning guide for teachers which offers articles on the major areas of the curriculum and clear, succinct statements focusing on the central issues of each lesson. Prerequisite: Permission of instructor.

MED 576. Music and Development  
3 credits  
Offered Fall Semester  
Review of development in cognitive, communication, and musical domains. Survey of developmental disabilities most commonly found in child populations is included as well as demonstration and practice of therapeutic techniques for cognitive and communication deficits. Prerequisite: Music Therapy majors only.

MED 577. Music Therapy Workshop  
2 credits  
Offered By Announcement only  
Current issues and approaches in the clinical practice of music therapy, designed specifically to provide continuing education for professional music therapists.

MED 578. Suzuki Institute  
2 credits  
Offered Spring Semester  
Institute brings certified and master teachers from the tradition, philosophy, and teaching of the celebrated Japanese pedagogue, Shinichi Suzuki, to work with both children and teachers. Children may study violin, viola, cello, and piano. Teachers receive instruction in techniques of Suzuki pedagogy.

MED 581. Teaching Classroom Guitar I  
2 credits  
Offered First Summer Session  
This class is designed for students and teachers, guitarist or non-guitarist, who wish to initiate, enhance, and teach guitar in a multi-level classroom setting. The course includes demonstration classes with elementary and secondary students. Topics include organization and teaching performance materials in a hands-on setting. Prerequisite: By permission of the instructor.

MED 582. Teaching Classroom Guitar II  
2 credits  
Offered First Summer Session  
This course is a continuation of MED 581. It prepares the student or teacher, guitarist or non-guitarist, to teach intermediate to advanced levels of guitar in a classroom situation. Topics include technique, musical affects, a survey of didactic works, and repertoire available for both ensemble and solo performance. Prerequisite: MED 581.

MED 593. Special Topics MED  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Supervised topics and other activities in specific areas of Music Education. Prerequisite: Permission of the Dean.
MED 599. Practicum in Music
0 credits
Practical professional experience. Prerequisite: Music majors only.

Music: Instrumental Performance

MIP 001. Brass Forum
0 credits
An informal recital setting and performance class for brass principals and majors with guest and faculty presentations. Offered Fall and Spring Semesters

MIP 002. Guitar Forum
0 credits
An informal recital setting and performance class for guitar principals and majors with guest and faculty presentations. Offered Fall and Spring Semesters

MIP 005. Percussion Forum
0 credits
An informal recital setting and performance class for Percussion principals and majors with guest and faculty presentations. Offered Fall and Spring Semesters

MIP 007. String Forum
0 credits
An informal recital setting and performance class for string principals and majors with guest and faculty presentations. Offered Fall and Spring Semesters

MIP 009. Woodwind Forum
0 credits
An informal recital setting and performance class for woodwind principals and majors with guest and faculty presentations. Offered Fall and Spring Semesters

MIP 120. Class Guitar I for Non-Music Majors
1 credit
Offered Fall and Spring Semesters

MIP 121. Class Guitar I for Jazz Majors
1 credit
Prerequisite: Permission of instructor. Offered Fall and Spring Semesters

MIP 130. Afro-Caribbean Hand Drumming, Level I
1 credit
The study of hand drumming techniques used to perform the music of Africa and the new world. African music that originated in the islands of the Caribbean and the countries of Central and Latin America. This class is taught in a workshop format. Prerequisite: Audition. Offered Fall and Spring Semesters

MIP 131. Afro-Caribbean Hand Drumming, Level II
1 credit
The study of hand drumming techniques used to perform the music of Africa and the new world African music that originated in the islands of the Caribbean and the countries of Central and Latin America. Level II is a performance ensemble. Prerequisite: MIP 130 or Audition. Offered Fall and Spring Semesters

MIP 132. Brazilian Batteria
1 credit
Brazilian Batteria workshop is a study of the rhythmic aspects of the popular music of Brazil and the percussion instruments which produce many of the unique sounds which characterize this music. Study is made of the performance techniques of the pure Batteria and the incorporation of these techniques into a contemporary rhythm section. Prerequisite: By audition. Offered Fall and Spring Semesters
MIP 133. Cuban Conjunto
1 credit
Offered Fall and Spring Semesters
Cuban Conjunto workshop is a study of the Spanish and Afro traditions which meld together to form much of the Cuban folk repertory. Indigenous percussion instruments are studied together with the dance forms which make up much of this music. Prerequisite: By audition.

MIP 134. Steel Band/Trinidad
1 credit
Offered By Announcement only
Steel Band/Trinidad reflects the broad musical heritage of the West Indies. Steel Drums (Pans) are combined with other indigenous instruments in the performance of both folk music and transcriptions of standard classical repertory in the tradition of the Trinidad carnival celebration. Level one of this class is taught as a workshop, level two is taught as a performance ensemble. Prerequisite: By audition.

MIP 135. Percussion Ensemble
1 credit
Offered Fall and Spring Semesters
Percussion ensemble is a performance ensemble for percussion and majors. A wide variety of music is studied and performed in both the classical and popular idioms. Several sections of this ensemble are offered each semester to accommodate students of varying skill levels. Prerequisite: By Audition.

MIP 136. Marimba Ensemble
1 credit
Offered Fall and Spring Semesters
Marimba ensemble is a performance ensemble for percussionists with a medium to high level of mallet/keyboard skills. Transcriptions and original music in both classical and popular idioms are performed. Prerequisite: By Audition.

MIP 137. Mallet Ensemble
1 credit
Offered Fall and Spring Semesters
Mallet ensemble is a workshop for students with beginning mallet/keyboard skills. It serves as a prerequisite for PEC. Areas covered include mallet manipulation and performance of scales, chords, sight reading, and prepared etudes. Prerequisite: By Audition.

MIP 138. Trombone Choir
1 credit
Offered Fall and Spring Semesters
The study and performance of literature for small and large trombone ensembles. Prerequisite: By audition.

MIP 139. Brass Chamber Music
1 credit
Offered Fall and Spring Semesters
The study and performance of literature for small ensembles of similar or mixed brass instruments. Prerequisite: By Audition.

MIP 140. Flute Choir
1 credit
Offered Fall and Spring Semesters
Reading, rehearsing, and performing the flute choir repertoire (duets, trios, quartets, quintets). Prerequisite: By Audition.

MIP 141. Saxophone Ensemble
1 credit
Offered Fall and Spring Semesters
The study and performance of classical and jazz literature for small saxophone ensembles. Prerequisite: By Audition.

MIP 143. Woodwind Chamber Music
1 credit
Offered Fall and Spring Semesters
Exploring the woodwind chamber music repertoire as represented by various combinations of instruments. Prerequisite: By Audition.
MIP 144. Woodwind Chamber Ensemble
1 credit
Offered Fall and Spring Semesters
Woodwind chamber ensemble is designed to give students knowledge of the most important literature for woodwinds through practice, rehearsal, and performance of major works for woodwind chamber ensemble. Prerequisite: By Audition.

MIP 145. String-Keyboard Chamber Music
1 credit
Offered Fall and Spring Semesters
The study and performance of literature from the Baroque Period through the 20th Century for two or more players for string instrumentalists and strings with keyboard. Prerequisite: By Audition.

MIP 170. Marching Band
1 credit
Offered Fall Semester
The “Band of the Hour” Marching Band is open to all qualified undergraduate and graduate students, regardless of major. The band performs at all home Miami Hurricane football games and selected away games. Prerequisite: Audition.

MIP 171. Symphonic Winds
1 credit
Offered Spring Semester
Symphonic Band is a large wind band that performs significant repertoire for wind and percussion instruments. It is open to all qualified undergraduate and graduate students, regardless of major. Prerequisite: Audition.

MIP 172. University Band
1 credit
Offered Spring Semester
University Band is a large ensemble offering students the opportunity to play standard repertoire of the wind band. This group is open to all wind and permission players throughout the university, regardless of major. Prerequisite: No audition required.

MIP 174. Brass Choir
1 credit
Offered Fall and Spring Semesters
Major works for Brass Choir are studied. Special emphasis is given to orchestral repertoire. Prerequisite: By audition.

MIP 176. Wind Ensemble
1 credit
Offered Fall and Spring Semesters
This course offers performance opportunities for qualified wind and percussion players. Repertoire includes significant literature written for the small and large wind band. Prerequisite: Audition.

MIP 180. Symphony Orchestra
1 credit
Offered Fall and Spring Semesters
The Symphony Orchestra performs significant repertoire for large orchestra. It is open to all qualified undergraduate students by audition. Prerequisite: By audition.

MIP 181. Instrumental Conducting I
1 credit
Offered Fall Semester
This course provides practical procedures and materials for beginning instrumental conducting students. Students demonstrate basic conducting patterns, preparations, and releases in all meters. Prerequisite: MTC 112 and 122 or equivalent and MED major.

MIP 182. Instrumental Conducting II
1 credit
Offered Spring Semester
This course provides practical procedures and materials for advancing instrumental conducting students. Students demonstrate refined skill in conducting musical styles and independence of gestures. Prerequisite: MIP 181.
MIP 183. Greater Miami Symphonic Band
1 credit  
**Offered Fall and Spring Semesters**
A community instrumental ensemble with university and community personnel. Prerequisite: By Audition Only.

MIP 191. Tuba Ensemble
1 credit  
**Offered Fall and Spring Semesters**
The study and performance of compositions and/or transcriptions written for an ensemble of tubas and/or euphoniums. Prerequisite: By audition.

MIP 192. Classical Guitar Ensemble
1 credit  
**Offered Fall and Spring Semesters**
This course focuses on sightreading, rhythm recognition, and ensemble performance through the study of exercises, scales, and diverse repertoire. Prerequisite: By Audition.

MIP 199. Contemporary Music Ensemble
1 credit  
**Offered Fall and Spring Semesters**
An in-depth study and performance of new and standard classical music of the 20th century. Prerequisite: By audition.

MIP 220. Class Guitar II for Non-music Majors
1 credit  
**Offered Fall and Spring Semesters**

MIP 221. Class Guitar II for Jazz Majors
1 credit  
**Offered Fall and Spring Semesters**
Prerequisite: Permission of instructor.

MIP 281. Instrumental Conducting III
1 credit  
**Offered Fall Semester**
This course provides a synthesis of the skills demonstrated in Instrumental Conducting I and II while developing error detection skills in common performance errors. Prerequisite: MIP 182.

MIP 282. Instrumental Conducting IV
1 credit  
**Offered Spring Semester**
Students demonstrate knowledge of instruments, instrumentation of the wind band and orchestra, and analyze scores for conception, interpretation, rehearsal, and performance. Prerequisite: MIP 281.

MIP 317. Basic Conducting
1 credit  
**Offered Fall and Spring Semesters**
A study of the basic techniques of all rhythms, patterns, subdivisions of beats, dynamics, starting, stopping, and giving cues. Course provides an elementary study of scores as to form and harmonic intent. Prerequisite: MTC 211.

MIP 381. Seminar on Electronic Percussion
2 credits  
**Offered Fall Semester**
The study of current practices in the composition and performance using analog and digital machines which produce percussion sounds. Prerequisite: Permission of instructor.

MIP 399. Junior Recital
1 credit  
**Offered Fall and Spring Semesters**
A public recital of one half-hour or more. Course is required of all instrumental performance majors. Prerequisite: Permission of instructor.
MIP 418. Instrumental Conducting
1 credit  Offered Spring Semester
Course covers Baton technique, score reading, and interpretation. Actual experience in rehearsing instrumental ensembles is included. Prerequisite: MIP 317.

MIP 490. Senior Honors Thesis I
3 credits  Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MIP 491. Senior Honors Thesis II
3 credits  Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MIP 493. Special Projects
1- 3 credits  Offered Fall and Spring Semesters
Supervised readings and other activities in specific areas of Instrumental Performance. Prerequisite: Permission of department chairman and dean required.

MIP 499. Senior Recital
1 credit  Offered Fall and Spring Semesters
A public recital of one hour or more. Required of all performance majors. Prerequisite: Permission of instructor.

MIP 539. Brass Chamber Music Institute
2 credits  Offered By Announcement only
Institute offers opportunities for brass players to perform in all forms of chamber music—from trios to Brass Choir. Included are master classes on each instrument plus the availability of private instruction from an excellent faculty. The material covered spans the musical periods including recent brass publications.

MIP 541. Bassoon Repertoire and Pedagogy
1- 2 credits  Offered Fall Semester
Solo and small ensemble literature of the bassoon since 1600. Prerequisite: Advanced standing in music and permission of instructor. May be repeated for credit.

MIP 542. Clarinet Repertoire and Pedagogy
1- 2 credits  Offered Fall Semester
Solo and small ensemble literature of the clarinet since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 543. Flute Repertoire and Pedagogy
1- 2 credits  Offered Fall Semester
Solo and small ensemble literature of the flute since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 544. Oboe Repertoire and Pedagogy
1- 2 credits  Offered Fall Semester
Solo and small ensemble literature of the oboe since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 545. Brass Repertoire and Pedagogy
1- 2 credits  Offered Fall Semester
Solo and small ensemble literature of brass instruments since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.
MIP 546. Percussion Repertoire and Pedagogy
1- 2 credits Offered Fall Semester
Solo and small ensemble literature of percussion instruments since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 547. Saxophone Repertoire and Pedagogy
1- 2 credits Offered Fall Semester
Solo and small ensemble literature of the saxophone since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 548. Guitar Repertoire and Pedagogy
1- 2 credits Offered Fall Semester
Solo and small ensemble literature of the guitar since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 549. String Repertoire and Pedagogy
1- 2 credits Offered Fall Semester
An exploration of teaching string playing. Areas covered include problem-solving and communication techniques, and practical considerations in establishing a teaching studio. Students participate in hands-on teaching opportunities. Prerequisite: Advanced standing in Music and permission of instructor.

MIP 550. Bach Cello Suites
1 credit Offered Fall Semester
The study and performance of the six suites for unaccompanied cello of Johann Sebastian Bach.

MIP 580. Orchestral Literature
1 credit Offered Fall and Spring Semesters
The study of the more difficult excerpts from the orchestral literature for violin, viola, violoncello, or double bass. Course may be repeated for credit.

MIP 593. Special Topics MIP
1- 3 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Instrumental Performance. Prerequisite: Permission of the Dean.

MIP 599. Practicum in Music
0 credits
Practical professional experience. Prerequisite: Music majors only.

MIP BAA. Bassoon
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Method Books by Giampieri, Jancourt, Milde (Vol. 1). Repertoire: Vivaldi Concerto, Bourdeau - Premier solo, Galliard, Handel, Marcello, Nino Rota Procaccini. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP BAB. Bassoon
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Method Books by Giampieri, Jancourt, Milde (Vol. 1). Repertoire: Vivaldi Concerto, Bourdeau - Premier solo, Galliard, Handel, Marcello, Nino Rota Procaccini. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.
MIP BAC. Bassoon
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Method Books by Giampieri, Jancourt, Milde (Vol. 1). Repertoire: Bourdeau - Second Solo, David, Domenico, Dubois, Fasch, Kozeluh, Pierne, Telemann, Vivaldi. Prerequisite: Successful completion of previous level of study.

MIP BAD. Bassoon
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Method Books by Giampieri, Jancourt, Milde (Vol. 1). Repertoire: Bourdeau - Second Solo, David, Domenico, Dubois, Fasch, Kozeluh, Pierne, Telemann, Vivaldi. Prerequisite: Successful completion of previous level of study.

MIP BAE. Bassoon
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Method Books by Giampieri, Milde (Vol. 2). Gambaro. Repertoire: Bach, Bozza, Eigar, Jean Jean, Hindemith, Mozart, Flament. Prerequisite: Successful completion of previous level of study.

MIP BAF. Bassoon
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Method Books by Giampieri, Milde (Vol. 2). Gambaro. Repertoire: Bach, Bozza, Eigar, Jean Jean, Hindemith, Mozart, Flament. Prerequisite: Successful completion of previous level of study.

MIP BAG. Bassoon
1- 4 credits  Offered Fall and Spring Semesters

MIP BAH. Bassoon
1- 4 credits  Offered Fall and Spring Semesters

MIP BHA. Baritone Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Arban, Concone, Schlossberg, Barat, Presser. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP BHB. Baritone Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Arban, Concone, Schlossberg, Barat, Presser. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.
MIP BHC. Baritone Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Bordogni-Rochut, Peters, Jones, Vivaldi. Prerequisite: Successful completion of previous level of study.

MIP BHD. Baritone Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Bordogni-Rochut, Peters, Jones, Vivaldi. Prerequisite: Successful completion of previous level of study.

MIP BHE. Baritone Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Fink Stevens, Maxime-Alphones, Jacob, Hartley. Prerequisite: Successful completion of previous level of study.

MIP BHF. Baritone Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Fink Stevens, Maxime-Alphones, Jacob, Hartley. Prerequisite: Successful completion of previous level of study.

MIP BHG. Baritone Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Charlier, Bozza, Uber, Horovitz Bellstedt; band and orchestral excerpts. Prerequisite: Successful completion of previous level of study.

MIP BHH. Baritone Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Charlier, Bozza, Uber, Horovitz Bellstedt; band and orchestral excerpts. Prerequisite: Successful completion of previous level of study.

MIP CDA. Conducting
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP CDB. Conducting
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.
MIP CDC. Conducting
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP CDD. Conducting
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP CDE. Conducting
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP CDF. Conducting
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP CDG. Conducting
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP CDH. Conducting
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP CLA. Clarinet
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Scale study. Etude books: Rose 32 Etudes, Baermann Method Book 3. Repertoire: Schumann, Saint-Saens, Gade, Arnold. Orchestral excerpts. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP CLB. Clarinet
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Scale study. Etude books: Rose 32 Etudes, Baermann Method Book 3. Repertoire: Schumann, Saint-Saens, Gade, Arnold. Orchestral excerpts. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP CLC. Clarinet
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Same as previous semesters as well as Cavillini Caprices, and Opperman Intermediate Velocity Studies. Repertoire: Weber, Hindemith, Burgmuller. Prerequisite: Successful completion of previous level of study.
MIP CLD. Clarinet
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Same as previous semesters as well as Cavillini Caprices, and Opperman Intermediate Velocity Studies. Repertoire: Weber, Hindemith, Burgmüller. Prerequisite: Successful completion of previous level of study.

MIP CLE. Clarinet
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Same as previous semesters as well as Jean Jean 16 or 18 Etudes, and Opperman Advanced Velocity Studies. Repertoire: Poulenc, Stravinsky, Bernstein, Brahms. Prerequisite: Successful completion of previous level of study.

MIP CLF. Clarinet
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Same as previous semesters as well as Jean Jean 16 or 18 Etudes, and Opperman Advanced Velocity Studies. Repertoire: Poulenc, Stravinsky, Bernstein, Brahms. Prerequisite: Successful completion of previous level of study.

MIP CLG. Clarinet
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Same as previous semesters as well as Opperman Virtuoso Velocity Studies. Repertoire: Debussy, Rozsa, Muczynski, Berg. Prerequisite: Successful completion of previous level of study.

MIP CLH. Clarinet
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Same as previous semesters as well as Opperman Virtuoso Velocity Studies. Repertoire: Debussy, Rozsa, Muczynski, Berg. Prerequisite: Successful completion of previous level of study.

MIP DBA. Double Bass
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP DBB. Double Bass
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP DBC. Double Bass
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP DBD. Double Bass
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.
MIP DBE. **Double Bass**

1-4 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP DBF. **Double Bass**

1-4 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP DBG. **Double Bass**

1-4 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP DBH. **Double Bass**

1-4 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP FHA. **French Horn**

1-4 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Beginning transposition study. Studies by Shoemaker, Kopprasch, Maxime-Alphonse, Kling; appropriate passages from orchestral works. Repertoire: Mozart, Saint-Saens, F. Strauss, R. Strauss. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP FHB. **French Horn**

1-4 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Beginning transposition study. Studies by Shoemaker, Kopprasch, Maxime-Alphonse, Kling; appropriate passages from orchestral works. Repertoire: Mozart, Saint-Saens, F. Strauss, R. Strauss. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP FHC. **French Horn**

1-4 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continue transposition study. Continue development of embouchure, breathing, and articulation. Appropriate major and minor scales. Studies by Kopprasch, Maxime-Alphonse, Kling; Gallay; orchestral repertoire. Repertoire: Mozart, Strauss, Rachmaninoff, Glazounov. Prerequisite: Successful completion of previous level of study.

MIP FHD. **French Horn**

1-4 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continue transposition study. Continue development of embouchure, breathing, and articulation. Appropriate major and minor scales. Studies by Kopprasch, Maxime-Alphonse, Kling; Gallay; orchestral repertoire. Repertoire: Mozart, Strauss, Rachmaninoff, Glazounov. Prerequisite: Successful completion of previous level of study.
MIP FHE. French Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continued transposition study, further skills development, scales and arpeggios. Studies by Bach, Maxime-Alphonse, Gallay; Belloli; orchestral repertoire. Repertoire: Mozart, Strauss, Hindemith, Dukas, Chabier. Prerequisite: Successful completion of previous level of study.

MIP FHF. French Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continued transposition study, further skills development, scales and arpeggios. Studies by Bach, Maxime-Alphonse, Gallay; Belloli; orchestral repertoire. Repertoire: Mozart, Strauss, Hindemith, Dukas, Chabier. Prerequisite: Successful completion of previous level of study.

MIP FHG. French Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Further skills development to the highest attainable level. Studies by Reynolds, Hackelman, Neuling, Barboteo, Bach. Orchestral repertoire. Repertoire: Bozza, Gliere, Strauss, Haydn. Prerequisite: Successful completion of previous level of study.

MIP FHH. French Horn
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Further skills development to the highest attainable level. Studies by Reynolds, Hackelman, Neuling, Barboteo, Bach. Orchestral repertoire. Repertoire: Bozza, Gliere, Strauss, Haydn. Prerequisite: Successful completion of previous level of study.

MIP FLA. Flute
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Taffanel - Gaubert 17 Daily Exercises, Berbiguer - 18 Etudes, Andersen Little Caprices. All major and minor scales, two octaves; Moyse - De la Sonorite, 24 Petite Melodies Vol. I. Repertoire: Handel Sonatas, Godard Allegretto. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP FLB. Flute
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Taffanel - Gaubert 17 Daily Exercises, Berbiguer - 18 Etudes, Andersen Little Caprices. All major and minor scales, two octaves; Moyse - De la Sonorite, 24 Petite Melodies Vol. I. Repertoire: Handel Sonatas, Godard Allegretto. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP FLC. Flute
1- 4 credits  Offered Fall and Spring Semesters
MIP FLD. Flute
1- 4 credits
Offered Fall and Spring Semesters

MIP FLE. Flute
1- 4 credits
Offered Fall and Spring Semesters

MIP FLF. Flute
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Moyse Daily Exercises, Andersen Op. 15, Soussmann Etudes; Moyse De la Sonorite, Tone Development Through Interpretation. Repertoire: Poulenc Sonata, Bach Sonatas, Martinu Sonata. Prerequisite: Successful completion of previous level of study.

MIP FLG. Flute
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Moyse Daily Exercises, Andersen Op. 15, Soussmann Etudes; Moyse De la Sonorite, Tone Development Through Interpretation. Repertoire: Poulenc Sonata, Bach Sonatas, Martinu Sonata. Prerequisite: Successful completion of previous level of study.

MIP FLH. Flute
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Moyse Daily Exercises, Andersen Op. 15, Soussmann Etudes; Moyse De la Sonorite, Tone Development Through Interpretation. Repertoire: Poulenc Sonata, Bach Sonatas, Martinu Sonata. Prerequisite: Successful completion of previous level of study.

MIP GUA. Guitar
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP GUB. Guitar
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP GUC. Guitar
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.
MIP GUD. Guitar
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP GUE. Guitar
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP GUF. Guitar
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP GUG. Guitar
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP GUH. Guitar
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP HAA. Harp
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP HAB. Harp
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP HAC. Harp
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP HAD. Harp
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP HAE. Harp
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.
MIP HAF. Harp
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP HAG. Harp
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP HAH. Harp
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP OBA. Oboe
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales, arpeggios, trills. Appropriate technical exercises. Etudes by Barret (Brod, Luft, Sellner, Ferling). Repertoire: Albinoni, Bach, Hayde, Schumann, Britten. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP OBB. Oboe
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales, arpeggios, trills. Appropriate technical exercises. Etudes by Barret (Brod, Luft, Sellner, Ferling). Repertoire: Albinoni, Bach, Hayde, Schumann, Britten. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP OBC. Oboe
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales, arpeggios, trills. Appropriate technical exercises. Etudes by Ferling (Bleuzet, Sellner). Repertoire: Saint-Saens, Hindemith, Vivaldi, Goossens, Francaix. Prerequisite: Successful completion of previous level of study.

MIP OBD. Oboe
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales, arpeggios, trills. Appropriate technical exercises. Etudes by Ferling (Bleuzet, Sellner). Repertoire: Saint-Saens, Hindemith, Vivaldi, Goossens, Francaix. Prerequisite: Successful completion of previous level of study.

MIP OBE. Oboe
1- 4 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales, arpeggios, trills. Appropriate technical exercises. Etudes by Bozza (Gillet, Prestini). Repertoire: Mozart, Telemann, Bach, Poulenc, Vaughan Williams. Prerequisite: Successful completion of previous level of study.
MIP OBF. Oboe

**1-4 credits**

Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales, arpeggios, trills. Appropriate technical exercises. Etudes by Bozza (Gillet, Prestini). Repertoire: Mozart, Telemann, Bach, Poulenc, Vaughan Williams. Prerequisite: Successful completion of previous level of study.

MIP OBG. Oboe

**1-4 credits**

Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales, arpeggios, trills. Appropriate technical exercises. Etudes by Loyon (Gillet). Repertoire: Mozart, Strauss, Martinu, Dutilleux. Prerequisite: Successful completion of previous level of study.

MIP OBH. Oboe

**1-4 credits**

Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales, arpeggios, trills. Appropriate technical exercises. Etudes by Loyon (Gillet). Repertoire: Mozart, Strauss, Martinu, Dutilleux. Prerequisite: Successful completion of previous level of study.

MIP PEA. Percussion

**1-4 credits**

Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of two mallets technique. Review of basic technique and repertory on snare drum and timpani. Basic multi-percussion etudes. Repertoire: Mallet: G. H. Green, Musser, Creston, Rosauro. Snare Drum: Cirone, Delecluse, Rosauro. Timpani: Hochrainer, Writh, Goodman. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP PEB. Percussion

**1-4 credits**

Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of two mallets technique. Review of basic technique and repertory on snare drum and timpani. Basic multi-percussion etudes. Repertoire: Mallet: G. H. Green, Musser, Creston, Rosauro. Snare Drum: Cirone, Delecluse, Rosauro. Timpani: Hochrainer, Writh, Goodman. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP PEC. Percussion

**1-4 credits**

Offered Fall and Spring Semesters

**MIP PED. Percussion**

1-4 credits  
Offered Fall and Spring Semesters

**MIP PEE. Percussion**

1-4 credits  
Offered Fall and Spring Semesters

**MIP PEF. Percussion**

1-4 credits  
Offered Fall and Spring Semesters

**MIP PEG. Percussion**

1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of advanced repertory and preparation for the final recital. Etudes and works on marimba, vibraphone, snare drum, timpani, multi-percussion, and orchestral excerpts. At least one piece at the final concert has to be a concerto-like composition performed with piano or percussion ensemble. Prerequisite: Successful completion of previous level of study.

**MIP PEH. Percussion**

1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of advanced repertory and preparation for the final recital. Etudes and works on marimba, vibraphone, snare drum, timpani, multi-percussion, and orchestral excerpts. At least one piece at the final concert has to be a concerto-like composition performed with piano or percussion ensemble. Prerequisite: Successful completion of previous level of study.

**MIP SAA. Saxophone**

1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

**MIP SAB. Saxophone**

1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.
MIP SAC. Saxophone
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP SAD. Saxophone
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP SAE. Saxophone
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP SAF. Saxophone
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP SAG. Saxophone
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP SAH. Saxophone
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP TBA. Trombone
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, articulation, sound, and slide technique. Appropriate major and minor scales. Works by Arban, Blazhevich, Pares, Rochut, Tyrell, and others. Solo literature as appropriate for the student’s abilities. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP TBB. Trombone
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, articulation, sound, and slide technique. Appropriate major and minor scales. Works by Arban, Blazhevich, Pares, Rochut, Tyrell, and others. Solo literature as appropriate for the student’s abilities. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP TBC. Trombone
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continuation of previous aspects of technical development. Works as previously listed, followed by Blume, and solo literature as appropriate for the student’s abilities. Introduction of orchestral excerpts as both literature and as an aid to technical and musical development. Prerequisite: Successful completion of previous level of study.
MIP TBD. Trombone
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continuation of previous aspects of technical development. Works as previously listed, followed by Blume, and solo literature as appropriate for the student’s abilities. Introduction of orchestral excerpts as both literature and as an aid to technical and musical development. Prerequisite: Successful completion of previous level of study.

MIP TBE. Trombone
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continuation of technical development including upper register, advanced slide technique, and refined articulation. Works as previously listed, followed by Masson and Bitsch. Solo literature as appropriate for the student’s abilities, and continuation of selected orchestral excerpts. Prerequisite: Successful completion of previous level of study.

MIP TBF. Trombone
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Further development of all technical aspects of performance. Works by Masson and Bitsch, and solo literature geared towards recital performance. Prerequisite: Successful completion of previous level of study.

MIP TBG. Trombone
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Further development of all technical aspects of performance. Works by Masson and Bitsch, and solo literature geared towards recital performance. Prerequisite: Successful completion of previous level of study.

MIP TBH. Trombone
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Arban, Clarke, Hering, Schlossberg; orchestral excerpts. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP TPA. Trumpet
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Arban, Clarke, Hering, Schlossberg; orchestral excerpts. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.
MIP TPC. Trumpet  
1- 4 credits Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP TPD. Trumpet  
1- 4 credits Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP TPE. Trumpet  
1- 4 credits Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP TPF. Trumpet  
1- 4 credits Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP TPG. Trumpet  
1- 4 credits Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP TPH. Trumpet  
1- 4 credits Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MIP TUA. Tuba  
1- 4 credits Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Concone, Arban, Bordogni, Haddad, Hartley. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP TUB. Tuba  
1- 4 credits Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Concone, Arban, Bordogni, Haddad, Hartley. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP TUC. Tuba  
1- 4 credits Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Vasiliev, Kopprash, Gallay, Frankenpohl, Nelhybel, Bernstein. Prerequisite: Successful completion of previous level of study.
MIP TUD. Tuba
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Vasiliev, Kopprash, Gallay, Frankenpohl, Nelhybel, Bernstein. Prerequisite: Successful completion of previous level of study.

MIP TUE. Tuba
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Bach/Bobo Ostrander, Kotsier, Hindemith, Wilder. Prerequisite: Successful completion of previous level of study.

MIP TUF. Tuba
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Cimera, Maenz, Broughton, Persichetti, orchestral excerpts. Prerequisite: Successful completion of previous level of study.

MIP TUH. Tuba
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of embouchure, breathing, and articulation. Appropriate major and minor scales. Repertoire: Cimera, Maenz, Broughton, Persichetti, orchestral excerpts. Prerequisite: Successful completion of previous level of study.

MIP VAA. Viola
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Right hand and left hand position evaluation and adjustment if necessary. Scales and etudes as assigned. Repertoire: Solo literature appropriate for level and major. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP VAB. Viola
1-4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Right hand and left hand position evaluation and adjustment if necessary. Scales and etudes as assigned. Repertoire: Solo literature appropriate for level and major. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.
MIP VAC. Viola
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales and etudes as assigned. Repertoire: Solo literature appropriate for level and major. Solo literature appropriate for level and major. Prerequisite: Successful completion of previous level of study.

MIP VAD. Viola
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales and etudes as assigned. Repertoire: Solo literature appropriate for level and major. Solo literature appropriate for level and major. Prerequisite: Successful completion of previous level of study.

MIP VAE. Viola
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales and etudes as assigned. Repertoire: Solo literature appropriate for level and major. Solo literature appropriate for level and major. Prerequisite: Successful completion of previous level of study.

MIP VAF. Viola
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales and etudes as assigned. Repertoire: Solo literature appropriate for level and major. Solo literature appropriate for level and major. Prerequisite: Successful completion of previous level of study.

MIP VAG. Viola
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales and etudes as assigned. Repertoire: Solo literature appropriate for level and major. Solo literature appropriate for level and major. Prerequisite: Successful completion of previous level of study.

MIP VAH. Viola
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Scales and etudes as assigned. Repertoire: Solo literature appropriate for level and major. Solo literature appropriate for level and major. Prerequisite: Successful completion of previous level of study.

MIP VCA. Violoncello
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of basic bow strokes, vibrato, and position changes. Appropriate major scales and arpeggios. Etudes as needed. Repertoire: Vivaldi Sonatas, Saint-Saens Concerto, Hayden C Major Concerto, Beethoven Sonata 1 or 2, Bach Suite 1 or 2. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.
MIP VCB. Violoncello
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Development of basic bow strokes, vibrato, and position changes. Appropriate major scales and arpeggios. Etudes as needed. Repertoire: Vivaldi Sonatas, Saint-Saëns Concerto, Hayden C Major Concerto, Beethoven Sonata 1 or 2, Bach Suite 1 or 2. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP VCC. Violoncello
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: All major and minor scales and arpeggios. Etudes as needed. Repertoire: Lalo Concerto, Boccherini B-flat, Beethoven or Brahms Sonatas, Bach Suite No. 3. Prerequisite: Successful completion of previous level of study.

MIP VCD. Violoncello
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Popper etudes, Duport etudes. Repertoire: Dvorak Concerto, Hayden D Major Concerto, Shostakovich Sonata, Bach Suite No. 4. Prerequisite: Successful completion of previous level of study.

MIP VCE. Violoncello
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Popper etudes, Duport etudes. Repertoire: Schumann Concerto, Bach Suites No. 5 or No. 6. Prerequisite: Successful completion of previous level of study.

MIP VCF. Violoncello
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Schumann Concerto, Bach Suites No. 5 or No. 6. Prerequisite: Successful completion of previous level of study.

MIP VCG. Violoncello
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Flesch Scale System, Schradieck School of Technic, Sevcik Shifting Studies, Sevcik Trill Studies. Fiorello - 36 Etudes and Caprices, Kreutzer - 42 Etudes. Repertoire: J. S. Bach, Beethoven, Mozart, Haydn, De Beriot. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.
MIP VNB. Violin
1- 4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Flesch Scale System, Schradieck School of Technic, Sevcik Shifting Studies, Sevcik Trill Studies. Fiorello - 36 Etudes and Caprices, Kreutzer - 42 Etudes. Repertoire: J. S. Bach, Beethoven, Mozart, Haydn, De Beriot. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MIP VNC. Violin
1- 4 credits  
Offered Fall and Spring Semesters

MIP VND. Violin
1- 4 credits  
Offered Fall and Spring Semesters

MIP VNE. Violin
1- 4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Flesch Scale System, Dont 42 Caprices, Gavinies 24 Matinees, Vieuxtemps 12 Studies. Repertoire: J. S. Bach, Beethoven, Brahms, Vaughan Williams, Ravel, Sarasate, Sibelius, Vieuxtemps, Shostakovich. Prerequisite: Successful completion of previous level of study.

MIP VNF. Violin
1- 4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Flesch Scale System, Dont 42 Caprices, Gavinies 24 Matinees, Vieuxtemps 12 Studies. Repertoire: J. S. Bach, Beethoven, Brahms, Vaughan Williams, Ravel, Sarasate, Sibelius, Vieuxtemps, Shostakovich. Prerequisite: Successful completion of previous level of study.

MIP VNG. Violin
1- 4 credits  
Offered Fall and Spring Semesters

MIP VNH. Violin
1- 4 credits  
Offered Fall and Spring Semesters
Music: Keyboard Performance

MKP 004. Organ Forum
0 credits
Offered By Announcement only

MKP 006. Piano Forum
0 credits
Offered Fall and Spring Semesters
A non-credit performance class for all piano majors and principals. Majors are required to perform once each semester with the approval of the applied teacher.

MKP 101. Class Piano I
1 credit
Offered Fall and Spring Semesters
Students enrolling in MKP 101 must not have any previous keyboard experience. MKP 101 begins with basic keyboard skills including locating notes on the keyboard, whole and half steps on the keyboard and all major and minor 5-finger patterns. Students in MKP 101 also learn beginning repertoire, major scales and arpeggios, a basic chord progression, four types of triads, dominant seventh chords and inversions, beginning sight reading, harmonization, and improvisation skills. A minimum grade of C is required before a student can progress to MKP 102. Prerequisite: Open to music majors only.

MKP 102. Class Piano II
1 credit
Offered Fall and Spring Semesters
After a thorough review of concepts presented in MKP 101, students in MKP 102 learn minor scales and arpeggios, modal scales, five types of seventh chords and inversions, and work more extensively with chord progressions. Study of repertoire and the development of sight reading, harmonization, and improvisation skills are continued. A minimum grade of C is required before a student can progress to MKP 103. Prerequisite: Open to music majors only. MKP 101 or placement audition.

MKP 103. Class Piano III
1 credit
Offered Fall and Spring Semesters
After a thorough review of concepts presented in MKP 102, students in MKP 103 learn dominant seventh arpeggios, secondary dominants, and work more extensively with chord progressions. Study of repertoire and the development of sight reading, harmonization, and improvisation skills are continued. As a final project, students create and perform a theme and two variations. A minimum grade of C is required before a student can progress to MKP 104. Prerequisite: Open to music majors only. MKP 102 or placement audition.

MKP 104. Class Piano IV
1 credit
Offered Fall and Spring Semesters
After a thorough review of concepts presented in MKP 103, students in MKP 104 learn diminished seventh arpeggios, augmented and Neapolitan sixth chords, and learn a variety of chord progressions that modulate. Study of repertoire and the development of sight reading, harmonization, and improvisation skills are continued. The final exam in MKP 104 is the Secondary Piano Proficiency Exam. Every student who is required to take class piano must pass this exam in order to fulfill the class piano requirement. If a student does not pass the exam, they must repeat MKP 104 and take the proficiency exam again. Students must pass the exam in order to receive a passing grade in the class. Prerequisite: Open to music majors only. MKP 103 or placement audition.

MKP 111. Non-Major Class Piano I
1 credit
Offered Fall and Spring Semesters
This course is designed for the adult beginner who has an interest in playing keyboard instruments for pleasure. Students with no previous musical or keyboard experience learn the fundamentals of music theory and apply them to playing the keyboard at the beginning level.
MKP 112. Non-Major Class Piano II  
1 credit  
Offered Fall and Spring Semesters  
Designed for the adult beginner who has an interest in playing keyboard instruments for pleasure, this course builds on the concepts introduced in MKP 111. Students continue to learn the fundamentals of music theory and apply them to playing the keyboard. Prerequisite: MKP 111 or audition.

MKP 121. Class Piano/MTR Majors Only (Level I)  
1 credit  
Offered Fall Semester  
Students enrolling in 121 must not have any previous keyboard experience. MKP 121 begins with basic keyboard skills including locating notes on the keyboard, whole and half steps on the keyboard, and all major and minor 5-finger patterns. Students in 121 also learn beginning repertoire, major scales and arpeggios, a basic chord progression, four types of triads, dominant seventh chords and inversions, beginning sight reading, harmonization, and improvisation skills. A minimum grade of C is required before a student can progress to MKP 122. Prerequisite: Musical Theatre Majors only.

MKP 122. Class Piano/MTR Majors Only (Level II)  
1 credit  
Offered Spring Semester  
After a thorough review of concepts presented in 121, students in 122 learn minor scales and arpeggios, modal scales, five types of seventh chords and inversions, and work more extensively with chord progressions. Study of repertoire and the development of sight reading, harmonization, and improvisation skills are continued. A minimum grade of C is required before a student can progress to MKP 123. Prerequisite: Musical Theatre Majors only.

MKP 123. Class Piano/MTR Majors Only (Level III)  
1 credit  
Offered Fall Semester  
After a thorough review of concepts presented in 122, students in 123 learn dominant seventh arpeggios, secondary dominants, and work more extensively with chord progressions. Study of repertoire and the development of sight reading, harmonization, and improvisation skills are continued. As a final project, students create and perform a theme and two variations. A minimum grade of C is required before a student can progress to MKP 124. Prerequisite: Musical Theatre Majors only.

MKP 124. Class Piano/MTR Majors Only (Level IV)  
1 credit  
Offered Spring Semester  
After a thorough review of concepts presented in 123, students in 124 learn diminished seventh arpeggios, augmented and Neapolitan sixth chords, and a variety of chord progressions that modulate. Study of repertoire and the development of sight reading, harmonization, and improvisation skills are continued. The final exam in 124 is the Secondary Piano Proficiency Exam. Every student who is required to take class piano must pass this exam in order to fulfill the class piano requirement. If a student does not pass the exam they must repeat 124 and take the proficiency exam again. Students must pass the exam in order to receive a passing grade in the class. Prerequisite: Musical Theatre Majors only.

MKP 185. Musical Theatre Accompanying  
1 credit  
Offered Fall and Spring Semesters  
A class designed to improve the skills of pianists with a particular interest in musical theatre piano accompaniment. Students will study in a classroom setting. Prerequisite: Permission of instructor.

MKP 186. Vocal Accompanying I  
1 credit  
Pianists will attend seminars where the principles of accompanying classical and musical theatre singers are addressed. Students are assigned to accompany applied voice lessons and ensembles. Prerequisite: Permission of instructor.
MKP 187. Vocal Accompanying II
1 credit
Offered Fall and Spring Semesters
Pianists attend seminars where the principles of accompanying classical and musical theatre singers are addressed. Students are assigned to accompany applied voice lessons and ensembles. Prerequisite: Permission of instructor.

MKP 189. Accompanying, Level I
1 credit
Offered Fall and Spring Semesters
Development of sightreading skills and score preparation. Prerequisite: Audition/permission of instructor.

MKP 190. Accompanying, Level II
1 credit
Offered Fall and Spring Semesters
Progressive development of individual vocal/instrumental and ensemble accompanying, sightreading, score reading, and improvising from a lead sheet. Prerequisite: MKP 189 or permission of instructor.

MKP 191. Accompanying, Level III
1 credit
Offered Fall and Spring Semesters
Progressive development of all types of accompaniment skills including; clef and score reading, transposition; possible recital, opera theater, choral ensemble, and/or orchestral accompanying. Prerequisite: MKP 190/690 or permission of instructor.

MKP 220. Computers, Keyboards, and Music
2 credits
Offered Fall and Spring Semesters
An introduction to basic computing skills for the musician that explores computers, keyboards, and other MIDI- (Musical Instrument Digital Interface) related instruments as tools for the musician. Topics include electronic keyboards, computer hardware and software, MIDI sequencing, computer-assisted musical notation, and teaching strategies using new technologies. Students gain hands-on experience while completing projects in each of the above areas. Prerequisite: MKP 102.

MKP 399. Junior Recital
1 credit
Offered Fall and Spring Semesters
A public recital of one half-hour or more. Course is required of all performance majors. Prerequisite: Permission of instructor.

MKP 490. Senior Honors Thesis I
3 credits
Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MKP 491. Senior Honors Thesis II
3 credits
Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MKP 493. Special Projects
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised readings and other activities in specific areas of Keyboard Performance. Prerequisite: Permission of department chairman and dean required.

MKP 499. Senior Recital
1 credit
Offered Fall and Spring Semesters
A public recital of one hour or more. Course is required of all performance majors. Prerequisite: Permission of instructor.
MKP 547. Keyboard Pedagogy

1- 2 credits  
Offered Fall Semester
Methods and materials for teaching keyboard instruments with a focus on private lesson instruction. Topics include teacher profile, general teaching considerations, the business of teaching, the beginning student, second- and third-year students, teaching materials, and an introduction to new technology in piano teaching. Prerequisite: Permission of instructor.

MKP 589. Keyboard Accompanying Program in Salzburg, Austria

2- 4 credits  
Offered Spring Semester
Course is conducted at Salzburg College, Austria. Students receive comprehensive and intensive coaching in piano and accompanying from Dr. Posnak and other internationally acclaimed guest artists. Piano students study piano (2 cr.) and accompanying (1 cr.). Prerequisite: By audition only.

MKP 593. Special Topics MKP

1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Keyboard Performance. Prerequisite: Permission of the Dean.

MKP 599. Practicum in Music

0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical professional experience. Prerequisite: Music majors only.

MKP HCA. Harpsichord

1- 4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MKP HCB. Harpsichord

1- 4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MKP HCC. Harpsichord

1- 4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MKP HCD. Harpsichord

1- 4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MKP HCE. Harpsichord

1- 4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MKP HCF. Harpsichord

1- 4 credits  
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.
MKP HCG. Harpsichord
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MKP HCH. Harpsichord
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MKP ORA. Organ
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Gleason, Method of Organ Playing: selected exercises from Manual Technique and Pedal Technique. Repertoire: Gleason, Method of Organ Playing: Compositions for Manuals, Studies and Compositions for Manuals and Pedal; selected chorale preludes and smaller-scale preludes and fugues by Bach, Buxtehude, Brahms, and others; basics of hymn playing. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MKP ORB. Organ
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Gleason, Method of Organ Playing: selected exercises from Manual Technique and Pedal Technique. Repertoire: Gleason, Method of Organ Playing: Compositions for Manuals, Studies and Compositions for Manuals and Pedal; selected chorale preludes and smaller-scale preludes and fugues by Bach, Buxtehude, Brahms, and others; basics of hymn playing. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MKP ORC. Organ
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Gleason, Method of Organ Playing: selected exercises from Manual Technique, Pedal Exercises and Scales. Repertoire: Gleason, Method of Organ Playing: selected Compositions for Manuals and Pedals; intermediate-level works by Bach, Mendelssohn, Franck, and others; Additional hymn playing techniques. Prerequisite: Successful completion of previous level of study.

MKP ORD. Organ
1- 4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Gleason, Method of Organ Playing: selected exercises from Manual Technique, Pedal Exercises and Scales. Repertoire: Gleason, Method of Organ Playing: selected Compositions for Manuals and Pedals; intermediate-level works by Bach, Mendelssohn, Franck, and others; Additional hymn playing techniques. Prerequisite: Successful completion of previous level of study.
MKP ORE. Organ
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Gleason, Method of Organ Playing: selected exercises from Pedal Scales, Broken Chords, Advanced Exercises. Repertoire: Selected compositions by Bach and representative Baroque, Classical, Romantic, and Modern composers. Hymn playing and organ accompanying techniques. Prerequisite: Successful completion of previous level of study.

MKP ORF. Organ
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Gleason, Method of Organ Playing: selected exercises from Pedal Scales, Broken Chords, Advanced Exercises. Repertoire: Selected compositions by Bach and representative Baroque, Classical, Romantic, and Modern composers. Hymn playing and organ accompanying techniques. Prerequisite: Successful completion of previous level of study.

MKP ORG. Organ
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Nilson, A System of Technical Studies in Pedal Playing for the Organ; selected exercises. Repertoire: Selected works by composers from all style periods, with an emphasis on the French Romantic and Modern French schools. Advanced service-playing techniques. Prerequisite: Successful completion of previous level of study.

MKP ORH. Organ
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Nilson, A System of Technical Studies in Pedal Playing for the Organ; selected exercises. Repertoire: Selected works by composers from all style periods, with an emphasis on the French Romantic and Modern French schools. Advanced service-playing techniques. Prerequisite: Successful completion of previous level of study.

MKP PIA. Piano
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: To show a comprehensive foundation in basic/advanced keyboard skills. Repertoire: Appropriate repertoire as required. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MKP PIB. Piano
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: To show a comprehensive foundation in basic/advanced keyboard skills. Repertoire: Appropriate repertoire as required. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MKP PIC. Piano
1- 4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: To show a comprehensive foundation in basic/advanced keyboard skills. Repertoire: Appropriate repertoire as required. Prerequisite: Successful completion of previous level of study.
MKP PID. Piano
1-4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: To show a comprehensive foundation in basic/advanced keyboard skills. Repertoire: Appropriate repertoire as required. Prerequisite: Successful completion of previous level of study.

MKP PIE. Piano
1-4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Complete Junior Recital as required. Repertoire: Appropriate repertoire as required. Prerequisite: Successful completion of previous level of study.

MKP PIF. Piano
1-4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Complete Junior Recital as required. Repertoire: Appropriate repertoire as required. Prerequisite: Successful completion of previous level of study.

MKP PIG. Piano
1-4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Complete Senior Recital as required. Repertoire: Appropriate repertoire as required. Prerequisite: Successful completion of previous level of study.

MKP PIH. Piano
1-4 credits  Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Complete Senior Recital as required. Repertoire: Appropriate repertoire as required. Prerequisite: Successful completion of previous level of study.

Music Media and Industry

MMI 013. Music Engineering Forum
0 credits  Offered Fall and Spring Semesters
A weekly forum for all Music Engineering Technology and Audio Engineering majors, both undergraduate and graduate. Presentations include faculty lectures, guest lectures by industry professionals, as well as dissemination of information pertaining to audio studios and laboratories.

MMI 014. Music Industry Forum
0 credits  Offered Fall and Spring Semesters
A weekly forum for all Music Industry majors, both graduate and undergraduate, for the purpose of updating current teaching material with the latest developments, presentations of guest speakers from the industry, lectures, and reports from faculty on current employment opportunities.

MMI 103. Introduction to Film Sound Recording
1 credit  Offered By Announcement only
Introduction to the concepts and technologies involved with audio production for visual media. Prerequisite: None/Summer Scholar Program only.

MMI 140. Audio Workshop I
1 credit  Offered Fall Semester
Introduction to recording studio techniques. Demonstrations and projects study microphone type and placement, console operation, digital multitrack recording, and stereo mixdown. Prerequisite: MMI 150. Instructor’s permission required.
MMI 141. Audio Workshop II  
1 credit  
Offered Spring Semester  
Hands-on study of advanced recording techniques. Topics include signal processing, automated mixdown, synchronization, and hard disk recording. Open to EAN Majors only. Prerequisite: MMI 140.

MMI 150. Recording Studio Workshop  
1 credit  
Offered Fall Semester  
Introduction to the recording studio. Projects cover microphone technique, signal flow, console architecture, multitrack recording, overdubs, and mixdown. Prerequisite: Open to MUE and MEC Majors only.

MMI 151. Desktop Audio Production  
1 credit  
Offered Spring Semester  
Introduction to MIDI technology and computer based tools for music production. Prerequisite: MUE majors only.

MMI 160. Ensemble Recording Workshop I  
1 credit  
Offered Fall Semester  
Assisting recording and sound reinforcement engineers in the assigned performance ensemble in both rehearsal and performance. Students also perform in a studio ensemble where they act as both recording engineer and musician. Prerequisite: Open to MUE and MEC Majors only.

MMI 161. Ensemble Recording Workshop II  
1 credit  
Offered Spring Semester  
Students are responsible for the audio needs of an assigned ensemble in both rehearsal and performance. Lectures address audio equipment and practices. Students also perform in a studio ensemble where they act as the recording engineer and musician. Open to MUE majors only. Prerequisite: MMI 160.

MMI 162. Ensemble Recording Workshop III  
1 credit  
Offered Fall Semester  
Computer-based editing of digital audio and digital signal processing. Projects involve sampling, editing, and synchronization of digital media. In addition, students work in the recording studio, engineering digital multitrack recordings and mixdowns of advanced jazz and composition ensembles. Prerequisite: MMI 161. Open to MUE and MEC Majors only.

MMI 163. Ensemble Recording Workshop IV  
1 credit  
Offered Spring Semester  
Hardware and software aspects of MIDI studio technology. Projects involve computer-based sequencer control of synthesizers and signal processors. In addition, students work in the recording studio, engineering digital multitrack recordings and mixdowns of advanced jazz and composition ensembles. Open to MUE Majors only. Prerequisite: MMI 162.

MMI 170. Audio Design Workshop I  
1 credit  
Offered By Announcement only  
Fundamentals of audio system design and architecture including basic audio signal analysis and theory, electronics fundamentals, equipment specifications, and studio installation techniques. Students will design and troubleshoot audio projects including audio adapters, direct-injection devices, and passive audio circuits. Open to MUE Majors only.

MMI 171. Audio Design Workshop II  
1 credit  
Offered Fall Semester  
Analog audio system design and architecture including dynamics processing, amplifier and filter theory, balanced and single-ended systems, circuits, and advanced equipment specifications. Students design and troubleshoot audio projects including microphone pre-amps, equalizers, noise-gates, and power amplifiers. Prerequisite: EEN 201. Open to MUE and MEC Majors only.
MMI 172. Audio Design Workshop III  
1 credit  
Offered Spring Semester  
Digital audio system design and architecture including analog-digital conversion, digital I/O hardware specifications, audio effects processors and digital audio recorder alignment techniques. Students design and troubleshoot audio projects including A/D converters, S/PDIF I/O, and DAT recorders. Open to MUE and EAN Majors only. Prerequisite: MMI 171.

MMI 173. Multinational Recorded Music Industry  
3 credits  
Offered Spring Semester  
An introductory course presenting a structural overview of the music business and entertainment industries and the Music Industry Program. Historical development of music as a business and the development of the market place for both music and musicians. Emphasis is placed on contemporary music business practices. Topics include songwriting, publishing, musical instrument sales, artist management, arts management, professional organizations, copyright law, record industry, unions and guilds, and career development.

MMI 201. Introduction to Music Recording  
3 credits  
Offered Fall Semester  
An overview study of the theory and practice of music recording, with emphasis on modern recording studio practices. Topics include physics of sound, psychoacoustics, studio design, microphones, loudspeakers, consoles, signal processing, digital audio, MIDI, and synchronization. Prerequisite: Open to MUE and MEC Majors only.

MMI 273. Artist Management and the Live Entertainment Industry  
2 credits  
Offered Spring Semester  
Views of the live entertainment industry from the perspective of the performing artist, artist manager, talent agent, attorney, and concert promoter. Consideration is given to the interpersonal, business, and contractual relationships and their impact on the performing artist’s career. Strategies for career development are addressed and the ground rules of publicity, public relations, and promotion explored and applied in practical situations through special individual and team projects.

MMI 274. Introduction to Music Copyright Law  
2 credits  
Offered Spring Semester  
A study of essential provisions of the 1976 Copyright Act and the Protection of Intellectual Property, covering the principles and practices of modern music publishing and international co-publishing. Students examine the complexities of copyright right law as it relates to the music industry.

MMI 275. Record Company Marketing  
1 credit  
The course focuses on marketing techniques unique to the record industry by providing the students with practical interactive experience. Aspects of regional and niche marketing are explored extensively. Students market specific products. Prerequisite: MBEI majors only.

MMI 301. Audio for Film and Video  
3 credits  
Offered By Announcement only  
Course provides fundamentals of audio control, recording, microphone use, transducer theory, signal modification, audio aspects of videotape and film, location recording, synchronization, and principles of digital audio. Prerequisite: Permission of film department.
MMI 307. Introduction to the Internet
2 credits
Offered Spring Semester
A hands-on introduction to the history, structure, and applications of the Internet. Topics include electronic mail, file transfer (FTP), remote computer access (telnet), file and database retrieval (Archie, WAIS, WWW, Gopher), and discussion groups (USENET, BITNET).

MMI 361. Acoustics
3 credits
Offered Spring Semester
A study of the theoretical principles of acoustics. Principle topics include basic properties, acoustical phenomena, superposition, Fourier Theorem, symmetry, vibrating strings and columns, and musical instruments; a study of architectural acoustics such as growth and decay, absorption coefficients, normal modes, diffusion, isolation, and mass law; design applications such as structural techniques and materials, live end-dead end, room geometry, tuning, TDS and other measurement techniques. Prerequisite: MTH 112 and PHY 102 or 205.

MMI 374. Record Company Promotion
1 credit
Offered Fall Semester
The course provides practical experience in the promotion of a recorded music product. The interaction that occurs between the marketing and promotion departments of a record label is investigated along with personnel responsibilities as they relate to a specific product. Consideration is given to the use of print, radio and television media. Students market specific products. Prerequisite: MBEI majors only.

MMI 375. Record Company Management
1 credit
Offered Spring Semester
The study of management techniques applicable to the record industry and the decision making process. Practical experience is gained in the planning and budgeting of a recorded music product, Coordination problems are covered extensively. Students oversee the release schedules of specific products. Prerequisite: MBEI majors only.

MMI 376. Networking in the Entertainment Industry
1 credit
Offered Fall Semester
The students become familiar with various ways to explore opportunities in the entertainment industry and the value of networking. Prerequisite: MBEI majors only.

MMI 377. Royalties in the Music Publishing Industry
1 credit
Offered Spring Semester
A practical study of royalty payment formulas and procedures used in the music publishing industry. Prerequisite: MBEI Majors only.

MMI 401. Audio Electronics
3 credits
Offered By Announcement only
An introductory course in audio electronics theory and professional audio applications such as recording studio equipment and audio effects design. Coursework includes basic electronic components and theories, passive filtering, transformers, operational amplifiers, vacuum tubes, non-linear elements including diodes and JFETs, graphic, parametric and shelving equalizers, compressors, limiters, gates, microphone preamps, analog effects including reverb, flanging, and chorusing. Students will design custom audio circuits and use computer simulations to understand theory of operation. Prerequisite: MMI 201. Corequisite: EEN 201. Open to MUE and MEC Majors only.
MMI 436. Audio Postproduction
3 credits Offered Fall Semester
Basic audio for video and film postproduction, including the study of time code, synchronization, electronic editing, video and film transports, dolby stereo, equipment interfacing, and future developments. Prerequisite: Permission of instructor.

MMI 454. Entertainment Industry Practicum
1 credit Offered Fall and Spring Semesters
Practical experience in an entertainment industry organization.

MMI 455. Internship in Entertainment Industry
3 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical experience in different areas of the entertainment industry under the supervision of professional firms and the faculty advisor. Prerequisite: MMI 376; MBEI Majors only.

MMI 456. Internship in Entertainment Industries II
0 credits Offered First and Second Summer Sessions
Continuation of MMI 455. Prerequisite: MMI 455.

MMI 460. Recital Recording and Sound Reinforcement
1 credit Offered Fall and Spring Semesters
Practical experience in live concert recording, editing and mastering, and sound reinforcement, under supervision of professional on-campus engineers. Prerequisite: Open only to MUE and MEC Majors only.

MMI 465. Internship in Music Engineering
1-3 credits
Practical experience in the music engineering industry such as work in a recording studio, broadcast company, hardware or software manufacturer, under professional supervision. Prerequisite: Open only to MUE and MEC Majors only.

MMI 490. Senior Honors Thesis I
3 credits Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MMI 491. Senior Honors Thesis II
3 credits Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MMI 493. Special Projects
1-3 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised readings and other activities in specific areas of Music Media and Industry. Prerequisite: Permission of department chairman and dean required.

MMI 501. Transducer Theory
3 credits Offered Spring Semester
Course covers the fundamentals of electromagnetism and audio transducer theory including loudspeaker and microphone systems. Classical electro-acoustical analysis of transducers including acoustic suspension, bass-reflex, transmission line, electrostatic and horn loudspeakers, dynamic, ribbon and condenser pressure, and pressure-gradient microphones. Students use computer-aided design programs and Thiele-Small parameterization to model loudspeakers and measure loudspeaker responses. Open to MUE and EAN Majors only. Prerequisite: EEN 201, PHY 102 or 205.
MMI 502. Digital Audio I
3 credits
Offered Fall Semester
A study of the theory and practice of digital audio topics including discrete time sampling, quantization, dithering, PCM, A/D and D/A conversion, digital filtering, oversampling, modulation codes, timebase, error correction codes, magnetic storage, DAT, and optical storage. Prerequisite: MMI 501.

MMI 503. Digital Audio II
3 credits
Offered Spring Semester
A study of the theory and practice of digital audio topics including fiber optics and networks, compact disc, interconnection, psychoacoustics, low bit-rate perceptual coding, MPEG, digital audio broadcasting, sigma-delta conversion, noise shaping, digital video, and emerging technologies. Open to MUE and EAN Majors only. Prerequisite: MMI 502.

MMI 504. Audio Analysis and Synthesis
3 credits
Offered Fall Semester
Theory, design, and development of computer audio synthesizers and analyzers. Students implement software synthesizers including analog and physical modeling, wave-table, wave-shaping, and FM designs. Classical and modern theories of timbre and time-frequency analysis are included. Prerequisite: MMI 503. Open to MUE and MEC Majors only.

MMI 505. Advanced Audio Signal Processing
3 credits
Offered Spring Semester
Theory, design and development of audio signal processing techniques. Topics include DSP architectures, systems design, algorithm development, and applications. DSP development tools used to write, debug, and test programs including time-domain based effects such as reverb, chorus, flanging, and digital delay as well as frequency-domain projects such as FIR, IIR, and FFT filters and vocoders. Prerequisite: MMI 504, Open to MUE Majors only.

MMI 507. Introduction to the Internet
2 credits
Offered Spring Semester
A hands-on introduction to the history, structure, and applications of the Internet. Topics include electronic mail, file transfer (FTP), remote computer access (telnet) file, database retrieval (Archie, WAIS, WWW, Gopher), and discussion groups (USENET, BITNET).

MMI 520. Audio Technology for Musicians
2-3 credits
Introduction and overview of audio technology with emphasis on music recording, production equipment, and techniques. Topics include microphones, loudspeakers, mixing consoles, interconnection, amplifiers, digital processing, time code, and surround sound. Open to non-MUE majors. Prerequisite: Junior standing and permission of instructor.

MMI 530. Entrepreneurship for Musicians
3 credits
Offered By Announcement only
Course explores a wide range of options for musicians who want to pursue music business careers in their regional music markets. Students examine opportunities in performance, recording, composition, education, and more. Emphasis is placed on the packaging of musical skills in the marketplace and on the financial management of a small proprietary music business. As a result, the student musician will be prepared to make career decisions with foresight and planning.

MMI 573. International Music Publishing
2 credits
Offered Fall Semester
An in-depth study of the international publishing industry with an emphasis on catalog development and exploitation. Prerequisite: MMI 173; MBEI majors and minors only.
MMI 574. A & R Administration and Music Licensing
3 credits
Offered Spring Semester
An in-depth study of the budgeting and administrative procedures employed in the music industry. Topics include artist and repertoire administration, session budgeting, compilation albums, release schedules, master license agreement, business affairs, and industry ethics. Preproduction, production, and postproduction responsibilities are also included and special consideration is given to the artist recording contract. Prerequisite: MMI 173; junior standing; MBEI majors and minors only.

MMI 575. Entertainment Industry Contract Basics
3 credits
Offered Fall Semester
Business relations between the record company, artist, producer and licensees, both domestic and foreign. Analysis of actual contracts between parties, implication of newer technology on the industry. Prerequisite: MMI 173; senior standing; MBEI majors and minors only.

MMI 578. Royalties in the Recorded Music Industry
1 credit
Offered Spring Semester
A practical study of royalty payment formulas and procedures used in the recorded music industry. Prerequisite: MBEI majors only.

MMI 593. Special Topics MMI
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Music Media and Industry. Prerequisite: Permission of the Dean.

MMI 599. Practicum in Music
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical professional experience. Prerequisite: Music majors only.

Musicology

MCY 016. Musicology Forum
0 credits
Offered By Announcement only

MCY 101. The World of Music and its Powers
1 credit
Offered Fall Semester
For all new music majors, a novel introduction to music now and then, here and there; its ideas, its relations to other arts, and its role in human life. Prerequisite: Freshman Music Major Status.

MCY 124. The Evolution of Jazz
3 credits
Offered Fall and Spring Semesters and First Summer Session
A study of the origin, development, and styles of jazz music and its exponents.

MCY 127. Evolution of Rock
3 credits
Offered Fall and Spring Semesters and Second Summer Session
Rock music from its sources to the present. Aural recognition of rock styles and selected performing artists are included.

MCY 131. The Understanding and Enjoyment of Music I
3 credits
Offered Fall Semester and First Summer Session
A non-technical introduction to the language, genres, media, and forms of music, utilizing lectures, films, recordings, and live performances.
MCY 132. The Understanding and Enjoyment of Music II  
3 credits  
Offered Spring Semester and Second Summer Sessions  
A non-technical introduction to the history of music, from ancient times to the present day, including classical music, folk music and jazz, utilizing lectures, films, recordings, and live performances.

MCY 324. Music in Hebrew Culture  
3 credits  
Offered Spring Semester  
A study of the folk, traditional, liturgical, and art music of the Jews. Particular attention is given to music on Jewish subjects, music employing traditional Jewish resources, and music by contemporary Jewish and Israeli composers.

MCY 325. Honors Music Masterworks  
3 credits  
Offered Fall and Spring Semesters  
A study of selected masterpieces of music drawn from significant stylistic periods of music history and representing important generic forms of musical composition. Enrollment is limited to honors students who are non-music majors. Prerequisite: Admission to Honors Program and junior standing.

MCY 333. Introduction to Cuban Music  
3 credits  
Offered Fall and Spring Semesters  
A survey of Cuban Music from the early European settlement to the present. Course addresses African and Caribbean influences and the amalgamation into new national styles, as well as current musical activity on the island and in expatriate communities.

MCY 361. Honors Music of the Mediaeval, Renaissance, and Baroque Periods  
3 credits  
Offered Fall Semester  
A comprehensive, in-depth study of the musical styles and genres of the Mediaeval, Renaissance, and Baroque Eras. Important musical figures of these periods and analytical studies of important pieces of music from these periods are discussed. This course replaces MCY 331 for Honors Program students. Prerequisite: Admission to Honors Program.

MCY 362. Honors Music of the Classical, Romantic, and Modern Periods  
3 credits  
Offered Spring Semester  
A comprehensive, in-depth study of the musical styles and genres of the Classical, Romantic, and Modern Eras. Important musical figures of these periods and analytical studies of important pieces of music from these periods are addressed. This course replaces MCY 332 for Honors Program students. Prerequisite: Admission to Honors Program.

MCY 490. Senior Honors Thesis I  
3 credits  
Offered Fall and Spring Semesters  
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MCY 491. Senior Honors Thesis II  
3 credits  
Offered Fall and Spring Semesters  
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MCY 493. Special Projects  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Supervised readings and other activities in specific areas of Musicology. Prerequisite: Permission of department chairman and dean required.
MCY 520. History and Literature of the Wind Band  
3 credits  
Offered Spring Semester  
An historical survey of wind band literature, the evolution of the military band, the wind band, and the wind orchestra. Prerequisite: Advanced standing.

MCY 521. Symphonic Literature  
3 credits  
Offered Fall Semester  
A survey of orchestral music from the end of the seventeenth century to the present.

MCY 522. Operatic Literature  
3 credits  
Offered Spring Semester  
The history and literature of opera from the end of the sixteenth century to the present.

MCY 524. Contemporary Music  
3 credits  
Offered Fall Semester  
Music of the 20th century, with emphasis on developments since 1945. Prerequisite: Permission of instructor.

MCY 525. Art Song Literature  
3 credits  
Offered Fall Semester  
A survey of the solo vocal literature from the 16th century to the present, with particular emphasis on the 19th-century French and German repertoire. Prerequisite: Permission of instructor.

MCY 526. Keyboard Literature I  
3 credits  
Offered Fall Semester  
A survey of keyboard literature from its beginning to approximately 1750 emphasizing changes in styles of writing and expression, development of techniques suited to the primary instruments in use (including the early organ, clavichord, harpsichord and fortepiano), ornamentation both specified and improvised, forms, and ideas for interpretation based on historical sources. Prerequisite: Permission of instructor.

MCY 527. Keyboard Literature II  
3 credits  
Offered Spring Semester  
A survey of solo keyboard literature from approximately 1750 to the present emphasizing changes in styles of writing and expression, development of technique suited to the primary instruments in use (including the clavichord, harpsichord, fortepiano and modern piano), embellishment both specified and improvised, forms, and ideas for interpretation based on historical sources (including facsimiles, printed scores, written records and sound recordings, particularly those by the composers themselves). Prerequisite: Permission of instructor.

MCY 528. Music Bibliography  
3 credits  
Offered Fall Semester  
Course presents research materials, including dictionaries, encyclopedias, historical collections, scholarly editions, complete works, books, articles, and lists dealing with specialized areas of music history and literature. Prerequisite: Graduate standing, or permission of instructor.

MCY 529. Music of the Baroque Period  
3 credits  
Offered Spring Semester  
Literature and history of music from the end of the sixteenth to the middle of the eighteenth centuries. Prerequisite: Six credits of undergraduate music history.

MCY 530. Music of the Classical Period  
3 credits  
Offered Fall and Spring Semesters and Second Summer Session  
The musical styles which developed between the mid-eighteenth century and the nineteenth century. Prerequisite: Permission of instructor.
MCY 532. History of Chamber Music
3 credits Offered Spring Semester
Styles and forms in chamber music literature from the seventeenth century to the present. Prerequisite: Permission of instructor.

MCY 533. Music of the Romantic Period
3 credits Offered Fall Semester
The musical styles which developed during the nineteenth century. Prerequisite: Senior standing or permission of instructor.

MCY 535. Choral Literature I
2 credits Offered Fall Semester
Choral music of the sixteenth through the eighteenth centuries. A combination of lecture-discussion and class performance. Prerequisite: Permission of instructor.

MCY 536. Choral Literature II
2 credits Offered Fall Semester
Choral music of the nineteenth and twentieth centuries. A combination of lecture-discussion and class performance. Prerequisite: Permission of instructor.

MCY 537. Music in the United States
3 credits Offered Spring Semester
A survey of music in the United States from colonial times to the present, with emphasis on the social, economic, and political conditions which affected it. Art music (sacred and secular), popular music in all idioms, the music industry as it evolved in the U.S., and the influence of American music on the music of other countries. Prerequisite: Permission of instructor.

MCY 539. Special Topics in Musicology
2 credits Offered Fall Semester
Subject matter offerings based upon student demand and availability of faculty. The topic to be announced in the class schedule. May be repeated if the Course may be repeated if the content is different.

MCY 541. Music of the Mediaeval, Renaissance, and Baroque Periods
3 credits Offered Fall Semester and First Summer Session
A comprehensive, in-depth study of the musical styles and genres of the Mediaeval, Renaissance, and Baroque Eras., Important musical figures of these periods and analytical studies of important pieces of music from these periods are addressed. Prerequisite: Music major or permission of instructor.

MCY 542. Music of the Classical, Romantic, and Modern Periods
3 credits Offered Spring Semester and Second Summer Sessions
A comprehensive, in-depth study of the musical styles and genres of the Classical, Romantic, and Modern Eras of important musical figures of these periods, and analytical studies of important pieces of music from these periods. Prerequisite: Music major, or permission of instructor.

MCY 553. Miami’s Musical Heritage
3 credits Offered Spring Semester and First Summer Session
A study of the musical traditions and practices of the various cultures that are part of Miami’s unique multi-ethnic society.

MCY 554. Music Cultures of the World
3 credits Offered Spring Semester
A study of music culture, ranging from the music of non-literate and folk societies through Asian art music. Open to non-majors. Prerequisite: Permission of instructor.
MCY 583. History of the American Musical Theatre
3 credits
Offered Fall and Spring Semesters
An examination of the development of musical theatre from its European opera and operetta background to an indigenous American art form. The areas to be explored include the rise and fall of various genre of musical shows, integration of story, song and dance, important producers, directors, lyricists, composers, and new fields such as director-choreographer. The development of an American cultural consciousness and political and socio-economic trends of various decades that greatly influenced the content and form of musical shows is also examined.

MCY 593. Special Topics MCY
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Musicology. Prerequisite: Permission of the Dean.

MCY 599. Practicum in Music
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical professional experience. Prerequisite: Music majors only.

Studio Music and Jazz

MSJ 003. Jazz Forum
0 credits
Offered Fall and Spring Semesters

MSJ 011. Saxophone Forum
0 credits
Offered Fall and Spring Semesters
Course provides a weekly forum for all saxophone principals. Student performances, guest artists, master classes, and listening to selected recordings are part of the curriculum. Prerequisite: Saxophone principal.

MSJ 018. Jazz Vocal Forum
0 credits
Offered Fall and Spring Semesters

MSJ 088. Jazz Piano Forum
0 credits
Offered Fall and Spring Semesters
Jazz Piano Forum is a weekly performance venue for jazz piano principals and majors which may include guest clinicians and artists.

MSJ 113. Analysis and Evolution of Jazz Styles
3 credits
Offered Spring Semester
A study and analysis of recorded improvised solos by major jazz artists during various historical periods. Prerequisite: Permission of instructor. Required of Studio Jazz Major.

MSJ 123. Survey of Jazz Literature
2 credits
Offered Fall Semester
A survey examining jazz artists, styles, and cultural milieu with emphasis on the development of jazz concepts through the refinement of listening skills. Prerequisite: MSJ majors.

MSJ 124. Introduction to Jazz Improvisation
3 credits
Offered Fall Semester
Introduction to the harmonic, melodic, and rhythmic techniques of Jazz Improvisation.

MSJ 125. Introduction to Jazz Improvisation/Vocal
3 credits
Offered By Announcement only
Introduction to the harmonic, melodic, and rhythmic techniques of Jazz Improvisation.
MSJ 133. Jazz Keyboard Ensemble
1 credit
Offered Fall and Spring Semesters
Prerequisite: Audition; permission of instructor.

MSJ 134. E.C.M. Ensemble
1 credit
This ensemble performs music typical of the contemporary European jazz styles such as those characterized by the Edition of Contemporary Music (E.C.M.) Recording Company. Prerequisite: Audition.

MSJ 138. Vocal Recording Ensemble
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 139. Small Jazz Vocal Ensemble
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 140. Small Jazz Ensemble
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 141. Small Jazz Ensemble I
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 142. Small Jazz Ensemble II
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 143. Small Jazz Ensemble III
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 144. Small Jazz Ensemble IV
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 145. Small Jazz Ensemble V
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 146. Small Jazz Ensemble VI
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 147. Small Jazz Ensemble VII
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 148. Studio Rhythm Section
1 credit
Offered Fall and Spring Semesters
Prerequisite: By audition.

MSJ 149. Reading Ensemble
1 credit
A small to medium sized instrumental ensemble which focuses on reading and interpretation. A broad range of representative styles will be covered. Prerequisite: Placement audition.

MSJ 150. Studio Jazz Band
1 credit
Offered Fall and Spring Semesters
Prerequisite: By Audition.
MSJ 151. Concert Jazz Band
1 credit 
Prerequisite: By Audition. Offered Fall and Spring Semesters

MSJ 152. Jazz Band II
1 credit 
Prerequisite: By Audition. Offered Fall and Spring Semesters

MSJ 153. Jazz Band III
1 credit 
Prerequisite: By Audition. Offered Fall and Spring Semesters

MSJ 155. Monk/Mingus Ensemble
1 credit 
This ensemble is dedicated to the study and performance of the music of the influential jazz composers Charles Mingus and Thelonious Monk. Prerequisite: By audition. Offered Fall Semester

MSJ 156. Funk/Fusion Ensemble
1 credit 
Small jazz ensemble focusing on contemporary electric jazz/rock/fusion/Latin styles. Emphasis is placed on original compositions by the members of the ensemble. The most common instrumentation is bass, drums, piano/synthesizer, guitar, and saxophone. Prerequisite: Audition. Offered Fall and Spring Semesters

MSJ 157. Horace Silver Ensemble
1 credit 
This ensemble is dedicated to the study and performance of the music of Horace Silver. Prerequisite: Audition. Offered Spring Semester

MSJ 158. Bebop Ensemble
1 credit 
Prerequisite: By Audition. Offered Fall and Spring Semesters

MSJ 159. Rock Ensemble
1 credit 
Prerequisite: By Audition. Offered Fall and Spring Semesters

MSJ 160. Avant Garde Ensemble
1 credit 
This ensemble offers students the opportunity to develop the “free form” improvisation in either the bebop based style of Ornette Coleman or the fusion oriented style as typified by Bill Laswell. Prerequisite: Audition. Offered Fall and Spring Semesters

MSJ 161. Electric Bass Ensemble
1 credit 
Prerequisite: By Audition. Offered Fall and Spring Semesters

MSJ 162. Jazz Saxophone Ensemble
1 credit 
Prerequisite: By Audition. Offered Fall and Spring Semesters

MSJ 164. Contemporary Rhythm Section Techniques I
1 credit 
Prerequisite: By Audition. Offered Fall and Spring Semesters

MSJ 165. Contemporary Rhythm Section Techniques II
1 credit 
Fundamentals of rhythm section playing for guitarists, pianists, bassists, and drummers. It covers a variety of contemporary styles within the rock, jazz, Latin, and pop idioms. Students are grouped into ensembles which perform in class weekly. Prerequisite: By audition. Offered Fall and Spring Semesters
MSJ 166. **Small Jazz Ensemble Lab**  
0 credits  
Offered Fall and Spring Semesters  
Prerequisite: By Audition.

MSJ 167. **Salsa Ensemble**  
1 credit  
Offered Fall and Spring Semesters

MSJ 169. **Jazz Guitar Ensemble I**  
1 credit  
Offered Fall and Spring Semesters  
A small instrumental ensemble comprised of five electric guitars which perform with bass and drums in a wide variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 170. **Jazz Guitar Ensemble II**  
1 credit  
Offered Fall and Spring Semesters  
A small instrumental ensemble comprised of five electric guitars which perform with bass and drums in a wide variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 171. **Jazz Guitar Ensemble III**  
1 credit  
Offered Fall and Spring Semesters  
A small instrumental ensemble comprised of five electric guitars which perform with bass and drums in a wide variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 172. **Jazz Guitar Ensemble (Workshop I)**  
1 credit  
Offered Fall and Spring Semesters  
A small instrumental reading ensemble, comprised of four to eight electric guitars, which studies a variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 173. **Jazz Guitar Ensemble (Workshop II)**  
1 credit  
Offered Fall and Spring Semesters  
A small instrumental reading ensemble, comprised of four to eight electric guitars, which studies a variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 195. **Jazz Vocal Ensemble I**  
1 credit  
Offered Fall and Spring Semesters  
A choir of 12 to 16 voices, with rhythm section, which perform a wide variety of jazz and pop styles. Prerequisite: Permission of conductor.

MSJ 196. **Jazz Vocal Ensemble II**  
1 credit  
Offered Fall and Spring Semesters  
A choir of 12 to 16 voices, with rhythm section, which perform a wide variety of jazz and pop styles. Prerequisite: Permission of conductor.

MSJ 197. **Jazz Vocal Ensemble III**  
1 credit  
Offered Fall and Spring Semesters  
A choir of 12 to 16 voices, with rhythm section, which perform a wide variety of jazz and pop styles. Prerequisite: Permission of instructor.

MSJ 198. **Synthesizer Ensemble**  
1 credit  
Offered Fall and Spring Semesters  
Prerequisite: Permission of instructors.

MSJ 201. **Jazz Vocal Styles I**  
1 credit  
Offered Fall and Spring Semesters  
Analysis and application of singing styles and attendant skills, techniques and repertoire required in performance and recording of jazz, popular music, and other current idioms. Prerequisite: Permission of instructor.
MSJ 202. Jazz Vocal Styles II
1 credit
Vocal Coaching of swing and traditional ballad styles with emphasis on communication of lyric content and phrasing. Prerequisite: MSJ 201 or permission of instructor.

MSJ 203. Jazz Piano Class I
1 credit
Offered Fall and Spring Semesters
Prerequisite: MKP 102 or placement audition.

MSJ 204. Jazz Piano Class II
1 credit
Offered Fall and Spring Semesters
Prerequisite: MSJ 203 or placement audition.

MSJ 209. Jazz Guitar Theory I
2 credits
Offered Fall Semester
A study of modern jazz harmony as related to the electric guitar. Prerequisite: Permission of instructor.

MSJ 210. Jazz Guitar Theory II
2 credits
Offered Spring Semester
Continuation of MSJ 209. Prerequisite: MSJ 209.

MSJ 220. Basic Drumset Styles and Techniques (Part 1)
3 credits
Offered By Announcement only
This course explores the basic sticking, swing, backbeat drumset techniques, basic world drumset styles, and chart reading.

MSJ 226. Jazz Piano Trio Class
1 credit
Offered Fall Semester
A format for piano, bass, and drums examining and performing the jazz piano trio literature at the advanced level. Prerequisite: MSJ majors or permission of instructor.

MSJ 227. Jazz Rhythm Section Techniques
1 credit
Offered By Announcement only
A jazz ensemble for piano, bass, drums, and horns that offers advanced concepts in small group interactive performance. Prerequisite: MSJ majors or permission of instructor.

MSJ 301. Jazz Vocal Styles III
1 credit
Offered Fall Semester
Course provides performance experience in the Rock/Funk and Rock Ballad idioms that require strong vocal projection and presentation. Prerequisite: MSJ 202 or permission of the instructor.

MSJ 302. Jazz Vocal Styles IV
1 credit
Offered By Announcement only
Advanced techniques for the Jazz/Pop Vocalist in live performance. Prerequisite: MSJ 301 or permission of instructor.

MSJ 305. Jazz Piano Class III
1 credit
Offered Fall and Spring Semesters
Prerequisite: MSJ 204 or placement audition.

MSJ 306. Jazz Piano Class IV
1 credit
Offered Fall and Spring Semesters
Prerequisite: MSJ 305 or placement audition.
MSJ 320. Basic Drumset Styles and Techniques (Part 2)  
3 credits  
Offered By Announcement only  
This course is a continuation of MSJ 220. It explores advanced sticking, swing, backbeat drumset techniques, advanced world drumset styles, and chart reading. Prerequisite: MSJ 220.

MSJ 371. Jazz Improvisation Theory I  
3 credits  
Offered Fall Semester  
Fundamentals of jazz harmony with emphasis on simple chord progressions, altered scales, and modes. Prerequisite: Permission of instructor.

MSJ 372. Improvisation II  
3 credits  
Offered Spring Semester  
Fundamentals of jazz harmony with emphasis on complex harmonic progressions and tunes. Prerequisite: MSJ 371, or permission of instructor.

MSJ 490. Senior Honors Thesis I  
3 credits  
Offered Fall and Spring Semesters  
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MSJ 491. Senior Honors Thesis II  
3 credits  
Offered Fall and Spring Semesters  
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MSJ 493. Special Projects  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Supervised readings and other activities in specific areas of Studio Music and Jazz. Prerequisite: Undergraduate Music students only. Dean's approval and signature required.

MSJ 499. Senior Recital  
1 credit  
Offered Fall and Spring Semesters  
A public recital of one hour or more. Course is required of all performance majors. Prerequisite: Permission of instructor.

MSJ 509. Jazz Composition I  
2 credits  
Offered Fall Semester  
Application of advanced composition techniques to various contemporary Jazz styles making extensive use of analysis of established compositions. Emphasis is placed on small group performance. Prerequisite: MTC 211 and MSJ JPD or permission of instructor.

MSJ 510. Jazz Composition II  
2 credits  
Offered Spring Semester  
This course is a continuation of MSJ 500 with an emphasis on melody writing, reharmonization techniques, pentatonic/blues composition, and an introduction to advanced harmonic materials. Prerequisite: MSJ 509.

MSJ 516. Jazz Vocal Arranging  
2 credits  
Offered Fall Semester  
Analysis and techniques of jazz vocal writing. Prerequisite: MSJ 519.

MSJ 519. Advanced Modern Arranging I  
3 credits  
Offered Fall Semester  
Advanced arranging and composition for the Jazz and studio ensemble. Prerequisite: Permission of instructor.
MSJ 520. **Advanced Modern Arranging II**
3 credits
Offered Spring Semester
Advanced arranging and composition for the Jazz and studio ensemble. Prerequisite: Permission of instructor.

MSJ 521. **Advanced Modern Arranging III**
3 credits
Offered Spring Semester
Course addresses scoring for large jazz ensemble, utilizing chord scale voicings and line writing techniques. Emphasis is placed on orchestration styles such as Duke Ellington, Gil Evans, and Thad Jones. Prerequisite: Permission of instructor.

MSJ 522. **Introduction to Midi Sequencing and Digital Workstations**
2 credits
An introduction to Midi Sequencing with hands-on experience working with a computer sequencing workstation. Topics include sequencing, quantizing, editing, mixing, and effects processing. Prerequisite: MSJ 519/520 or permission of instructor.

MSJ 544. **Jazz Pedagogy and Administration**
3 credits
Offered Spring Semester
The philosophy, methods, and materials of instruction pertinent to the teaching and management of a jazz and commercial curriculum at the high school and college level. Includes preparation of model curricula and supervised instruction. Prerequisite: MSJ 565 and 620 or permission of instructor.

MSJ 560. **Advanced Jazz Improvisation Theory**
3 credits
Offered Fall and Spring Semesters
Review of fundamentals and introduction of advanced topics in jazz harmony and scale resources for improvisation. Prerequisite: Placement audition and permission of instructor.

MSJ 565. **Advanced Improvisation I**
3 credits
Offered Fall Semester
Use of stylistic nuance with emphasis on melodic development, complex harmonies, time-feel, and phrasing. Open only to senior or graduate majors in Studio Music and Jazz. Prerequisite: MSJ 372 and JPD or permission of instructor.

MSJ 566. **Advanced Improvisation II**
3 credits
Offered Spring Semester
Refinement of improvisation concepts leading towards the establishment of a personal style of playing. Open only to senior or graduate majors in Studio Music and Jazz. Prerequisite: MSJ 565 or permission of instructor.

MSJ 589. **Jazz Accompanying**
2 credits
Offered By Announcement only
A comprehensive study in accompaniment concepts for pianists/guitarists reflecting contemporary and traditional jazz styles. Prerequisite: Permission of instructor.

MSJ 593. **Special Topics MSJ**
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Studio Music and Jazz. Prerequisite: Permission of the Dean.

MSJ 599. **Practicum in Music**
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical professional experience. Prerequisite: Music majors only.
MSJ JBA.  **Jazz Bass**  
1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Basic techniques, sight-reading. Major, minor, diminished, and whole tone scales. Chord structure and analysis. Bass line construction, basis of walking lines. Voice leading for bass lines and improvisation. Etudes and studies in all styles. Repertoire: Standards and Jazz. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MSJ JBB.  **Jazz Bass**  
1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Basic techniques, sight-reading. Major, minor, diminished, and whole tone scales. Chord structure and analysis. Bass line construction, basis of walking lines. Voice leading for bass lines and improvisation. Etudes and studies in all styles. Repertoire: Standards and Jazz. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MSJ JBC.  **Jazz Bass**  
1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous materials in addition to solo bass techniques. Advanced arpeggios and scales. Pentatonic theory and applications. Improvisational vocabulary (traditional). Prerequisite: Successful completion of previous levels of study.

MSJ JBD.  **Jazz Bass**  
1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous materials in addition to solo bass techniques. Advanced arpeggios and scales. Pentatonic theory and applications. Improvisational vocabulary (traditional). Prerequisite: Successful completion of previous levels of study.

MSJ JBE.  **Jazz Bass**  
1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous materials in addition to advanced harmonic applications. Expanding traditional improvisational vocabulary. Creating original vocabulary. Prerequisite: Successful completion of previous levels of study.

MSJ JBF.  **Jazz Bass**  
1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous materials in addition to advanced harmonic applications. Expanding traditional improvisational vocabulary. Creating original vocabulary. Prerequisite: Successful completion of previous levels of study.

MSJ JBG.  **Jazz Bass**  
1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous materials in addition to recital preparation. Prerequisite: Successful completion of previous levels of study.
MSJ JBH.  **Jazz Bass**  
**1-3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous materials in addition to recital preparation. Prerequisite: Successful completion of previous levels of study.

MSJ JDA. **Jazz Drumset**  
**1-3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Sticking technique, basic hand/foot patterns. Analysis of styles, history of drum set. Rhythm section interaction. Basic transcription, chart reading. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MSJ JDB. **Jazz Drumset**  
**1-3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Sticking technique, basic hand/foot patterns. Analysis of styles, history of drum set. Rhythm section interaction. Basic transcription, chart reading. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MSJ JDC. **Jazz Drumset**  
**1-3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Advanced analysis or major drum set artists. Advanced transcription. Soloing over form using motives, dynamics, and subdivision, comping patterns. Prerequisite: Successful completion of previous level of study.

MSJ JDD. **Jazz Drumset**  
**1-3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Advanced analysis or major drum set artists. Advanced transcription. Soloing over form using motives, dynamics, and subdivision, comping patterns. Prerequisite: Successful completion of previous level of study.

MSJ JDE. **Jazz Drumset**  
**1-3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Advanced jazz styles and comping, odd note groupings, advanced chart reading, advanced hand/foot patterns. Prerequisite: Successful completion of previous level of study.

MSJ JDF. **Jazz Drumset**  
**1-3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Advanced jazz styles and comping, odd note groupings, advanced chart reading, advanced hand/foot patterns. Prerequisite: Successful completion of previous level of study.

MSJ JDG. **Jazz Drumset**  
**1-3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Displacement, metric modulation, preparation for recital, developing an individual voice. Prerequisite: Successful completion of previous level of study.
**MSJ JDH. Jazz Drumset**

*1-3 credits*  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Displacement, metric modulation, preparation for recital, developing an individual voice. Prerequisite: Successful completion of previous level of study.

**MSJ JGA. Jazz Guitar**

*1-3 credits*  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Left and right hand development. Basic fretboard theory including arpeggios, voice leading (2 string studies), blues and bebop scales. Accompanying: 3-note voicings. Introduction to transcription. Application of the concepts studied to basic repertoire. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

**MSJ JGB. Jazz Guitar**

*1-3 credits*  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Further development of repertoire and continuation of technical studies. Improvisation using arpeggios with tension substitutions. Application of major and melodic minor modes. More advanced transcriptions and refinement of time feel. Prerequisite: Successful completion of previous level of study.

**MSJ JGD. Jazz Guitar**

*1-3 credits*  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Further development of repertoire and continuation of technical studies. Improvisation using arpeggios with tension substitutions. Application of major and melodic minor modes. More advanced transcriptions and refinement of time feel. Prerequisite: Successful completion of previous level of study.

**MSJ JGE. Jazz Guitar**

*1-3 credits*  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Works by Bach, Galbraith and others. Building of standard/jazz repertoire including works by Arlen, Porter, Kern, Parker, Ellington, etc. Improvisation and harmonic studies based on the foregoing. Eartraining as required. Use of Jamey Aebersold play-along series. Prerequisite: Successful completion of previous level of study.

**MSJ JGF. Jazz Guitar**

*1-3 credits*  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Works by Bach, Galbraith and others. Building of standard/jazz repertoire including works by Arlen, Porter, Kern, Parker, Ellington, etc. Improvisation and harmonic studies based on the foregoing. Eartraining as required. Use of Jamey Aebersold play-along series. Prerequisite: Successful completion of previous level of study.
**MSJ JGG. Jazz Guitar**

1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. More advanced repertoire (works by Corea, Hancock, etc.). Continued expansion of harmonic concepts and exploration of chord voicings and applications. Use of Aebersold series. Assistance with senior recital preparation. Prerequisite: Successful completion of previous level of study.

**MSJ JGH. Jazz Guitar**

1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. More advanced repertoire (works by Corea, Hancock, etc.). Continued expansion of harmonic concepts and exploration of chord voicings and applications. Use of Aebersold series. Assistance with senior recital preparation. Prerequisite: Successful completion of previous level of study.

**MSJ JPA. Jazz Piano**

1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technique: Major and melodic minor scales in all keys and diminished and blues scales in all keys, in both hands in at least two octaves with a swing (triplet) subdivision. Student should demonstrate the ability to solve fingerling problems when ascending and descending the keyboard diatonically. Introduction to the ii-V7-I chord progression in all keys as applied to tunes which have a harmonic rhythm of one change per bar such as Cherokee (Noble) and I Love You (Porter). Literature: Study of the twelve-bar blues progression, including tunes such as “Now’s The Time” (Parker), Billie’s Bounce (Parker), Blue Monk (Monk). Memorization of at least two tunes per lesson in their original key, at least 75% of which should be tunes in the “American standard” format featuring composers such as Berlin, Porter, Kahn, Gershwin, etc. All of the above to be performed with bass accompaniment. Introduction to the use of Aebersold recordings. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

**MSJ JPB. Jazz Piano**

1-3 credits  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technique: Major and melodic minor scales in all keys and diminished and blues scales in all keys, in both hands in at least two octaves with a swing (triplet) subdivision. Student should demonstrate the ability to solve fingerling problems when ascending and descending the keyboard diatonically. Introduction to the ii-V7-I chord progression in all keys as applied to tunes which have a harmonic rhythm of one change per bar such as Cherokee (Noble) and I Love You (Porter). Literature: Study of the twelve-bar blues progression, including tunes such as “Now’s The Time” (Parker), Billie’s Bounce (Parker), Blue Monk (Monk). Memorization of at least two tunes per lesson in their original key, at least 75% of which should be tunes in the “American standard” format featuring composers such as Berlin, Porter, Kahn, Gershwin, etc. All of the above to be performed with bass accompaniment. Introduction to the use of Aebersold recordings. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.
MSJ JPC. Jazz Piano  
**1- 3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technique: Arpeggiation of major, minor, diminished and augmented seventh chords, in both hands and in at least two octaves with a swing (triplet) subdivision. Introduction to melodic harmonization through practice of “Shearing Style” and “Drop Two” scaler exercises. Introduction of the ii-V7-I chord progression in all keys as applied to tunes which have a harmonic rhythm of two changes per bar such as Confirmation (Parker) and in Your Own Sweet Way (Brubeck). Literature: Study of the “I Got Rhythm” chord progression. Memorization of at least two tunes per lesson in their original key, at least 75% of which should be in the “American standard” format featuring composers such as Berlin, Porter, Kahn, Gershwin, etc. All of above to be performed with bass accompaniment, or in solo piano format. Study, performance and analysis of transcribed solos such as those found in the Omnibook (Parker). Introduction to solo piano format through study of transcribed pieces. Prerequisite: Successful completion of previous level of study.

MSJ JPD. Jazz Piano  
**1- 3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technique: Selected exercises from the Dohnanyi or Pishna exercise books. Augmented scales and modes of major in all keys, in both hands and in at least two octaves with a swing (triplet) subdivision. Introduction to modal harmony and sideslipping through study of plateau modal compositions (tunes with long sections of the same modality.) Pentatonic scales in all keys. Literature: Blues in the stride solo piano format. Analysis and transcription of artists who played in this style such as Tatum, Johnson, Smith, and Peterson. Memorization of at least two tunes per lesson in at least three key centers, at least 75% of which should be in the “American standard” format featuring composers such as Berlin, Porter, Kahn, Gershwin, etc. All of the above to be performed both with bass accompaniment and in solo piano format with sections in stride style. Introduction to the Bill Evans piano style through performance of his transcribed piano pieces. Prerequisite: Successful completion of previous level of study.

MSJ JPE. Jazz Piano  
**1- 3 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technique: Selected exercises from the Dohnanyi or Pishna exercise books. Augmented scales and modes of major in all keys, in both hands and in at least two octaves with a swing (triplet) subdivision. Introduction to modal harmony and sideslipping through study of plateau modal compositions (tunes with long sections of the same modality.) Pentatonic scales in all keys. Literature: Blues in the stride solo piano format. Analysis and transcription of artists who played in this style such as Tatum, Johnson, Smith, and Peterson. Memorization of at least two tunes per lesson in at least three key centers, at least 75% of which should be in the “American standard” format featuring composers such as Berlin, Porter, Kahn, Gershwin, etc. All of the above to be performed both with bass accompaniment and in solo piano format with sections in stride style. Introduction to the Bill Evans piano style through performance of his transcribed piano pieces. Prerequisite: Successful completion of previous level of study.
MSJ JPF.  **Jazz Piano**

1-3 credits  
**Offered Fall and Spring Semesters**

1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technique: Selected exercises from the Dohnanyi or Pishna exercise books. Augmented scales and modes of major in all keys, in both hands and in at least two octaves with a swing (triplet) subdivision. Introduction to modal harmony and sideslipping through study of plateau modal compositions (tunes with long sections of the same modality.) Pentatonic scales in all keys. Literature: Blues in the stride solo piano format. Analysis and transcription of artists who played in this style such as Tatum, Johnson, Smith, and Peterson. Memorization of at least two tunes per lesson in at least three key centers, at least 75% of which should be tunes in the "American standard" format featuring composers such as Berlin, Porter, Kahn, Gershwin, etc. All of the above to be performed both with bass accompaniment and in solo piano format with sections in stride style. Introduction to the Bill Evans piano style through performance of his transcribed piano pieces. Prerequisite: Successful completion of previous level of study.

MSJ JPH.  **Jazz Piano**

1-3 credits  
**Offered Fall and Spring Semesters**

1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technique: Selected exercises from the Dohnanyi or Pishna exercise books. Augmented scales and modes of major in all keys, in both hands and in at least two octaves with a swing (triplet) subdivision. Introduction to modal harmony and sideslipping through study of plateau modal compositions (tunes with long sections of the same modality.) Pentatonic scales in all keys. Literature: Blues in the stride solo piano format. Analysis and transcription of artists who played in this style such as Tatum, Johnson, Smith, and Peterson. Memorization of at least two tunes per lesson in at least three key centers, at least 75% of which should be tunes in the "American standard" format featuring composers such as Berlin, Porter, Kahn, Gershwin, etc. All of the above to be performed both with bass accompaniment and in solo piano format with sections in stride style. Introduction to the Bill Evans piano style through performance of his transcribed piano pieces. Prerequisite: Successful completion of previous level of study.
MSJ JSA. Jazz Saxophone
1-3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Introduction to principals of saxophone acoustics; introduction to tone production, intonation, tonal color, and blend; basic technique, chords and scale studies; jazz phrasing; establishment of a “tune list” (repertoire); study of improvised Solos through transcription; major scales full range, thirds, diatonic seventh chords in level A and in level B, melodic minor scales full range, thirds, diatonic seventh chords. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MSJ JSB. Jazz Saxophone
1-3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continuation of earlier levels as needed; diminished scales; pentatonic scales/patterns; extended range exercises; application of melodic minor/pentatonic scales; chromatic scale extensions; tritone substitutions. Prerequisite: Successful completion of previous level of study.

MSJ JSC. Jazz Saxophone
1-3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continuation of earlier levels as needed; augmented scale; rhythmic exercises from drum methods; continue extended range studies; a cappella improvisation; studies in melodic/rhythmic development. Prerequisite: Successful completion of previous level of study.

MSJ JSE. Jazz Saxophone
1-3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continuation of tone and technique as needed; augmented scale; rhythmic exercises from drum methods; continue extended range studies; a cappella improvisation; studies in melodic/rhythmic development. Prerequisite: Successful completion of previous level of study.

MSJ JSF. Jazz Saxophone
1-3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continuation of tone and technique as needed; augmented scale; rhythmic exercises from drum methods; continue extended range studies; a cappella improvisation; studies in melodic/rhythmic development. Prerequisite: Successful completion of previous level of study.
MSJ JSG. Jazz Saxophone
1- 3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Recital Preparation. Building of repertoire; concentration on selected influential composers: Ellington, Shorter, Hancock, Miller, Silver, Jobim, Golson, Lieberman, etc. Review of teaching methods, materials. Advanced technique studies: Bozza Etudes Caprices, Lacour 8 Difficult studies. Topics of interest as decided by student in consultation w/teacher. Total 80 tunes (minimum) by end of H level.

MSJ JSH. Jazz Saxophone
1- 3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Recital Preparation. Building of repertoire; concentration on selected influential composers: Ellington, Shorter, Hancock, Miller, Silver, Jobim, Golson, Lieberman, etc. Review of teaching methods, materials. Advanced technique studies: Bozza Etudes Caprices, Lacour 8 Difficult studies. Topics of interest as decided by student in consultation w/teacher. Total 80 tunes (minimum) by end of H level.

MSJ TBA. Jazz Trombone
1- 3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Daily routine/classical etudes. Major, melodic minor, diminished scales, Dorian and Mixolydian modes, dominant 7th arpeggios, minor 7th arpeggios. All major and minor 3rds followed by respective dominant 7ths. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MSJ TBB. Jazz Trombone
1- 3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Daily routine/classical etudes. Major, melodic minor, diminished scales, Dorian and Mixolydian modes, dominant 7th arpeggios, minor 7th arpeggios. All major and minor 3rds followed by respective dominant 7ths. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MSJ TBC. Jazz Trombone
1- 3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous material in addition to blues and rhythm changes in 12 keys. Voice Leading (3rds and 7ths). Transcription techniques/assigned transcriptions. Standard tunes (1 per week). Prerequisite: Successful completion of previous level of study.

MSJ TBD. Jazz Trombone
1- 3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous material in addition to blues and rhythm changes in 12 keys. Voice Leading (3rds and 7ths). Transcription techniques/assigned transcriptions. Standard tunes (1 per week). Prerequisite: Successful completion of previous level of study.

MSJ TBE. Jazz Trombone
1- 3 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous material, in addition to standard tunes (2 per week). 251 licks in major and minor. Diminished patterns. Prerequisite: Successful completion of previous level of study.
**MSJ TBF. Jazz Trombone**

1-3 credits  
Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous material, in addition to standard tunes (2 per week). 251 licks in major and minor. Diminished patterns. Prerequisite: Successful completion of previous level of study.

**MSJ TBG. Jazz Trombone**

1-3 credits  
Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous material in addition to augmented scales and patterns. Pentatonic scales and patterns. Recital preparation. Prerequisite: Successful completion of previous level of study.

**MSJ TBH. Jazz Trombone**

1-3 credits  
Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Previous material in addition to augmented scales and patterns. Pentatonic scales and patterns. Recital preparation. Prerequisite: Successful completion of previous level of study.

**MSJ TPA. Jazz Trumpet**

1-3 credits  
Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Concentration on basic trumpet skills, utilizing the Arbans and Clarke technical studies book. Proper breathing techniques. Major and diminished whole tone scales. Jazz tonguing. Standard jazz repertoire. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

**MSJ TPB. Jazz Trumpet**

1-3 credits  
Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Concentration on basic trumpet skills, utilizing the Arbans and Clarke technical studies book. Proper breathing techniques. Major and diminished whole tone scales. Jazz tonguing. Standard jazz repertoire. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

**MSJ TPC. Jazz Trumpet**

1-3 credits  
Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Concentration of basic skills in addition to range studies utilizing the Wedge breath. Transcribing jazz trumpet solos. A cappella blues in all keys. Prerequisite: Successful completion of previous level of study.

**MSJ TPD. Jazz Trumpet**

1-3 credits  
Offered Fall and Spring Semesters

1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Concentration of basic skills in addition to range studies utilizing the Wedge breath. Transcribing jazz trumpet solos. A cappella blues in all keys. Prerequisite: Successful completion of previous level of study.
MSJ TPE. Jazz Trumpet

1- 3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continuation of range studies in addition to advanced etudes such as Bitsch and Charlier. Advanced jazz repertoire. Diminished and augments scales. Studio techniques. Prerequisite: Successful completion of previous level of study.

MSJ TPF. Jazz Trumpet

1- 3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Continuation of range studies in addition to advanced etudes such as Bitsch and Charlier. Advanced jazz repertoire. Diminished and augments scales. Studio techniques. Prerequisite: Successful completion of previous level of study.

MSJ TPG. Jazz Trumpet

1- 3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Study of advanced jazz repertoire. Recital preparation. Prerequisite: Successful completion of previous level of study.

MSJ TPH. Jazz Trumpet

1- 3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Study of advanced jazz repertoire. Recital preparation. Prerequisite: Successful completion of previous level of study.

MSJ VOA. Jazz Voice

1- 3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirement: Warm-ups, Cool downs and introductory exercises for breath management. Attack in phonation, registration, resonance, articulation, coordination, microphone technique, key selection and vocal hygiene and maintenance. Repertoire: 25 Songs: 6 swing, 6 traditional ballad, 5 bossa/samba, 2 blues/funk, contemporary ballad, 4 student choice. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MSJ VOB. Jazz Voice

1- 3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirement: Warm-ups, Cool downs and introductory exercises for breath management. Attack in phonation, registration, resonance, articulation, coordination, microphone technique, key selection and vocal hygiene and maintenance. Repertoire: 25 Songs: 6 swing, 6 traditional ballad, 5 bossa/samba, 2 blues/funk, contemporary ballad, 4 student choice. Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MSJ VOC. Jazz Voice

1- 3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Repertoire: 24 Songs: 16 selections from Swing, Ballad, Jazz Waltz and Latin idioms. 4 Rock/Funk/R&B arrangements in coordination with MSJ 301. Mini-Concert (4 song set) Note: Sophomore proficiency. Prerequisite: Successful completion of previous level of study.
MSJ VOD. Jazz Voice
1-3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Repertoire: 24 Songs: 16 selections from Swing, Ballad, Jazz Waltz and Latin idioms. 4 Rock/Funk/R&B arrangements in coordination with MSJ 301. Mini-Concert (4 song set) Note: Sophomore proficiency. Prerequisite: Successful completion of previous level of study.

MSJ VOE. Jazz Voice
1-3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Repertoire: 15 Songs, continuation of standard repertoire at more advance and complex level, including bebop, original material, modal tunes and selections of harmonic and melodic complexity with improvisation. Prerequisite: Successful completion of previous level of study.

MSJ VOF. Jazz Voice
1-3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Repertoire: 15 Songs, continuation of standard repertoire at more advance and complex level, including bebop, original material, modal tunes and selections of harmonic and melodic complexity with improvisation. Prerequisite: Successful completion of previous level of study.

MSJ VOG. Jazz Voice
1-3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Repertoire: 15 Songs, same styles as above, Recital preparation, review of repertoire list and audition preparation. Prerequisite: Successful completion of previous level of study.

MSJ VOH. Jazz Voice
1-3 credits Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Repertoire: 15 Songs, same styles as above, Recital preparation, review of repertoire list and audition preparation. Prerequisite: Successful completion of previous level of study.

Music Theory and Composition

MTC 012. Composition Forum
0 credits Offered Fall and Spring Semesters
A weekly forum for all Music Theory/Composition majors, both undergraduate and graduate. Course involves guest lectures by visiting composers and performers, presentations of faculty compositions, and group discussions of important compositional and theoretical issues.

MTC 015. Media Writing and Production forum
0 credits Offered Fall and Spring Semesters
This course provides a weekly forum for sharing information about issues, current developments, and other matters related to commercial music composition and production as a field of study and as a profession. The course is required for all undergraduate MWP majors during each semester.

MTC 101. Composition I
2 credits Offered Fall Semester
Course covers elementary principles of composition; class performance of composition projects is also included. Required of theory-composition majors. Prerequisite: Permission of instructor.
MTC 102. Composition II
2 credits
Offered Spring Semester
Continuation of MTC 101. Prerequisite: MTC 101.

MTC 105. Rudimentary Aural and Sightsinging Skills
1 credit
Offered Fall and Spring Semesters
The rudiments of major/minor melodic sightsinging and rhythmic reading are introduced and drilled. Simple melodic and rhythmic dictation and error detection will be included.

MTC 110. Fundamentals of Music
3 credits
Offered Fall and Spring Semesters
Course is designed for students deficient in the knowledge of the basic fundamentals of music. Includes the study of notation, keys, scales, and chord construction. Credits do not count toward music degree requirements.

MTC 111. Music Theory I
2 credits
Offered Fall and Spring Semesters and First Summer Session
Introduction to basic concepts of melody, harmony, rhythm, and formal structure through analysis and writing. Topics include intervals, scales, elementary melodic and four-part writing, phrase structure and cadences, and diatonic harmony. Laboratory: MTC 121. Prerequisite: MTC 110 or equivalent.

MTC 112. Music Theory II
2 credits
Offered Fall and Spring Semesters and First Summer Session
Continuation of MTC 111. Topics include chord extensions, altered chords, intermediate melodic and four-part writing, binary and ternary structures, and tonality changes. Laboratory: MTC 122. Prerequisite: MTC 111.

MTC 121. Music Theory Laboratory I
1 credit
Offered Fall and Spring Semesters
Laboratory for aural and singing skills. Topics include interval and chord structure recognition, harmonic progressions, dictation-transcription (melody, rhythm, harmony), and error dictation. Prerequisite: MTC 110 or equivalent.

MTC 122. Music Theory Laboratory II
1 credit
Offered Fall and Spring Semesters and First Summer Session
Laboratory for aural and singing skills. Continuation of MTC 121. Prerequisite: MTC 121.

MTC 125. The Nature of Music
3 credits
Offered Fall and Spring Semesters
A study of sound, pitch, rhythm, meter, melody, scales, intervals, tempo, expression terms, and highlights of music in history. Enrollment is limited to honors students who are non-music majors. Prerequisite: Admission to Honors Program.

MTC 148. Electronic Music Ensemble
1 credit
Offered Fall and Spring Semesters
Prerequisite: By Audition.

MTC 182. Composition Workshop
1 credit
Offered Fall and Spring Semesters
Prerequisite: Permission of the instructor.

MTC 197. Studio Rhythm Section
1 credit
Offered Fall and Spring Semesters
Prerequisite: By Audition.
MTC 199. The Other Music Ensemble
1 credit
Offered Fall and Spring Semesters
An in-depth study and performance of 20th century music. Prerequisite: By audition.

MTC 201. Composition III
2 credits
Offered Fall Semester
Principles of composition with special emphasis on stylistic considerations. Prerequisite: MTC 102.

MTC 202. Composition IV
2 credits
Offered Spring Semester
Continuation of MTC 201. Prerequisite: MTC 201.

MTC 203. Pop Composition I
2 credits
Offered Fall Semester
Introduces students to the concept of form in commercial music through a survey of representative past and current works. Emphasis is placed on acoustic repertoire. Assignments include lead sheet transcriptions and an introduction to the 3, 4, and 5-piece rhythm section. Prerequisite: MTC 102, 162, or permission of instructor.

MTC 204. Pop Composition II
2 credits
Offered Spring Semester
Continuation of MTC 203. Survey of lyrics from different pop genres. Compositional assignments are for rhythm section and vocalist, and include the writing and setting of lyrics. Prerequisite: MTC 203 and 251; co-requisite: MTC 252.

MTC 211. Music Theory III
2 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Continuation of MTC 112. Emphasis is placed on chromatic harmony, enriched tonal resources, and larger formal structures. Laboratory: MTC 221. Prerequisite: MTC 112.

MTC 212. Music Theory IV
2 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Continuation of MTC 211. Continued study of chromatic harmony and large instrumental forms. Analysis of late nineteenth century music and the works of Debussy are included. Prerequisite: MTC 211.

MTC 213. Music Notation
1 credit
Offered Fall Semester
Principles, techniques, and skills of automated and manual music notation. Prerequisite: Permission of instructor.

MTC 221. Music Theory Laboratory III
1 credit
Offered Fall and Spring Semesters and First and Second Summer Sessions
Laboratory for aural and singing skills. Continuation of MTC 122. Prerequisite: MTC 122.

MTC 222. Music Theory Laboratory IV
1 credit
Offered Fall and Spring Semesters and First and Second Summer Sessions
Laboratory for aural and singing skills. Continuation of MTC 221. Prerequisite: MTC 221.
MTC 251. Audio, Computers, and MIDI I
1 credit  Offered Fall Semester
Combination lecture and laboratory course designed to familiarize students with audio signal flow concepts and the use of the patch bay, various sound modules, music-related computer hardware, sequencing software, and basic MIDI theory. Some individual lab time is used to realize assignments from MTC 203.

MTC 252. Audio, Computers, and MIDI II
1 credit  Offered Spring Semester
Continuation of MTC 251. Combination lecture and laboratory course with a focus on audio/video synchronization and more advanced MIDI applications. Prerequisite: MTC 203 and 251; co-requisite: MTC 204.

MTC 261. Honors Music Theory III
3 credits  Offered Fall Semester
Conclusion of Honors theory core curriculum. Topics include review of chromatic harmony, introduction to larger instrumental forms, advanced nineteenth-century harmony, and advanced eartraining. This course replaces MTC 212. Prerequisite: MTC 162 or permission of the instructor and admission to the Honors Program.

MTC 301. Composition V
3 credits  Offered Fall and Spring Semesters
Individual compositional projects with an emphasis on smaller formal structure. Prerequisite: MTC 202.

MTC 302. Composition VI
3 credits  Offered Fall and Spring Semesters
Individual compositional projects including all media with an emphasis on extended formal structures. Prerequisite: MTC 301.

MTC 303. Media Composition I
2 credits  Offered Fall Semester
Introduces the student to the 30 and 60-second music format. Addresses psychoacoustic issues as well as stylistic and instrumentation considerations. Compositional assignments include the musicalization of radio commercials, station IDs, TVG themes, and other media applications. Prerequisite: MTC 204, 252, or permission of instructor; co-requisite: MTC 351.

MTC 304. Media Composition II
2 credits  Offered Spring Semester
Continuation of MTC 303. Introduces the student to longer and more complex musical forms. Examines the use of orchestral forces, hybrid (electronic + acoustic) ensembles, and unusual instrumental combinations in contemporary commercial applications. Compositional assignments include television program themes, background music, and short underscoring exercises. Student projects are realized during the course of the semester. Prerequisite: MTC 303 and 416. Co-requisite: enrollment in MIP 320 for 0-credits.

MTC 311. Analysis and Exper
3 credits  Offered Fall and Spring Semesters and First Summer Session
Musical analysis and its relationship to listening and performance. An introduction to musical aesthetics is also included. Prerequisite: MTC 212.

MTC 312. Twentieth Century Techniques
3 credits  Offered Fall and Spring Semesters and Second Summer Session
Analysis of twentieth century compositional resources. Topics include Impressionism, expanded tonal resources, Neo-classicism, serialism, post-serialism, aleatoric procedures, minimalism, and other recent trends. Prerequisite: MTC 212.
MTC 313. 18th Century Counterpoint
3 credits  Offered Fall and Spring Semesters and First Summer Session
Two-part keyboard counterpoint in the style of J. S. Bach, beginning with a modified species approach and including composition of dance-suite movements and inventions. Introduction to three-part writing is also included. Prerequisite: MTC 211.

MTC 318. Band Arranging and Instrumentation
3 credits  Offered Spring Semester
Techniques of arranging and writing for various wind-percussion ensembles with a study of instrumentation. Prerequisite: MTC 211.

MTC 351. Media Composition Lab
1 credit  Offered By Announcement only
Laboratory component to MTC 303. Course can only be taken concurrently with MTC 303.

MTC 401. Composition VII
3 credits  Offered Fall and Spring Semesters
Individual compositional projects including all media with an emphasis on advanced problems in composition. Prerequisite: MTC 302.

MTC 402. Composition VIII
1-3 credits  Offered Fall and Spring Semesters
Advanced Composition. Continuation of MTC 401. Prerequisite: MTC 401 or consent of instructor.

MTC 403. Media Production Project I
2 credits  Offered Fall Semester
Course is designed to provide students with information on subsidiary areas of music production. Topics include aspects of project-based planning such as choice of talent, facilities, budgeting and scheduling considerations, and other related pre-production issues. Course also addresses the multiple roles and responsibilities of the producer. Students demonstrate their understanding of these issues through written assignments and the development of specific projects. Prerequisite: Permission of instructor. Open only to majors following this track.

MTC 404. Media Production Project II
1 credit  Offered Spring Semester
Focus is on audio mixing techniques and other post-production issues. Application of these concepts (as well as those presented in MTC 403) is achieved through the planning and execution of two (2) separate musical production projects, both from inception to completion. The specific scope and goals of each project are defined by both the student and the instructor at the beginning of the semester. Due to the production-intensive requirements of this course, greater credit-hour weight is given to the co-requisite laboratory than to the lecture component. Prerequisite: MTC 403 and MMI 436; corequisite: MTC 452. Open only to majors following this track.

MTC 416. Orchestration
3 credits  Offered Fall and Spring Semesters and Second Summer Session
The uses and possibilities of orchestral instruments as well as scoring for various instrumental groups, including the symphony orchestra. Prerequisite: MTC 211 or permission of instructor.

MTC 452. Media Production Project Lab
2 credits  Offered By Announcement only
Laboratory component to MTC 404. Course can only be taken concurrently with MTC 404.
MTC 490. Senior Honors Thesis I  
3 credits  
Offered Fall and Spring Semesters  
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MTC 491. Senior Honors Thesis II  
3 credits  
Offered Fall and Spring Semesters  
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MTC 493. Special Projects  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Supervised reading, writing, collaboration, and other activities in specific areas. Prerequisite: Permission of department chairman and dean required.

MTC 499. Senior Recital  
1 credit  
Offered Fall and Spring Semesters  
A public recital of original compositions required of all Music Composition majors. Prerequisite: Permission of instructor.

MTC 501. The Aesthetics of Music  
3 credits  
Offered By Announcement only  
Survey of thought and discourse about the nature, roles, values, experiences, and meanings of music. Variety of perspectives, including those of the listener, performer, and composer are addressed. Application to musical interpretation and criticism is included. Prerequisite: MTC 311 or 312 or graduate standing.

MTC 505. Electronic Music Studio  
2 credits  
Offered Fall and Spring Semesters  
Introduction to electroacoustic music and the digital electronic music studio. Computer and MIDI based applications in performance and composition including sequencing, music notation, and electronic orchestration are addressed. Theoretical and aesthetic issues relating to music technology, study of important figures and works. Lectures, reading, listening, and studio assignments leading to individual projects are also included. Prerequisite: MTC 211 or permission of instructor.

MTC 506. MIDI and Control Processing  
2 credits  
Offered Fall Semester  
Computers as control devices for music synthesis. Topics include interfacing microcomputers and synthesizers, programming of controllers, sequencers, patch librarians, sound editors, and other applications. Computer assisted composition and performance techniques, lectures, reading, listening, and studio assignments leading to individual projects are also included. Prerequisite: MTC 505 or permission of instructor.

MTC 507. Digital Sound Synthesis and Processing  
2 credits  
Offered Spring Semester  
Software-based techniques of digital audio recording and editing, sound synthesis/design, audio signal processing, and sound analysis. Lectures, reading, listening, and studio assignments leading to individual projects in synthesis, composition, performance, or programming are included. Prerequisite: MTC 506 or permission of instructor.

MTC 511. Film Scoring I  
2 credits  
Offered Fall Semester  
Seminar in the aesthetics and psychology of mood music, sound-film synchronization, timing techniques, and scoring procedures. Analysis and performance of student projects is included. Prerequisite: MTC 302 or permission of instructor.
MTC 512. **Film Scoring II**  
2 credits  
Offered Spring Semester  
Adaptation of previous semester’s techniques to television scripts and performed  
music. Pre-recording, direct recording, and dubbing procedures are included as  
well as preparation and performance of complete film cues. Each student is  
required to conduct his/her project. Prerequisite: MTC 511.

MTC 513. **16th Century Counterpoint**  
3 credits  
Offered Fall Semester  
Two- and three-voice vocal counterpoint based on Palestrina’s style, beginning  
with studies of strict species and including composition of two- and three-voice  
texted motets. Prerequisite: MTC 211.

MTC 515. **Choral Arranging**  
3 credits  
Offered Spring Semester  
Arranging for choir and vocal groups with and without instrumental  
accompaniment in all styles. Prerequisite: MTC 212.

MTC 516. **Advanced Orchestration**  
3 credits  
Offered Spring Semester  
Scoring for the symphonic orchestra with an emphasis on recent techniques.  
Prerequisite: MTC 416 or permission of instructor.

MTC 517. **Analysis of Popular Music Since 1950**  
3 credits  
Course examines popular music in the second half of the Twentieth Century from  
a music analytical perspective. Critical skills needed for this analysis are identified  
and developed. Analytical techniques for understanding the determination and  
utilization of musical elements and structures in contemporary popular music are  
applied. Various contemporary genres and some precursors are examined and  
partialistic determinants of their compositional and performance models  
are discussed. Prerequisite: Graduate standing or MTC 311 or 312, or permission  
of the instructor.

MTC 518. **Advanced Counterpoint**  
3 credits  
Offered Fall Semester  
Three-voice fugal writing in Bach’s style, followed by compositional projects in a  
variety of twentieth-century contrapuntal styles. Prerequisite: MTC 313 or  
permission of the instructor.

MTC 521. **Multimedia for Musicians**  
3 credits  
Offered By Announcement only  
Presents an overview and introduction to the creation of multimedia projects for  
presentation on the Web. Focus is placed on building websites, and the creation of  
multimedia content for online delivery. Software tools for the manipulation of  
digital media, including audio and video, are utilized in the realization of course  
projects. Prerequisite: MTC 212 and MKP 220, or Graduate standing or  
permission of the instructor.

MTC 567. **Electronic and Computer Music Seminar**  
1- 3 credits  
Offered Fall and Spring Semesters  
Advanced techniques and applications in electronic and computer music. Topics  
may include electronic projects in composition, performance, research,  
programming, or other as approved by instructor. Prerequisite: MTC 505, 506,  
507, or consent of the instructor.

MTC 593. **Special Topics MTC**  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second  
Summer Sessions  
Supervised topics and other activities in specific areas of Music  
Theory-Composition. Prerequisite: Permission of the Dean.
**MTC 599. Practicum in Music**  
0 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Practical professional experience. Prerequisite: Music majors only.

**Music: Vocal Performance**

**MVP 008. Voice Forum**  
0 credits  
*Offered Fall and Spring Semesters*  
A weekly informal recital setting and performance class for voice principals and majors with guest artists, master classes, and faculty presentations. Required for all two, three, and four credit applied voice students.

**MVP 101. Voice Class for Voice Principals**  
1- 2 credits  
*Offered Fall and Spring Semesters*  
Class instruction for beginning voice principals. Fundamentals of singing, breath control, and tone production are taught. Appropriate solo repertoire is assigned. Prerequisite: Permission of instructor.

**MVP 105. Solfege**  
1 credit  
*Offered Fall and Spring Semesters*  
The rudiments of major/minor melodic and rhythmic sight singing are introduced and drilled using the “moveable do” system of Solfege. Prerequisite: Voice majors and principals or permission of instructor.

**MVP 120. Freshman Studio I**  
1 credit  
*Offered Fall Semester*  
First year musical theatre laboratory with strong focus on ensemble, rehearsal, and performance skills. Prerequisite: Open only to first year BM Musical Theatre Majors.

**MVP 144. Vocal Techniques for Non-Majors**  
1 credit  
*Offered Fall and Spring Semesters*  
Class instruction in fundamentals of singing, breath control, tone production, diction, and solo singing for non-music majors. Basic music reading skills are taught.

**MVP 147. Men’s Chorale**  
1 credit  
*Offered Fall and Spring Semesters*  
This ensemble is open to the entire university community. Students will work on all aspects of choral singing, including skills in basic musicianship. This ensemble presents two or three concerts per semester. Prerequisite: By audition.

**MVP 148. Women’s Chorale**  
1 credit  
*Offered Fall and Spring Semesters*  
This ensemble is open to the entire university community. Students will work on all aspects of choral singing, including skills in basic musicianship. This ensemble presents two or three concerts per semester. Prerequisite: By Audition.

**MVP 167. Music Theatre Workshop**  
1 credit  
*Offered Fall and Spring Semesters*  
Participation in a fully-staged production or supervised classwork and projects which integrate the skills of the musical theatre singer/actor. Prerequisite: Permission by audition. Preference given to MUS/THA.

**MVP 168. Musical Theatre Instrumental Ensemble**  
1 credit  
*Offered Fall and Spring Semesters*  
An instrumental ensemble for musical theatre productions. Prerequisite: Permission of instructor.
MVP 181. Choral Conducting I  
1 credit  
Offered Fall Semester  
This course provides practical procedures and materials for beginning conducting students. Students demonstrate basic conducting patterns, preparations, and releases in all meters. Prerequisite: MTC 112, and 122 or equivalent.

MVP 182. Choral Conducting II  
1 credit  
Offered Spring Semester  
This course provides practical procedures and materials for advanced conducting students. Students demonstrate refined skills in conducting musical styles and independent gesture. A strong emphasis is placed on conducting of mixed meters. Prerequisite: MVP 181 or MIP 317.

MVP 183. Civic Chorale  
1 credit  
Offered Fall and Spring Semesters  
Open to the university community, students, faculty, and community members to perform two to three concerts each semester, including one concert each semester with instrumentalists. Students work on all aspects of choral singing. Prerequisite: By audition.

MVP 184. Chamber Singers  
1 credit  
Offered Fall and Spring Semesters  
An ensemble of eighteen to twenty undergraduate and graduate students, the ensemble performs challenging chamber choir repertoire from the Renaissance through the Twentieth Century. Prerequisite: By audition.

MVP 185. UM Chorale  
1 credit  
Offered Fall and Spring Semesters  
This ensemble performs significant choral literature with an emphasis on music of the Twentieth Century and on choral/orchestral works including opera. Open to all qualified undergraduate students, regardless of major. Prerequisite: By audition.

MVP 188. Opera Theater  
1 credit  
Offered Fall and Spring Semesters  
The preparation and public performance of staged operatic scenes and complete operas with supplemental classes in basic acting skills, stage movement, and characterization. Three to four productions, including one with orchestra, are scheduled each academic year. Required for all voice majors; admission by audition for voice principals. Prerequisite: By audition.

MVP 190. Collegium Musicum  
1 credit  
Offered Fall and Spring Semesters  
A forty voice ensemble specializing in the study and performance of Baroque and Renaissance music, the Collegium Musicum is the choir for the Miami Bach Society. Open to undergraduate students and community singers. Prerequisite: By Audition.

MVP 196. Singing for the Stage I-A  
1 credit  
Offered Fall Semester  
The selection, learning process, and performance of Musical Theatre Songs with emphasis on tone production and style. Prerequisite: Open only to freshman B.M. Musical Theatre Majors.

MVP 197. Singing for the Stage I-B  
1 credit  
Offered Spring Semester  
Continuation of MVP 196. Prerequisite: MVP 196.
MVP 205. Acting for Opera
2 credits Offered Fall Semester
This course is designed to combine acting techniques with singing, dealing specifically with challenges presented to the singing actor and including musical styles and periods, period fashion and props, movement, and stage techniques for recitative, aria and ensemble performance. Prerequisite: THA 105; sophomore status as Vocal Performance majors.

MVP 250. English Diction for Singers
1 credit Offered Fall Semester
Class designed for voice majors and principals, focus on development of pronunciation skills for teaching and singing in English. International Phonetic Alphabet is presented as a learning tool.

MVP 251. Italian Diction for Singers
1 credit Offered Spring Semester
Class designed for voice majors and principals, with a focus on the development of pronunciation skills for teaching in Italian and Latin. International Phonetic Alphabet is presented as a learning tool. Prerequisite: MVP 250.

MVP 252. German Diction for Singers
1 credit Offered Fall Semester
Class designed for voice majors and principals, with a focus on the development of pronunciation skills for teaching and singing in German. International Phonetic Alphabet is presented as a learning tool. Prerequisite: MVP 250.

MVP 253. French Diction for Singers
1 credit Offered Spring Semester
Class designed for voice majors and principals, with a focus on the development of pronunciation skills for teaching and singing in French. International Phonetic Alphabet is presented as a learning tool. Prerequisite: MVP 250.

MVP 281. Choral Conducting III
1 credit Offered Fall Semester
This course provides a synthesis of the skills demonstrated in Choral Conducting I and II, while developing error detection skills in musical scores. Prerequisite: MVP 182 or MIP 418.

MVP 282. Choral Conducting IV
1 credit Offered Spring Semester
This course focuses on quality choral literature for middle school and high school ensembles. Prerequisite: MVP 281 or MIP 281.

MVP 294. Singing for Actors
1 credit Offered Fall and Spring Semesters
The preparation of song literature and audition material for actors (can be repeated for credit). Prerequisite: Open to BFA Performance Majors.

MVP 296. Singing for the Stage II-A
1 credit Offered Fall Semester
Instruction in auditioning methods and materials for American musical theatre. Prerequisite: THA 197.

MVP 297. Singing for the Stage II-B
1 credit Offered Spring Semester
Instruction in preparing vocal material for musical scenes drawn from American musical theatre. Prerequisite: THA 296.
MVP 300. Basic Songwriting
2 credits
Offered Spring Semester
This class has both an analytical and a creative component. Students analyze popular song forms, with examples by Porter, Berlin, the Gershwins, Paul Simon, Joni Mitchell, Bob Dylan, and others. In addition, composers and lyricists are randomly paired up for writing assignments. After class critiques, the songs are revised and then performed at the end of the semester. This course is open to composers/lyricists; however lyricists need not be able to read music, but rudimentary knowledge is beneficial. Prerequisite: Writing sample submitted to instructor.

MVP 399. Junior Recital
1 credit
Offered Fall and Spring Semesters
A public recital of one half-hour or more. Course required of all Vocal Performance majors. Prerequisite: Permission of instructor.

MVP 415. Auditioning I
2 credits
Offered Fall Semester
Students prepare three to five audition pieces, photos, and resumes. Income tax, unions, opportunity, and methods of searching for and obtaining work is included. Course culminates in a seven to ten day trip to New York attending auditions. Prerequisite: Senior standing in Bachelor of Music, Musical Theatre degree.

MVP 416. Auditioning II
2 credits
Offered Spring Semester
Continuation of MVP 415. Prerequisite: MVP 415.

MVP 420. Musical Theatre Studio
3 credits
Offered Spring Semester
Participation in a full production to be directed, choreographed, acted and designed by faculty or students. Prerequisite: B.M. Senior musical theatre majors or permission of instructor.

MVP 431. Musical Theatre Styles I
3 credits
Offered By Announcement only
Course topics include creating a character through song and dialogue, making transition from songs into and out of scenes, and becoming comfortable and familiar with the style and performance unique to musical theatre. Prerequisite: Permission of instructor for non-musical theatre major.

MVP 432. Musical Theatre Styles II
3 credits
Offered Fall Semester
Continuation of MVP 431. Prerequisite: THA 431, permission of instructor for non-musical theatre major.

MVP 490. Senior Honors Thesis I
3 credits
Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MVP 491. Senior Honors Thesis II
3 credits
Offered Fall and Spring Semesters
Development and completion of a senior Honors Thesis to fulfill requirements for University Honors of Magna or Summa Cum Laude.

MVP 493. Special Projects
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised readings and other activities in specific areas of Vocal Performance. Prerequisite: Undergraduate Music students only. Dean’s approval and signature required.
MVP 499. Senior Recital
1 credit \(\text{Offered Fall and Spring Semesters}\)
A public recital of one hour or more. Course is required of all performance majors. 
Prerequisite: Permission of instructor.

MVP 508. Choral Score Study
2 credits \(\text{Offered Fall Semester}\)
In depth study of selected choral or choral/orchestral works related to literature being performed by university ensembles during the academic year. Prerequisite: 
Permission of instructor.

MVP 538. Vocal Pedagogy
2- 3 credits \(\text{Offered By Announcement only}\)
Course covers methods and concepts in the teaching of singing. Emphasis is placed on psychological, physiological, and acoustical principles involved in voice production with practical application, observing and teaching individual and class voice in a supervised environment. Prerequisite: Senior standing in music or permission of instructor.

MVP 552. Vocal Performance Preparation
1 credit \(\text{Offered Fall and Spring Semesters}\)
Musical preparation of a wide range of assigned vocal literature from all periods for performance in forums, juries, and recitals. Special emphasis is on musical values, styles, translations of texts, diction, pronunciation of Italian, German, French, and English, and memorization. Prerequisite: MVP major, junior status.

MVP 557. Choral Music Workshop
2 credits \(\text{Offered First Summer Session}\)
Survey and practice through performance and discussion of choral music, recommended for inclusion in public school and church choral music curricula.

MVP 588. Voice Performance in Salzburg, Austria
2- 4 credits \(\text{Offered Spring Semester}\)
Course is conducted at Salzburg College, Austria. Students receive comprehensive and intensive vocal training from University of Miami faculty as well as distinguished guest artists. A class in vocal repertoire is also included. Prerequisite: By audition only.

MVP 593. Special Topics MVP
1- 3 credits \(\text{Offered Fall and Spring Semesters and First and Second Summer Sessions}\)
Supervised topics and other activities in specific areas of Vocal Performance. Prerequisite: Permission of the Dean.

MVP 599. Practicum in Music
0 credits \(\text{Offered Fall and Spring Semesters and First and Second Summer Sessions}\)
Practical professional experience. Prerequisite: Music majors only.

MVP CDA. Conducting
1- 4 credits \(\text{Offered Fall and Spring Semesters}\)
Prerequisite: Undergraduate level.

MVP CDB. Conducting
1- 4 credits \(\text{Offered Fall and Spring Semesters}\)
Prerequisite: Undergraduate level.

MVP CDC. Conducting
1- 4 credits \(\text{Offered Fall and Spring Semesters}\)
Prerequisite: Undergraduate level.
MVP CDD. Conducting  
**1-4 credits**  
Offered Fall and Spring Semesters  
Prerequisite: Undergraduate level.

MVP CDE. Conducting  
**1-4 credits**  
Offered Fall and Spring Semesters  
Prerequisite: Undergraduate level.

MVP CDF. Conducting  
**1-4 credits**  
Offered Fall and Spring Semesters  
Prerequisite: Undergraduate level.

MVP CDG. Conducting  
**1-4 credits**  
Offered Fall and Spring Semesters  
Prerequisite: Undergraduate level.

MVP CDH. Conducting  
**1-4 credits**  
Offered Fall and Spring Semesters  
Prerequisite: Undergraduate level.

MVP VOA. Voice  
**1-4 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Demonstrate a beginning concept of breath management, legato connection for moderate length phrases, clear articulation and projection of vowels and consonants in English, emotional connection to and communication of text, release of vibrato in sustained singing, and jury repertoire, language, and performance requirements (See Guidelines for Voice Study). Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MVP VOB. Voice  
**1-4 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Demonstrate a beginning concept of breath management, legato connection for moderate length phrases, clear articulation and projection of vowels and consonants in English, emotional connection to and communication of text, release of vibrato in sustained singing, and jury repertoire, language, and performance requirements (See Guidelines for Voice Study). Prerequisite: Audition for Level A; Successful completion of Level A to move to Level B.

MVP VOC. Voice  
**1-4 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Demonstrate consistent breath support, firmly established legato line, evidence of musical phrasing, consistent vibrato, ability to execute technical exercises evenly throughout the range, and jury repertoire, language, and performing (See Guidelines for Voice Study). Prerequisite: Successful completion of previous level of study.

MVP VOD. Voice  
**1-4 credits**  
Offered Fall and Spring Semesters  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Demonstrate consistent breath support, firmly established legato line, evidence of musical phrasing, consistent vibrato, ability to execute technical exercises evenly throughout the range, and jury repertoire, language, and performing (See Guidelines for Voice Study). Prerequisite: Successful completion of previous level of study.
MVP VOE. Voice  
1- 4 credits  
*Offered Fall and Spring Semesters*  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Demonstrate evidence of upper range extension with fully supported sound and appropriate modification of resonators, ability to self-prepare a song, knowledge of musical styles and historical periods of music, effective communication of song literature, an established warm-up regiment and technical exercises as prescribed by the voice teacher, and jury repertoire, language, and performance requirements (See Guidelines for Voice Study). Prerequisite: Successful completion of previous level of study.

MVP VOF. Voice  
1- 4 credits  
*Offered Fall and Spring Semesters*  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Demonstrate evidence of upper range extension with fully supported sound and appropriate modification of resonators, ability to self-prepare a song, knowledge of musical styles and historical periods of music, effective communication of song literature, an established warm-up regiment and technical exercises as prescribed by the voice teacher, and jury repertoire, language, and performance requirements (See Guidelines for Voice Study). Prerequisite: Successful completion of previous level of study.

MVP VOG. Voice  
1- 4 credits  
*Offered Fall and Spring Semesters*  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Demonstrate perfect facility in required lyric languages, ability to evaluate performances critically and coherently, facility with register changes in upper range, polished and artistic performing with accuracy in pitch, rhythm, good posture, breath management, phonation, and resonance in addition to jury repertoire, language, and performance requirements (See Guidelines for Voice Study). Prerequisite: Successful completion of previous level of study.

MVP VOH. Voice  
1- 4 credits  
*Offered Fall and Spring Semesters*  
1-hour lesson for students enrolled for 2-3 credits. 1/2-hour lesson for students enrolled for 1 credit. Technical Requirements: Demonstrate perfect facility in required lyric languages, ability to evaluate performances critically and coherently, facility with register changes in upper range, polished and artistic performing with accuracy in pitch, rhythm, good posture, breath management, phonation, and resonance in addition to jury repertoire, language, and performance requirements (See Guidelines for Voice Study). Prerequisite: Successful completion of previous level of study.

MVP VOI. Voice  
1- 4 credits  
*Offered Fall and Spring Semesters*  
Prerequisite: Master’s level.

MVP VOJ. Voice  
1- 4 credits  
*Offered Fall and Spring Semesters*  
Prerequisite: Master’s level.

MVP VOK. Voice  
1- 4 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Prerequisite: Master’s level.

MVP VOL. Voice  
1- 4 credits  
*Offered Fall and Spring Semesters*  
Prerequisite: Master’s level.
MVP VOM. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VON. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VOO. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VOP. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VOQ. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VOR. Voice
1-4 credits
Prerequisite: Doctoral level.
### Nursing and Health Studies

#### Healthcare Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCS 207.</td>
<td>Introduction to Pharmacology</td>
<td>3</td>
<td>Offered Fall Semester</td>
</tr>
<tr>
<td></td>
<td>Emphasis is on the understanding of the different classes of drugs and their application in various health care settings. Prerequisite: BIL 150.</td>
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<tr>
<td>HCS 212.</td>
<td>Human Anatomy</td>
<td>3</td>
<td>Offered Fall Semester</td>
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<tr>
<td></td>
<td>Emphasis is on the understanding of the anatomical compartments of the human body and the ability to identify the bony skeleton, musculatures, blood vessels and internal organs of each compartment. Prerequisite: BIL 150.</td>
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</tr>
<tr>
<td>HCS 213.</td>
<td>Human Anatomy Laboratory</td>
<td>1</td>
<td>Offered Fall Semester</td>
</tr>
<tr>
<td></td>
<td>Prerequisite: HCS 212.</td>
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<td></td>
</tr>
<tr>
<td>HCS 215.</td>
<td>Introduction to Patho-physiology</td>
<td>3</td>
<td>Offered Fall Semester</td>
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<tr>
<td></td>
<td>Emphasis is on the understanding of the Physiology and selected Pathophysiology of various organs and systems. Prerequisite: BIL 150, HCS 212.</td>
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<tr>
<td>HCS 220.</td>
<td>Systemic Physiology</td>
<td>3</td>
<td>Offered Fall Semester</td>
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<tr>
<td>HCS 221.</td>
<td>Systemic Physiology Laboratory</td>
<td>2</td>
<td>Offered Fall Semester</td>
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<tr>
<td></td>
<td>Experiments illustrating the physiology of organ systems. Prerequisite or corequisite: HSC 220 and permission of instructor.</td>
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<tr>
<td>HCS 303.</td>
<td>HIV/AIDS and Health Maintenance for Health Care Providers</td>
<td>3</td>
<td>Offered Spring Semester</td>
</tr>
<tr>
<td></td>
<td>Definition, diagnosis, management, and care of diverse patient populations with HIV infection and AIDS. Course is presented and discussed from an interdisciplinary health care perspective. Prerequisite: Permission of instructor.</td>
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<tr>
<td>HCS 330.</td>
<td>Folk and Alternative Healing</td>
<td>3</td>
<td>Offered Spring Semester</td>
</tr>
<tr>
<td></td>
<td>Critical discussion and evaluation of alternative and complementary healing. Theoretical and scientific bases of ethnomedical systems, traditional medical systems, and contemporary alternative therapies are explored. (3) Writing Credit. Prerequisite: Permission of faculty.</td>
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</tr>
<tr>
<td>HCS 408.</td>
<td>Nursing Care in the Genomic Era</td>
<td>3</td>
<td>Offered Fall Semester</td>
</tr>
<tr>
<td></td>
<td>Exploration of basic knowledge in genomics, understanding of social, cultural and psychological implications of genetic services, health prevention and promotion.</td>
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<tr>
<td>HCS 583.</td>
<td>Folk and Alternative Healing</td>
<td>3</td>
<td>Offered Spring Semester</td>
</tr>
<tr>
<td></td>
<td>Critical discussion and evaluation of alternative and complementary healing. Theoretical and scientific bases of ethnomedical systems, traditional medical systems, and contemporary alternative therapies are explored. (3) Writing Credit. Prerequisite: Permission of faculty.</td>
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</tr>
</tbody>
</table>
Health Studies

**HST 300. Introduction to Theory and Research**

3 credits  
Offered Fall Semester

The introduction to the function of theory and research in nursing practice. Emphasis is on the development of an understanding of scientific problem solving using a multicultural perspective.

**HST 310. Using Research in Clinical Practice**

3 credits  
Offered Fall Semester

Introduction to basic research skills for individuals interested in health research. Emphasis is on the identification of health problems, reading research articles, and research issues such as research in health, ethics of health, privacy issues and the process of informed consent.


3 credits  
Offered Spring Semester

This course will explore key health policy issues within the U.S., along with the politics and interest groups which shape them. Fundamental concerns within the health care system such as: cost, quality and access to care will be analyzed. Major topics of discussion will include: Medicare, Medicaid, private insurance, the nursing shortage, and prescription drugs. The politics and policies surrounding issues such as bioethics, globalization, and infectious disease will also be considered.

**HST 545. Research Project Management**

3 credits  
Offered Fall Semester

The course focuses on preparing the student for coordination of all aspects of a research project including recruitment, consenting, testing, executing intervention, reliability checks, database management and data entry. Management of project staff, maintaining the integrity of the research design will be presented. Examination of ethical issues and IRB procedures will be included. Prerequisite: All previous courses in research certificate program.

**HST 564. Communicating Research Findings**

3 credits  
Offered Fall Semester

The course focuses on preparing individuals to present research findings related to research projects. Discussion of data interpretation, results and presentation of research for publication will be presented. Prerequisite: All previous courses in the research certificate program or equivalent research experience.

Nursing

**NUR 201. Writing as a Learning Strategy**

2 credits  
Offered First and Second Summer Sessions

The anxiety and apprehension associated with writing can become a significant deterrent to learning. Through experiential work, students learn the mechanics of scholarly writing as well as using writing as a learning strategy. (2)

**NUR 205. Personal Nutrition**

3 credits  
Offered Spring Semester

Principles of nutrition integrated with cultural dietary patterns across the lifespan. Not for nursing majors or minors. (3)

**NUR 300. Introduction to Nursing Theory and Research**

3 credits  
Offered Fall and Spring Semesters

The introduction to the function of theory and research in nursing practice. Emphasis is on the development of an understanding of scientific problem solving using a multicultural perspective. (3) Writing Credit. Prerequisite: Statistics.
NUR 302. Professional Concepts
2 credits  Offered Fall Semester
Historical and current trends and issues in professional nursing, health, and health care delivery with a transcultural focus. Emphasis is placed on interpersonal communication, assertiveness, and values clarification. Examination of being and the philosophy of baccalaureate nursing using the major concepts of human being, society, health, and nursing is included. (2) Prerequisite: Admission to RN-Transition Program.

NUR 303. HIV/AIDS and Health Maintenance for Health Care Providers
3 credits  Offered Spring Semester
Definition, diagnosis, management, and care of diverse patient populations with HIV infection and AIDS. Course is presented and discussed from an interdisciplinary health care perspective. (3) Prerequisite: Permission of instructor.

NUR 306. Principles of Nutrition
2 credits  Offered Fall Semester
Principles of nutrition integrated with cultural dietary patterns for client adaptation across the lifespan. (2) Prerequisite: Sophomore standing or permission of instructor.

NUR 307. Nursing Implications for Pharmacotherapeutics
3 credits  Offered Fall Semester
Introduction to the basic principles of therapeutic pharmacology. Special consideration of cultural beliefs and folk medicine included. (3) Prerequisite: NUR 322 and 315 or NUR 523 (Accelerated and Graduate Entry Options Only).

NUR 310. Using Research in Clinical Practice
3 credits  Offered Fall Semester
Introduction to basic research skills for individuals interested in health research. Emphasis is on the identification of health problems, reading research articles, and research issues such as research in health, ethics of health, privacy issues and the process of informed consent.

NUR 311. Conceptual Basis of Multicultural Nursing
2 credits  Offered Fall Semester
An introductory nursing course explaining the philosophy of baccalaureate nursing using the major concepts of person, environment, health, and nursing with a multicultural focus. Writing Credit. (2) Prerequisite: Six credits in Behavioral Sciences.

NUR 314. Health Assessment
3 credits  Offered Fall Semester
Introduction to health assessment using a lifespan approach. Emphasis is on the development of data collection and basic decision-making using health assessment findings. Prerequisite: Chemistry. Anatomy and Physiology, Microbiology. (2:2) Corequisite: Six credits of Behavioral Science.

NUR 315. Pathophysiology
3 credits  Offered Fall and Spring Semesters
The study of the physiologic and biologic manifestations of disease and disease processes. Emphasis is placed on physiology of altered health within the context of disruptions of structure and function of the human body as a whole. (3) Prerequisite: Microbiology Human Anatomy and Physiology Chemistry.

NUR 316. Application of Professional Concepts
5 credits  Offered Fall Semester
Conceptual view of professional nursing as it relates to clinical practice in multicultural primary care settings. Clinical focus on Health promotion and physiological health alterations in individuals across the lifespan is emphasized. (3:6) Prerequisite or corequisite: NUR 302, 314.
NUR 317. Developmental Issues Across the Lifespan
2 credits
Offered Fall Semester
Application of growth and development theories through the lifespan with a case study approach to issues commonly encountered in nursing practice in a variety of clinical settings. (2) Prerequisite: Six credits in Behavioral Sciences.

NUR 322. Community Based Multicultural Nursing Practice
6 credits
Offered Fall Semester
The introduction to basic knowledge, attitudes, and clinical nursing skills applicable to the care of clients of various ages in health promotion, disease prevention and health maintenance in a variety of multicultural community settings. (3:9) Prerequisite: Prenursing GPA of 2.5; Pass on Math (75%); Microbiology; Anatomy and Physiology; Chemistry, Statistics. Corequisite: NUR 311 and 314.

NUR 330. Folk and Alternative Healing
3 credits
Offered Spring Semester
Critical discussion and evaluation of alternative and complementary healing. Theoretical and scientific bases of ethnomedical systems, traditional medical systems, and contemporary alternative therapies are explored. (3) Writing Credit. Prerequisite: Permission of faculty.

NUR 331. Community Based Nursing Care of Adults and Families I
6 credits
Offered Fall Semester
Continuation of basic clinical nursing skills applicable to the care of clients across the lifespan in health promotion, disease prevention and health maintenance. Emphasis is placed on planning and delivering nursing care in multicultural settings. (3:9) Prerequisite: NUR 311, 314, 315, 322. Corequisite: NUR 335.

NUR 334. Community-Based Nursing Care of Women and Their Families
5 credits
Offered Fall Semester
Nursing care of women during their reproductive and post-reproductive years, including the interdependent needs of their families. Emphasis is placed on the family-centered care of women in a variety of multicultural community-based settings. (3:6) Prerequisite: NUR 311, 322, 315, 317. Prerequisite or corequisite: NUR 307.

NUR 335. Older Adult in the Community
2 credits
Offered Spring Semester
Course surveys factors related to aging in a multicultural community including demographic changes, theories of aging, culture, and ageism. Selected topics related to normal, age-related changes, health promotion for aged individuals and their families, and health maintenance are examined. Selected threats to health in late life including dementia and depression are analyzed as well as current intervention strategies. (2) Prerequisite: NUR 322 and 317. Corequisite: NUR 331.

NUR 340. Personal Nutrition
3 credits
Offered Spring Semester
Principles of nutrition integrated with cultural dietary patterns across the life span. (3) Prerequisite: Not for nursing majors or minors.

NUR 399. Independent Study
1- 3 credits
Offered Fall and Spring Semesters
As delineated in independent study contract. Prerequisite: Permission of instructor.

NUR 400. Theories, Research and Evidence-Based Practice
3 credits
Offered Fall Semester
Course emphasis is placed on developing an understanding of the research process and application of research findings in community-based practice in multicultural settings. Course focuses on the relationship between theory, research, practice, and the development of competencies to become an informed consumer of research. Writing Credit. (2) Prerequisite: NUR 311 and PSY 204.
NUR 402. Issues in Clinical Nursing  
2 credits  
Examination of group and organizational dynamics in relation to professional roles. Emphasis is placed on problem solving and decision making strategies applied to ethical and legal issues with multicultural nursing perspective in the delivery of health care. (2) Prerequisite: NUR 301 or 302.

NUR 404. Nursing Management and Leadership  
3 credits  
Offered Fall and Spring Semesters  
Course focuses on the evolving nursing first line management role in relation to care, and personnel and organizational components of the multicultural health care delivery system. Emphasis is placed on understanding theories, conceptual models, and technology supportive to professional decision making. (3) Prerequisite: NUR 419, corequisite: NUR 420, 421.

NUR 408. Nursing Care in the Genomic Era  
3 credits  
Offered Fall Semester  
Exploration of basic knowledge in genomics, understanding of social, cultural and psychological implications of genetic services, health prevention and promotion. (3)

NUR 412. Computer Applications in Nursing  
2-3 credits  
Offered Fall Semester  
Course focuses on the basic concepts of computer technology and applications used in nursing education, clinical practice, and research. Students develop novice level skills and use a variety of electronic strategies to access, store, communicate, analyze, and manage information. Students have the opportunity to study futuristic concepts such as virtual reality and apply it to nursing education, clinical practice, and research. (2-3)

NUR 415. Perianesthesia Nursing  
2-3 credits  
Offered First and Second Summer Sessions  
The focus of this course is on the use of the nursing process to develop and implement nursing management strategies for patients and families undergoing a surgical and/or special procedure. Emphasis is placed on the use of a multicultural nursing perspective to plan and implement nursing interventions. This course highlights Perianesthesia nursing care of surgical patients. (2-3) Prerequisite: NUR 331, 307, 315 and 314. Corequisite: NUR 429, 430.

NUR 426. Professional Nursing Role Synthesis  
5 credits  
Offered Fall Semester  
Analysis and synthesis of the application of professional concepts in a variety of multicultural health care delivery systems. Emphasis is placed on personal, professional, and organizational growth. Individualized and integrated clinical experiences are provided through direct clinical supervision by preceptors. (3:6) Prerequisite: NUR 316, 420. Corequisite: NUR 404.

NUR 429. Community Based Nursing Care of Adults and Families II  
6 credits  
Offered Fall Semester  
Development and implementation of nursing care strategies for adults and families experiencing acute and complex health alterations within multicultural-based community settings. As a member of the health care team students build on foundational competencies in collaboration and leadership in the provision of nursing care. (3:9) Prerequisite: NUR 307, 314, 315, 322, 331 and/or 523.
NUR 430. Community Based Nursing Care of Children and Families
6 credits  Offered Fall Semester
Course focuses on the use of the nursing process to develop and implement nursing management strategies for children and their families experiencing acute, chronic, and critical multisystem health alterations within a multicultural context. The use of the nursing process to expand and develop appropriate clinical interventions as a member of the health care team is emphasized. Students build on foundational skills in critical thinking, collaboration, and leadership in the provision of nursing care. (3:9) Prerequisite: NUR 331, 334, 315, 307 and 523 (Accelerated and Graduate Entry Options Only).

NUR 440. A Systems Approach to Population-Based Nursing
3 credits  Offered Spring Semester
The utilization of a comprehensive systems approach for assessment and analysis of multicultural communities and high-risk groups to promote the health of populations across the lifespan. Emphasis is placed on using the nursing process to implement a community health plan for diverse target populations. (3) Prerequisite: NUR 331.

NUR 441. Professional Role Synthesis
7 credits  Offered Fall Semester
Synthesizing professional roles in the delivery of nursing care with emphasis on the principles of leadership and management. Integrating learning experiences are provided through preceptorship, with an emphasis on a more independent role as a beginning nurse generalist. Writing Credit. (3:12) Prerequisite: NUR 430 and 429.

NUR 448. Community Based Psychiatric Mental Health Nursing
6 credits  Offered Spring Semester
Course surveys major theoretical frameworks of human behavior. A community-based psycho-cultural approach is taken in utilizing the nursing process with individuals, families, and groups. A life-span perspective is used focusing on acute and long-term interpersonal and family issues in community based settings. Developmental issues, research on mental health, trends and issues in bio-psychiatry, and ethical/legal issues are studied. The issue of culture in the therapeutic relationships is emphasized. Writing Credit. (3:9) Prerequisite: NUR 322.

NUR 487. International Health: Transcultural Nursing (International Clinical Experience)
3 credits  Offered Spring Semester
Collaborative clinical venture between the University of Miami, School of Nursing and an International School of Nursing. Students will exchange supervised western clinical experiences, knowledge and skills for the care of clients and families in specialty areas including Medical-Surgical, Surgery, Intensive Care and/or Emergency nursing units. This course will allow students to apply and synthesize basic science knowledge and skills that foster ethical, legal and culture specific health care. (3) Prerequisite: NUR 314, 315, 322 and permission of the instructor.

NUR 497. Selected Topics
1- 5 credits  Offered Fall and Spring Semesters
Prerequisite: NUR 301 and permission of instructor.

NUR 498. Selected Topics
1- 5 credits  Offered Fall and Spring Semesters
Prerequisite: NUR 301 and permission of instructor.

NUR 499. Selected Topics
1- 6 credits  Offered Fall and Spring Semesters
Prerequisite: Permission of instructor.
NUR 502. Nursing in the International Context
2-3 credits
Offered Fall Semester
The concept and process of international nursing in the context of world health are discussed. Analysis of the role of nursing in relation to various national health care systems, theories of national development, and global strategies for international health are also included. Emphasis is placed on nursing education and service in various nations with a focus on less developed countries. (2-3)

NUR 504. Topics in Oncology Nursing
2-3 credits
Offered Fall and Spring Semesters
Course emphasizes the impact of cancer upon the individual and family. Course integrates concepts and theories related to nursing practice and cancer research. (2-3) Prerequisite: Senior standing in undergraduate program; graduate standing; or permission of instructor.

NUR 507. Clinical Nutrition in Nursing Practice
2 credits
Offered Spring Semester
Application of clinical nutrition in the assessment, diagnosis, planning, implementation, and evaluation of nursing care of multicultural clients in primary and secondary care settings. (2) Prerequisite: NUR 306, Junior level status.

NUR 508. Dying, Death and Bereavement
2-3 credits
Offered Spring Semester
Issues of providing care and comfort to dying persons and loved ones during illness and support to survivors after death are addressed. The development of nursing practice based on theory and research from nursing and other disciplines is also included. Emphasis is placed on the physical, emotional, and spiritual components in dying and bereavement. (2-3)

NUR 523. Nursing Concepts of Health Promotion and Wellness
7 credits
Offered First and Second Summer Sessions
Assimilation and integration of theoretical foundations and clinical data applicable to the care of clients across the life span with a focus on health promotion, disease prevention, and health maintenance. Emphasis is placed on assessment and analysis of clinical data to formulate nursing care in multicultural setting. (3:12) Prerequisite: Admission to Accelerated or Graduate Entry Options. Corequisites: NUR 314, 315, a course in Growth and Development and Nutrition.

NUR 524. Community-Based Multicultural Psychiatric/Mental Health Nursing
6 credits
Offered Fall Semester
Assessment and analysis of clinical data applicable to the care of clients across the lifespan with multidimensional psychosocial or mental health alterations. Emphasis is on development of inter-personal and intra and interdisciplinary collaborative skills as a means of assisting individuals, groups, and families in active problem solving in community based settings. The formulation of nursing diagnoses and management strategies in multicultural settings is a focus. Developmental, sociological, and environmental aspects of nursing management are integrated throughout. Prerequisite: NUR 314, 315, 523.

NUR 530. Research in Nursing
3 credits
Offered Fall Semester
Focus on the nature of scientific inquiry, the research process and the role of the advanced practice nurse in conducting, critiquing, and synthesizing nursing research. Course consists of two modules. Module 1 focuses on the research process, research methodologies and the analysis of data using quantitative and qualitative approaches. Module 2 focuses on the synthesis of research findings for implementing changes in nursing practice or the development of a nursing research proposal, depending on the student’s area of interest. (3) Prerequisite: Basic Statistics Course.
NUR 531. The Older Adult in Health and Illness
2-3 credits
Offered By Announcement only
Course explores factors relating to aging in health including demographic changes, theories of aging, culture and ageism, the sandwich generation, developmental tasks and psychosocial issues in late life, sexual health, sleep pattern changes, and cognitive changes. Selected topics related to threats to health in later life are also discussed including depression, substance abuse, elder abuse and neglect, and failure to thrive. Current psychosocial intervention strategies such as reality orientation, re-motivation, reminiscence, life review and validation are examined. (2-3)

3 credits
Offered Spring Semester
This course will explore key health policy issues within the U.S., along with the politics and interest groups which shape them. Fundamental concerns within the health care system such as: cost, quality and access to care will be analyzed. Major topics of discussion will include: Medicare, Medicaid, private insurance, the nursing shortage, and prescription drugs. The politics and policies surrounding issues such as bioethics, globalization, and infectious disease will also be considered.

NUR 545. Research Project Management
3 credits
Offered Fall Semester
The course focuses on preparing the student for coordination of all aspects of a research project including recruitment, consenting, testing, executing intervention, reliability checks, data base management and data entry. Management of project staff, maintaining the integrity of the research design will be presented. Examination of ethical issues and IRB procedures will be included. Prerequisite: All previous courses in research certificate program.

NUR 550. Sociopolitical Dynamics of Health Issues
2-3 credits
Offered By Announcement only
The evaluation of public controversies surrounding community-based health issues are examined from sociopolitical, economic, and cultural perspectives. The focus of the course is on ethical and political dilemmas confronting health care professionals when health issues are politicized. (2-3)

NUR 551. Teaching and Learning Theory in Clinical Nursing Education
3 credits
Offered Spring Semester
The focus of this course is the exploration of principles and practice of teaching and learning integral to clinical nursing education. Identification of the role of the faculty in teaching students with diverse learning styles and needs within a variety of clinical settings. Prerequisite: RN/BSN; MSN, and/or Masters Student; RN License and permission of instructor.

NUR 552. From Childhood to Womanhood: Being Female in America
3 credits
Offered By Announcement only
Cultural perspective on emotional health issues related to growth and development of females in the United States of America. Multidisciplinary theoretical issues surrounding particular problems of sex roles from birth to death are examined. Emphasis is placed on mental health issues. Gender identity, critical events, eating disorders, abuse syndromes, reproductive sequelae, and aging are addressed. Emotional health, preventive, and treatment strategies are also analyzed. Graduate level course open to nursing students and students from related disciplines; education, psychology, sociology, and anthropology. (3)
NUR 553. Methods for Clinical Nursing Education
3 credits
Offered Spring Semester
The focus of this course is the organization and management of instruction for clinical nursing education. Emphasis is on effective strategies for development of learning opportunities in diverse clinical settings. Prerequisite: NUR 551, RN; permission of instructor.

NUR 555. Evaluation in Clinical Nursing Education
3 credits
Offered Spring Semester
The focus of this course is the exploration of principles and practices of evaluation integral to clinical nursing education. Prerequisite: NUR 551, 553 and/or permission of instructor.

NUR 558. Practicum in Clinical Nursing Education
6 credits
Offered Spring Semester
The focus of this course is laboratory and clinical application of principles of teaching and learning. Emphasis is on the operationalization of the clinical faculty role. Prerequisite: NUR 551, 553, 555, and/or permission of instructor.

NUR 564. Communicating Research Findings
3 credits
Offered Fall Semester
The course focuses on preparing individuals to present research findings related to research projects. Discussion of data interpretation, results and presentation of research for publication will be presented. Prerequisite: All previous courses in the research certificate program or equivalent research experience.

NUR 570. Psychobiology for Advanced Practice Nursing
3 credits
Offered Fall Semester
Focuses on basic neuroanatomy, neurophysiology, and neurochemistry followed by an introduction to the physiological bases of sensation, motor systems, motivation, emotion, learning and memory. (3) Prerequisite: Acceptance in the Graduate Nursing Program. NUR 612, 613.

NUR 575. Interdisciplinary Healthcare Improvement
2-3 credits
Offered By Announcement only
Analyses of the theories and principles of quality improvement and interdisciplinary teamwork. Application of improvement methods and tools used in solving client-focused, system-level problems through participation in an interdisciplinary team in a selected clinical setting. (2:3-6) Prerequisite: Undergraduate senior standing or permission of instructor.

NUR 583. Folk and Alternative Healing
3 credits
Offered Spring Semester
Critical discussion and evaluation of alternative and complementary healing. Theoretical and scientific bases of ethnomedical systems, traditional medical systems, and contemporary alternative therapies are explored. Writing Credit. (3) Prerequisite: Upper division or permission of faculty.

NUR 587. Sleep and Dreams
2-3 credits
Offered By Announcement only
Multidisciplinary theory and research on sleep and dreams. Circadian rhythm, sleep-wake cycle, sleep disorders, function, and meaning of dreams. Graduate level course open to nursing students and students from related disciplines; education, psychology, sociology, and anthropology. (2-3) Prerequisite: Senior or graduate standing, NUR 418 or equivalent.
NUR 590. Health Policy, Structure and Ethics
3 credits
Offered Fall Semester
Issues, problems, and motivation for change and policy development in the current health care system. Implications for advanced practice nursing are discussed. Examination of organizational, behavioral, ethical aspects, and interactions of various sectors in the U.S. health care system. The relationship between ethics, culture and public are emphasized. (3) Prerequisite: Admission to Graduate Program or permission of instructor.

NUR 594. Selected Topics
2-3 credits
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Selected Topics”. Also open to continuing education students. (2-3) Prerequisite: Permission of instructor.

NUR 595. Selected Topics
2-3 credits
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Selected Topics”. Also open to continuing education students. (2-3) Prerequisite: Permission of instructor.

NUR 596. Selected Topics
2-3 credits
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Selected Topics”. Also open to continuing education students. (2-3) Prerequisite: Permission of instructor.
INTERNATIONAL EXCHANGE AND LANGUAGE PROGRAMS

Study Abroad Program

SAP 001. Institutional Consortium Agreement
0-18 credits

SAP 101. International Education and Exchange Programs
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 102. International Education and Exchange Programs
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 103. International Education and Exchange Programs
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 104. International Education and Exchange Programs
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 201. International Education and Exchange Programs
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 202. International Education and Exchange Programs
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 203. International Education and Exchange Programs
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 204. International Education and Exchange Programs
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 311. Study Abroad-Argentina-Universidad del Salvador
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 312. Study Abroad - Argentina - Universidad de San Andres
1-18 credits Offered Fall and Spring Semesters

SAP 313. Study Abroad - Argentina - Universidad Torcuato di Tella
1-18 credits Offered Fall and Spring Semesters

SAP 315. Study Abroad - Trinidad - University of the West Indies
1-18 credits Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 316. Study Abroad - Dominican Republic - Pont. Univ. Catolica Madre & Maestra
1-18 credits Offered Fall and Spring Semesters

SAP 321. Study Abroad-Australia-James Cook University
1-18 credits Offered Fall and Spring Semesters
SAP 322. Study Abroad - Australia - University of Wollongong  
1-18 credits  
Offered Fall and Spring Semesters

SAP 323. Study Abroad - Australia - Monash University  
1-18 credits  
Offered Fall and Spring Semesters

SAP 324. Study Abroad - Australia - University of Technology, Sydney  
1-18 credits  
Offered Fall and Spring Semesters

SAP 325. Study Abroad - Australia - Murdoch University  
1-18 credits  
Offered Fall and Spring Semesters

SAP 326. Study Abroad - Australia - Edith Cowan University  
1-18 credits  
Offered Fall and Spring Semesters

SAP 327. Study Abroad - Australia - University of Melbourne  
1-18 credits  
Offered Fall and Spring Semesters

SAP 328. Study Abroad - Australia - Griffith University  
1-18 credits  
Offered Fall and Spring Semesters

SAP 329. Study Abroad - Australia - Flinders University  
1-18 credits  
Offered Fall and Spring Semesters

SAP 330. Australia - Deakin University  
1-18 credits  
Offered Fall and Spring Semesters

SAP 339. Univ. of Vienna - Strobl  
1-9 credits  
Offered First and Second Summer Sessions

SAP 340. Brazil - CIEE  
1-18 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 341. Study Abroad - Colombia - Universidad Javeriana  
1-18 credits  
Offered By Announcement only

SAP 342. Study Abroad - Colombia - Universidad de los Andes  
1-18 credits  
Offered By Announcement only

SAP 343. Study Abroad - Brazil - Pontificia Universidade Catolica do Rio de Janeiro  
1-18 credits  
Offered Fall and Spring Semesters

SAP 345. Study Abroad - Ecuador - PUCE  
1-18 credits  
Offered By Announcement only

SAP 349. Study Abroad - Czech Republic - Prague Summer Film Program  
1-12 credits  
Academy of Performing Arts.  
Offered By Announcement only

SAP 350. Study Abroad - England - University of Kent  
1-18 credits  
Offered Fall and Spring Semesters

SAP 351. Study Abroad - England - University of Sussex  
1-18 credits  
Offered Fall and Spring Semesters
SAP 352. Study Abroad-England-University of Essex  
1-18 credits  
Offered Fall and Spring Semesters

SAP 353. Study Abroad - England - London School of Economics  
3- 6 credits  
Offered Fall and Spring Semesters

SAP 354. Study Abroad-England-University of Leicester  
1-18 credits  
Offered Fall and Spring Semesters

SAP 355. Study Abroad-England-Queen Mary and Westfield College  
1-18 credits  
Offered Fall and Spring Semesters

SAP 356. Study Abroad - England - Buckinghamshire Chilterns University College  
1-18 credits  
Offered Fall and Spring Semesters

SAP 357. Study Abroad-England-University of Westminster  
1-18 credits  
Offered Fall and Spring Semesters

SAP 358. Study Abroad-England-University of East Anglia  
1-18 credits  
Offered Fall and Spring Semesters

SAP 359. Study Abroad-England-Lancaster University  
1-18 credits  
Offered Fall and Spring Semesters

SAP 361. Study Abroad-Chile-Univ. Diego Portales  
1-18 credits  
Offered Fall and Spring Semesters

SAP 362. Study Abroad-Chile-Universidad Catolica  
1-18 credits  
Offered Fall and Spring Semesters

SAP 363. Study Abroad - Chile - Universidad de Playa Ancha  
1-18 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 365. Study Abroad-China-Chinese University of Hong Kong  
1-18 credits  
Offered Fall and Spring Semesters

SAP 372. Study Abroad-France-Universite d’Orleans  
1-18 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 373. Study Abroad-France-University of Paris-MICEFA  
1-18 credits  
Offered Fall and Spring Semesters

SAP 374. Study Abroad-France-L’Ecole Superieure de Commerce Groupe de Rennes  
1-18 credits  
Offered Fall and Spring Semesters

SAP 375. Study Abroad-France-American University of Paris  
1-18 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 382. Study Abroad-Germany-University of Tuebingen  
1-18 credits  
Offered Fall and Spring Semesters
SAP 383. Study Abroad-Germany-University of Leipzig
1-18 credits
Offered Fall and Spring Semesters

SAP 387. Germany-Wiesbaden
1-18 credits
Offered Fall and Spring Semesters

SAP 388. Study Abroad-Germany-University of Flensburg
1-18 credits
Offered Fall and Spring Semesters

SAP 399. Study Abroad
1-18 credits
Offered Fall and Spring Semesters

SAP 400. Study Abroad-Wales-Cardiff University
1-18 credits
Offered Fall and Spring Semesters

SAP 402. Study Abroad - Slovenia - University of Ljubljana
1-18 credits
Offered Fall and Spring Semesters

SAP 405. Iceland-University of Iceland
1-18 credits
Offered Fall and Spring Semesters

SAP 406. Study Abroad - New Zealand - University of Auckland
1-18 credits
Offered Fall and Spring Semesters

SAP 407. Study Abroad - Ireland - National University of Ireland, Maynooth
1-18 credits
Offered Fall and Spring Semesters

SAP 411. Study Abroad-Italy-University of L’Aquila
1-18 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 415. South Africa-University of Natal
1-6 credits
Offered By Announcement only

SAP 421. Study Abroad-Israel-Tel Aviv University
1-18 credits
Offered Fall and Spring Semesters

SAP 422. Study Abroad-Israel-Hebrew University of Jerusalem
1-18 credits
Offered Fall and Spring Semesters

SAP 431. Study Abroad-Japan-Sophia University
1-18 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 432. Study Abroad-Japan-Kansai Gaidai
1-18 credits
Offered Fall and Spring Semesters

SAP 441. Study Abroad-Netherlands-Hogeschool voor Economische Studies (HES)
1-18 credits
Offered Fall and Spring Semesters

SAP 445. Study Abroad - Denmark - University of Southern Denmark
1-18 credits
Offered Fall and Spring Semesters

SAP 446. Study Abroad—Denmark—Univ. of Copenhagen
1-18 credits
Offered Fall and Spring Semesters
SAP 447. Study Abroad—Denmark—Aalborg Univ.  
1-18 credits  
Offered Fall and Spring Semesters

SAP 451. Mexico-Centro de Investigaciones y Docencia Economica  
1-18 credits  
Offered Fall and Spring Semesters

SAP 452. Study Abroad-Mexico-Universidad Iberoamericana  
1-18 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 453. Study Abroad—Mexico—Univ. de las Americas-Puebla  
1-18 credits  
Offered Fall and Spring Semesters

SAP 455. Study Abroad - Monaco - International University of Monaco  
1-18 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 461. Study Abroad-Scotland-University of Glasgow  
1-18 credits  
Offered Fall and Spring Semesters

SAP 462. Study Abroad-Scotland-University of Edinburgh  
1-18 credits  
Offered Fall and Spring Semesters

SAP 465. Study Abroad-Japan-Kagoshima  
3- 9 credits

SAP 466. Study Abroad - Singapore - Nanyang Technological University  
1-18 credits  
Offered Fall and Spring Semesters

SAP 467. Study Abroad Singapore - National University of Singapore  
1-18 credits  
Offered Fall and Spring Semesters

SAP 468. Study Abroad-England-University of Oxford Summer Program  
3- 6 credits  
Offered First and Second Summer Sessions

SAP 471. Study Abroad-Spain-University of Cantabria  
1-18 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 472. Study Abroad-Spain-Universidad de Granada  
1-18 credits  
Offered Fall and Spring Semesters

SAP 473. Study Abroad-Spain-Universidad de Murcia  
1-18 credits  
Offered Fall and Spring Semesters

SAP 474. Study Abroad - Spain - Universidad de Alicante  
1-18 credits  
Offered Fall and Spring Semesters

SAP 475. Spain - Universidad de Santiago de Compostela  
1-18 credits  
Offered Fall and Spring Semesters

SAP 476. Study Abroad-Spain-Antonio de Nebrija  
1-18 credits  
Offered Fall and Spring Semesters

SAP 477. Study Abroad—Spain—Univ. Politecnica de Madrid  
1-18 credits  
Offered Fall and Spring Semesters
SAP 478. Finland-Sibelius Academy
1-18 credits
Offered Fall and Spring Semesters

SAP 479. Poland-Adam Mickiewicz University
1-18 credits
Offered Fall and Spring Semesters

SAP 480. Mexico-Instituto Tecnologico y de Estudios Superiores De Monterrey
1-18 credits
Offered Fall and Spring Semesters

SAP 481. Germany - Universitat Mannheim
1-18 credits
Offered Fall and Spring Semesters

SAP 482. Vienna - Vienna University of Economics and Business Administration
1-18 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 483. Spain-Universidad de las Palmas de Gran Canaria
1-18 credits
Offered Fall and Spring Semesters

SAP 484. Austria - University of Innsbruck
1-18 credits
Offered Fall and Spring Semesters

SAP 485. Spain-Universidad Politecnica de Valencia
1-18 credits
Offered Fall and Spring Semesters

SAP 486. Study Abroad - Czech Republic - Charles University
1-18 credits
Offered Fall and Spring Semesters

SAP 487. Study Abroad - Brazil - Pontificia Universidade Catolica do Rio Grande do Sul
1-18 credits
Offered Fall and Spring Semesters

SAP 488. Study Abroad - Technische Universitat Munchen
1-18 credits
Offered Fall and Spring Semesters

SAP 490. Canada-McGill University
1-18 credits
Offered Fall and Spring Semesters

SAP 491. Study Abroad-Sweden-Uppsala University
1-18 credits
Offered Fall and Spring Semesters

SAP 495. Study Abroad-Switzerland-University of Lausanne
1-18 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

SAP 497. Study Abroad-Turkey-Istanbıl Technical University
1-18 credits
Offered Fall and Spring Semesters

SAP 498. Study Abroad—Russia—State University of St. Petersburg
1-18 credits
Offered Fall and Spring Semesters

SAP 499. Study Abroad
1-18 credits
Offered Fall and Spring Semesters
SAP 572. Study Abroad-France-Universite d’Orleans
1-12 credits  
Offered By Announcement only

SAP 582. Study Abroad-Germany-University of Tubingen
1-12 credits  
Offered Fall and Spring Semesters

SAP 599. Study Abroad
1-12 credits  
Offered By Announcement only

In some departments it is possible to earn graduate credits for study taken abroad. Curriculum must be worked out by the student in conjunction with an advisor.
Honors Program

HON 205. Society and the Future
3 credits  
Examination through contemporary readings of future studies and related social changes. Prerequisite: Admission to the Honors Program; sophomore standing.  
Offered Fall Semester

HON 321. Topics in the Humanities
1-3 credits  
Offered Fall Semester

HON 322. Topics in the Humanities
1-3 credits  
Offered Fall Semester

HON 323. Topics in Humanities
1-3 credits  
Prerequisite: Admission to Honors Program.  
Offered Fall Semester

HON 324. Topics in Humanities
1-3 credits  
Prerequisite: Admission to Honors Program.  
Offered Fall Semester

HON 331. Topics in the Social Sciences
1-3 credits  
Offered Fall Semester

HON 332. Topics in the Social Sciences
1-3 credits  
Offered Fall Semester

HON 333. Topics in Social Science
1-3 credits  
Prerequisite: Admission to Honors Program.  
Offered Fall Semester

HON 351. Topics in the Natural Sciences
1-3 credits  
Offered Fall Semester

HON 352. Topics in the Natural Sciences
1-3 credits  
Offered Fall Semester

HON 353. Topics in Natural Science
1-3 credits  
Prerequisite: Admission to Honors Program.  
Offered Fall Semester

HON 354. Topics in Natural Science
1-3 credits  
Prerequisite: Admission to Honors Program.  
Offered Fall Semester

HON 355. Readings in Biology
1 credit  
Prerequisite: Admission to Honors Program. Permission of instructor. This course replaces BIL 371, 372, 374, 375 for Honors Program students.  
Offered Fall Semester

HON 424. Topics in Humanities
1-3 credits  
Prerequisite: Admission to Honors Program.  
Offered Fall Semester
**Freshman Experience**

**FEX 103. Freshman Experience - Residents of MRC/PRC**  
1 credit  
Offered Fall Semester  
To promote a positive adjustment to University life and your residential college; approaches to learning and study skills; orientation to University resources; exposure to academic majors and requirements; enhancement of critical thinking skills and academic integrity.

**FEX 108. Freshman Experience - Commuter Students**  
1 credit  
Offered Fall Semester  
This course is designed to ease the transition to college life through the dimensions of commuting. It covers approaches to learning; orientation of University resources; exposure to academic programs and requirements; enhancement of critical thinking and academic integrity.

**First Year Seminars in Arts**

**FFA 190. First Year Seminars in Arts**  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.

**FFA 191. First Year Seminars in Arts**  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.

**FFA 192. First Year Seminars in Arts**  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.

**FFA 193. First Year Seminars in Arts**  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.

**FFA 194. First Year Seminars in Arts**  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.

**FFA 195. First Year Seminars in Arts**  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.

**FFA 196. First Year Seminars in Arts**  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.

**FFA 197. First Year Seminars in Arts**  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.

**FFA 198. First Year Seminars in Arts**  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.
FFA 199. First Year Seminars in Arts
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Fine Arts. Topics will vary from year to year, as will faculty teaching the seminars.

First Year Seminars in Literature

FLT 190. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

FLT 191. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

FLT 192. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

FLT 193. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

FLT 194. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

FLT 195. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

FLT 196. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

FLT 197. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

FLT 198. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

FLT 199. First Year Seminars in Literature
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Literature. Topics will vary from year to year, as will faculty teaching the seminars.

First Year Seminars in Natural Science

FNS 190. First Year Seminars in Natural Science
3 credits  Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.
FNS 191. First Year Seminars in Natural Science
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FNS 192. First Year Seminars in Natural Science
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FNS 193. First Year Seminars in Natural Science
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FNS 194. First Year Seminars in Natural Science
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FNS 195. First Year Seminars in Natural Science
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FNS 196. First Year Seminars in Natural Science
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FNS 197. First Year Seminars in Natural Science
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FNS 198. First Year Seminars in Natural Science
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FNS 199. First Year Seminars in Natural Science
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Natural Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

First Year Seminars in Philosophy/Religion

FPR 190. First Year Seminars in Philosophy/Religion
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.

FPR 191. First Year Seminars in Philosophy/Religion
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.

FPR 192. First Year Seminars in Philosophy/Religion
3 credits
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.
FPR 193. First Year Seminars in Philosophy/Religion  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.

FPR 194. First Year Seminars in Philosophy/Religion  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.

FPR 195. First Year Seminars in Philosophy/Religion  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.

FPR 196. First Year Seminars in Philosophy/Religion  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.

FPR 197. First Year Seminars in Philosophy/Religion  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.

FPR 198. First Year Seminars in Philosophy/Religion  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.

FPR 199. First Year Seminars in Philosophy/Religion  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to Philosophy and/or Religion. Topics will vary from year to year, as will faculty teaching the seminars.

First Year Seminars in the Social Sciences

FSS 190. First Year Seminars in the Social Sciences  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FSS 191. First Year Seminars in the Social Sciences  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FSS 192. First Year Seminars in the Social Sciences  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FSS 193. First Year Seminars in the Social Sciences  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FSS 194. First Year Seminars in the Social Sciences  
3 credits  
Offered Fall Semester  
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.
FSS 195. **First Year Seminars in the Social Sciences**
3 credits  
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FSS 196. **First Year Seminars in the Social Sciences**
3 credits  
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FSS 197. **First Year Seminars in the Social Sciences**
3 credits  
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FSS 198. **First Year Seminars in the Social Sciences**
3 credits  
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

FSS 199. **First Year Seminars in the Social Sciences**
3 credits  
Offered Fall Semester
Seminars designed to introduce up to 25 freshmen to the Social Sciences. Topics will vary from year to year, as will faculty teaching the seminars.

**University of Miami Experience**

UMX 101. **University Experience - General**
1 credit  
Offered Fall and Spring Semesters
This course is designed to promote a positive transition to UM; to give students the information they will need to maximize their um experience; to foster community building and networking.

UMX 102. **University of Miami Experience - Athletes**
1 credit  
Offered Fall Semester
This course is designed to facilitate student-athletes in the development and enhancement of academic and life skills for success in the University setting and beyond. Students will learn how to utilize existing campus resources to achieve their academic and personal goals.

UMX 104. **University of Miami Experience - Psychology and NeuroBiology Majors**
1 credit  
Offered Fall Semester
This course is designed to ease the transition to college life, give freshman the information they will need to maximize their undergraduate experience, and foster community building and networking within the department.

UMX 105. **University of Miami Experience - International Students**
1 credit  
Offered Fall Semester
To promote a positive adjustment to University life; to promote and facilitate a positive UM experience; to foster community building and networking; to provide information about campus resources and how to use them to achieve success at UM and beyond, with a particular emphasis on the needs of an international student.
UMX 106. University of Miami Experience - Nursing/Health Science Majors
1 credit
Offered Fall Semester
To promote a positive adjustment to University life; to promote and facilitate a positive UM experience; to foster community building and networking; to provide information about campus resources and how to use them to achieve success at UM and beyond, with a particular emphasis on the needs of an nursing/health science major.

UMX 107. University of Miami Experience - Education Majors
1 credit
Offered Fall Semester
To promote a positive adjustment to University life; to promote and facilitate a positive UM experience; to foster community building and networking; to provide information about campus resources and how to use them to achieve success at UM and beyond, with a particular emphasis on the needs of an education major.

UMX 109. University of Miami Experience - Sports and Wellness
1 credit
Offered Fall Semester
To promote a positive adjustment to University life; to promote and facilitate a positive UM experience; to foster community building and networking; to provide information about campus resources and how to use them to achieve success at UM and beyond, with a particular emphasis on sports and wellness.

UMX 110. University Experience - Undecided Arts and Sciences
1 credit
Offered Fall and Spring Semesters
This course is designed to maximize the student’s potential to achieve academic success, to adjust responsibly to the individual and interpersonal challenges of life at UM, and foster community building and networking within the University.

UMX 111. University of Miami Experience - Business Majors
1 credit
Offered Fall Semester
To promote a positive adjustment to University life; to promote and facilitate a positive UM experience; to foster community building and networking; to provide information about campus resources and how to use them to achieve success at UM and beyond, with a particular emphasis on business majors.

UMX 112. University of Miami Experience - Business Majors, Pre-Law/Pre-MBA
1 credit
Offered Fall Semester
To promote a positive adjustment to University life; to promote and facilitate a positive UM experience; to foster community building and networking; to provide information about campus resources and how to use them to achieve success at UM and beyond, with a particular emphasis on business majors who want to pursue law school or an MBA.
COURSE LISTINGS

Please note that courses are separated into Undergraduate and Graduate levels.

ARCHITECTURE ......................................................... 965
  Architecture

ARTS AND SCIENCES .................................................. 976
  Anthropology
  Art
  Art History
  Biology
  Chemistry
  Classics
  Computer Science
  English
  Foreign Languages and Literatures
  French
  Geography
  Geological Sciences
  German
  History
  International Studies
  Italian
  Latin
  Latin American Studies
  Liberal Studies
  Mathematics
  Philosophy
  Physics
  Portuguese
  Psychology
  Religious Studies
  Sociology
  Spanish
  Theatre Arts
  Women’s and Gender Studies

BUSINESS ADMINISTRATION ........................................ 1059
  Accounting
  Business Law
Computer Information Systems
Economics
Executive and Special Programs
Finance
Management
Management Science
Marketing
Political Science

COMMUNICATION .............................................................. 1109
Communication
Communication: Advertising and Public Relations
Communication: Broadcasting and Broadcast Journalism
Communication: Journalism
Communication: Motion Pictures
Communication Studies
Visual Communication

EDUCATION ................................................................. 1120
Educational and Psychological Studies
Exercise and Sport Science
Teaching and Learning

ENGINEERING ............................................................. 1152
Biomedical Engineering
Civil, Architectural, and Environmental Engineering
Electrical and Computer Engineering
Industrial Engineering
Mechanical and Aerospace Engineering

INTERDISCIPLINARY .......................................................... 1193
Interdisciplinary Graduate Studies

MARINE AND ATMOSPHERIC SCIENCE ......................... 1194
RSMAS—General
Applied Marine Physics
Marine and Atmospheric Chemistry
Marine Affairs and Policy
Marine Biology and Fisheries
Marine Geology and Geophysics
Marine and Physical Oceanography

MEDICINE ................................................................. 1228
Interdisciplinary Biomedical Studies
Biochemistry and Molecular Biology
Cancer Biology
Epidemiology and Public Health
Microbiology and Immunology
Molecular and Cellular Pharmacology
Molecular Cell and Developmental Biology
Neuroscience Program
Physiology and Biophysics
Physical Therapy

MUSIC .................................................. 1267
Dance
Music Education and Therapy
Music: Instrumental Performance
Music: Keyboard Performance
Music Media and Industry
Musicology
Studio Music and Jazz
Music Theory and Composition
Music: Vocal Performance

NURSING AND HEALTH STUDIES ..................... 1327
Healthcare Sciences
Health Studies
Nursing

INTERNATIONAL EXCHANGE AND LANGUAGE PROGRAMS ................. 1339
Study Abroad Program
ARCHITECTURE

Architecture

ARC 501. Architecture Design and Theory I
6 credits  Offered Fall Semester
Cultural, human and environment component and architectural responses to these: Social and aesthetic concepts, architectural psychology, climatic principles, programming analysis and design. Prerequisite: Graduate standing.

ARC 502. Architecture Design and Theory II
6 credits  Offered Spring Semester
Technology component; materials, structure, and environmental control systems as a framework for architectural design. Construction materials and methods, structural systems, mechanical systems. Prerequisite: ARC 501.

ARC 503. Architectural Design and Theory III
6 credits  Offered Fall Semester
Legal and economic component; government and finances as active constituents of architecture design. Zoning regulations, building codes, principles of public health, safety and welfare, market and feasibility studies. Prerequisite: ARC 502.

ARC 509. Architecture Design IX
6 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Elective component: student and faculty select areas of in-depth study. Topics include building types, environment, energy, community design, etc. Prerequisite: ARC 408.

ARC 510. Architecture Design X
6 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Elective component: student and faculty select areas of in-depth study. Topics include building types, environment, energy, community design, etc. Prerequisite: ARC 509.

ARC 511. Drawing
3 credits  Offered Fall Semester
Graphic representation and exploration of visual ideas through increased awareness of visual and graphic vocabulary, stressing projections, light, shade and shadow, perspective, and freehand sketching. Prerequisite: Graduate standing and permission of instructor.

ARC 512. Advanced Visual Analysis
3 credits  Offered By Announcement only
Drawing as a means of analyzing and recording visual experience. Composition, form, light, color and drawing as a primary device in the mental registration of visual experience. Prerequisite: ARC 204, 112.

ARC 513. Computing
3 credits  Offered Spring Semester
An introduction to new electronic design tools and technology available to architects today. Lectures on the history and future of computing in the profession. Prerequisite: Graduate standing and permission of instructor.

ARC 514. Michelangelo
3 credits  Offered Fall Semester
Drawing as a form of research across mediums to understand historical research and interpretation of Michelangelo’s work. Prerequisite: ARC 306, 112, 213 or permission of the instructor.
ARC 515. **Computer Modeling**  
*3 credits*  
Offered Fall and Spring Semesters  
Three-dimensional, computer modeling, and rendering. Lecture, problem solving exercises and laboratory. Prerequisite: ARC 213, 513 or permission of the instructor.

ARC 516. **Architectural Watercolor Renderings**  
*3 credits*  
Offered Fall Semester  
This course will use freehand drawing and watercolor painting as a vehicle to study and record the urban and architectural conditions of Coral Gables and other South Florida sites. Particular emphasis will be placed on the analytical potential of sketches (recording space, light, surfaces and color). Prerequisite: ARC 306 or permission of the instructor.

ARC 517. **Construction Documents**  
*3 credits*  
Offered Fall Semester  
Working drawings and specifications. Form, content and role of constituent parts of working drawings and specifications by using case studies. Prerequisite: ARC 204 and 261.

ARC 518. **Documentation of Historic Architecture**  
*3 credits*  
Offered First and Second Summer Sessions  
Principles of preservation and restoration, research methods, measured drawings, surveying methods, case studies. Prerequisite: ARC 204.

ARC 519. **Architecture and Color**  
*3 credits*  
Offered First and Second Summer Sessions  
This course focuses on the theory and practice of color and its application to architectural design. Topics include color history from Newton through Alber, the relationship between color practice in science versus art, and the discipline of color in architecture from the Neoclassical movement through the Modern Movement. Prerequisite: ARC 306 or permission of the instructor.

ARC 520. **Computer Modeling II**  
*3 credits*  
Offered Spring Semester  
Advanced three-dimensional computer modeling and rendering. Lecture, problem solving exercises and laboratory. Prerequisite: ARC 213 or 513 and 515 or permission of the instructor.

ARC 521. **The Architecture of American Cities**  
*3 credits*  
Offered Fall Semester  
Study of theories on relationships between architectural objects and urban space based on works which include Sitte, Rossi, and Norberg-Schulz. Application of selected theoretical principles to the contemporary American cities. Prerequisite: ARC 374.

ARC 522. **Architecture Psychology**  
*3 credits*  
Offered By Announcement only  
Environmental behavior concepts and their application to an architecture focused on designing for people. Fundamental principles covered include proxemics, privacy, personalization, territoriality, defensible space, social interaction, aesthetics, symbolism, and spatial perception, reasons for individual and cultural differences in spatial actions are outlined. Psychological and social concepts are applied to the process of design and to residential environments, neighborhoods, and public spaces. Prerequisite: Permission of instructor.

ARC 523. **Interior Architecture Design**  
*3 credits*  
Offered Fall Semester  
Principles and technical components of interior design. Topics include activity, analysis, finishes, furniture, fixture, lighting, and acoustics. Prerequisite: ARC 204 or permission of the instructor.
ARC 524. Selected Topics in Interior Architecture Design  
3 credits  Offered Spring Semester  
Principles and technical components of interior design. Topics include interior volumetrics, finishes, furnishings and lighting. Prerequisite: ARC 204 or permission of the instructor.

ARC 525. Landscape Arch Design I  
3 credits  Offered Fall and Spring Semesters  
Analysis and design of landscape spaces. Studies in historical precedent, gardens, parks, plazas, squares and response to architectural context. Prerequisite: ARC 204 or permission of the instructor.

ARC 526. Landscape Arch Design II  
3 credits  Offered By Announcement only  
Analysis and design of landscape spaces. Topics include ecological principles, landforms and plant materials. Prerequisite: ARC 204 or permission of the instructor.

ARC 527. Architecture Photography  
3 credits  Offered By Announcement only  
Photography with emphasis on architectural subjects. Introduction to visual principles, photographic equipment, materials, and techniques. Prerequisite: ARC 204.

ARC 528. Historic Preservation  
3 credits  Offered Spring Semester  
Basic design principles for the rehabilitation of historic buildings. Evaluating character-defining details; significance analysis; context of setting issues within historic districts; applying the Secretary of the Interior's Standards for rehabilitation. Prerequisite: ARC 204.

ARC 529. Research in Design-Methods and Procedures  
3 credits  Offered Fall and Spring Semesters  
Application of research methods and procedures to design issues. Historical, descriptive, analytic, and experimental research methods; tools for data manipulation and communication. Prerequisite: Permission of Program Director.

ARC 530. Architectural Principles of Harmony  
3 credits  Offered Fall and Spring Semesters  
The study of the essential elements of architectural design including form, proportion, light, color, ornamentation and intention. Referring to historic precedents, students will investigate the relationship between these elements through the spectrum of harmonic ratios. Emphasis on understanding Greek and Roman principles of design through analytical drawing. Prerequisite: ARC 382.

ARC 531. Building Structures I  
3 credits  Offered Spring Semester  
The structural behavior and tectonic form of the elements of buildings. Topics include loads, stability, equilibrium, strength, and the dimensions of structural form. Prerequisite: PHY 103, graduate standing or permission of instructor.

ARC 532. Building Structures II  
3 credits  Offered Spring Semester and First Summer Session  
The structural behavior of simple frame structures. Topics include techniques to determine basic system layout and preliminary dimensioning of key subsystems and members. Prerequisite: ARC 531.

ARC 533. Building Structures III  
3 credits  Offered Fall Semester and Second Summer Session  
The structural behavior of complex structures. Topics include prestressed systems, waffle and space trusses, curved structures and longspan buildings. Prerequisite: ARC 532.
ARC 534. The Palazzo in Italian Architecture
3 credits
Study of the development of the Renaissance and Baroque palazzo in Rome and other important centers of art and culture. Emphasis on the socio-political context. Prerequisite: ARC 384.

ARC 535. Historic Italian Urbanism
3 credits
Study of Italian cities and towns from medieval to contemporary times, including a comparative analysis of history and form. Prerequisite: ARC 382.

ARC 536. Italian Gardens
3 credits
Study of Italian garden design during the Renaissance, Baroque and Mannerist periods. Emphasis on historical and political context. Prerequisite: ARC 382.

ARC 537. Research in Rome
3 credits
An exploration of Roman history, architecture and urban form through lectures, on site study and drawing assignments. Emphasis on chronological and spatial sequence of development. Prerequisite: ARC 382.

ARC 541. Seminar on Town Design
3 credits
Introduction to the lexicon of urbanism; analytical presentations of the concepts of: region, town, neighborhood, corridor, district, and building type; interdisciplinary presentations, review, and criticism of current town and urban design projects.

ARC 542. Seminar on Housing
3 credits
Introduction to domestic building typology; exploration of the concepts of low, medium, and high density housing with attention to social, environmental, and economic issues; presentations of current case studies. Prerequisite: ARC 306 or permission of instructor.

ARC 543. Seminar on Retrofit of Suburbia
3 credits
Introduction to the critical reconstitution of the city; theory and history of the concepts of revitalization and redevelopment; presentations, review, and criticism of current case studies. Prerequisite: ARC 306 or permission of instructor.

ARC 544. The Architecture of Palladio
3 credits
On site study of the architecture and urbanism of Andrea Palladio. Emphasis on the artistic precedents of the Veneto Region. Prerequisite: Permission of the instructor.

ARC 545. Urban Composition
3 credits
Survey and analytical review of urban rooms as the vessel of human activity in urban culture. Study of proportional and compositional aspects of urban rooms together with economic, social, and cultural factors. Readings and discussion format. Prerequisite: ARC 306, 502, or permission of instructor.

ARC 546. Studies of Havana
3 credits
Analysis of the physical structure of a major city and its environments including an exploration of its history and iconographic themes, mapping and building studies.
ARC 547. Architecture and Urban Identity
3 credits
Study of the relationship between architecture and urbanism focusing on the ways by which architecture provides urban identity and image of place. Case studies relating monuments, fabric and urban plans to their culture, time and place. Lecture and seminar format. Prerequisite: ARC 306 or permission of instructor.

ARC 548. Seminar in Community Development
3 credits
Offered By Announcement only
Study of the contemporary context for the development of the physical environment. Examination of public, private and third sector implementation of building and community design. Format: guest speakers, readings, discussions, and seminar. Prerequisite: ARC 305, 502, or permission of instructor.

ARC 550. Professional Lecture Series
3 credits
Offered Fall and Spring Semesters
Exposure to the various professional disciplines in South Florida that make contributions to the design process. Case study analysis and evaluation of current building project, from time of initial formulation through completion, including research, diagrammatic studies, site visits and lectures.

ARC 551. Contemporary Theories of Architecture
3 credits
Offered By Announcement only
Theoretical basis of modern architecture and different present currents and movements. Agrarianism, technism, orthodoxy, brutalism, scientism, revivalism, consumerism, rationalism, classicism. Prerequisite: ARC 204 or permission of instructor.

ARC 553. Structural Design Theory
3 credits
Offered By Announcement only
Relationship of structural systems to architectural design. Case studies in theories of structure, form and construction. Prerequisite: ARC 306 or CAE 313.

ARC 554. Architecture of South Florida
3 credits
Offered By Announcement only
History of architecture and human settlements. Studies of significant architectural landmarks and urban design of the South Florida Region, chronological growth of Miami, Miami Beach, Coral Gables, Key West and Palm Beach. Prerequisite: ARC 204 or permission of the instructor.

ARC 555. Design and Fabrication Techniques in Wood: The Lamp
3 credits
Offered Spring Semester
Design, construction and detailing of wood as applied to furnishings and interiors. Focus: lamps and illumination. Workshop based course including research, exercises, measuring, documentation and a final project.

ARC 556. Design and Fabrication Techniques in Wood - The Clock
3 credits
Offered Fall Semester
Design, construction and detailing of wood as applied to furnishings and interiors. Focus: Traditional Clock and Case Design. Workshop based course including research, exercises, measuring, documentation and a final project.

ARC 557. Design and Fabrication Techniques: Carved Panels
3 credits
Offered First and Second Summer Sessions
Design, construction and detailing of wood as applied to furnishings and interiors. Focus: low and high relief carved wood panels. Workshop based course including research, exercises, measuring, documentation and a final project.
ARC 558. Theories of Landscape Architecture
3 credits
Offered Fall Semester
Leading theories of landscape architecture which have influenced current considerations of nature, landscape and design. Prerequisite: ARC 204 or permission of instructor.

ARC 559. Computer Aided Presentation Graphics
3 credits
Offered By Announcement only
Introduction to computer aided presentation graphics from the perspective of the design professional. Topics include: desktop publishing, image processing, and desktop presentations. Prerequisite: ARC 213 or permission of instructor.

ARC 561. Building Construction
3 credits
Offered Fall Semester
Material characteristics of enclosure and structural systems, case studies in traditional and modern building construction. Topics include properties of building materials; wood, masonry, concrete, steel and glass construction techniques; on-site and off-site processes; interior and exterior finishes; assemblies, detailing and building codes. Prerequisite: Graduate standing or permission of instructor.

ARC 562. Building Systems I
3 credits
Offered Fall Semester
Environmental and Safety Systems. Topics include mechanical - HVAC and conveyors; plumbing - fixtures and pipes; electrical - equipment and wiring design; safety systems - fire safety and emergency and signal systems. Prerequisite: ARC 561 or permission of instructor.

ARC 563. Building Systems II
3 credits
Offered Spring Semester
Principles and applications of light and acoustics. Topics include natural and artificial light - planning for sunlight, problems and solutions for interior and exterior illumination; sound - properties, problems and solutions in new and existing spaces electrical equipment and wiring design. Prerequisite: ARC 562 or permission of instructor.

ARC 564. Building Systems III
3 credits
Offered By Announcement only
Direction, control and coordination of construction project activities. Topics include inspection, recording, safety standards. Prerequisite: ARC 363 or 563 or permission of instructor.

ARC 567. History of Architecture I: Ancient, Medieval and Renaissance
3 credits
Offered Fall Semester
Studies of the history of architecture and urban design. Focus on religious and secular monuments and their settings, domestic architecture and infrastructure, regional constructional and compositional traditions from prehistory to the end of the sixteenth century. Prerequisite: Graduate standing. Corequisite: ARC 501.

ARC 568. History of Architecture II: Baroque through Contemporary
3 credits
Offered Spring Semester
Studies of the history of architecture and urban design. Focus on religious and secular monuments and their settings, domestic architecture and infrastructure, regional constructional and compositional traditions from the end sixteenth century through to the present. Prerequisite: Graduate standing. Corequisite: ARC 502.

ARC 569. Directed Readings
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
A structured program of readings and essays organized by the student and his/her graduate supervisor constituting a preparation for graduate research in the student's chosen area of interest. Prerequisite: Permission of Program Director.
ARC 570. Modern Architecture  
3 credits  
Offered Spring Semester  
History of architecture, landscape, and city design in the modern era.

ARC 571. Ancient Architecture  
3 credits  
Offered Fall Semester  
History of architecture and human settlements. Western European prehistory, Egypt, Mesopotamia, Persia, Aegean and Mediterranean, Greece, Rome. Prerequisite: Graduate standing or permission of instructor.

ARC 572. Selected Topics in World Architecture  
3 credits  
Offered Fall Semester  
History of architecture and human settlements. Islamic Near East, North Africa, Hindu and Buddhist India, Nepal, S. E. Asia, China, Japan, Pre-Columbian America. Prerequisite: Graduate standing or permission of instructor.

ARC 573. Early Christian, Byzantine, and Medieval Architecture  
3 credits  
Offered Fall Semester  
History of architecture and human settlements. Early Christian and Byzantine architecture in Italy, the Near East, Greece, North Africa, Eastern Europe, Medieval architecture in Western Europe. Prerequisite: Graduate standing or permission of instructor.

ARC 574. Renaissance Architecture  
3 credits  
Offered Fall Semester  
History of architecture and human settlements. Renaissance and Baroque architecture in Italy, France, Spain and Portugal, Great Britain, Austria, Germany, and neighboring countries. Prerequisite: Graduate standing or permission of instructor.

ARC 575. Colonial Architecture  
3 credits  
Offered Fall Semester  
History of architecture and human settlements. Iberian and British Colonies from the 16th through the 19th centuries: North and South America, Caribbean, India and Africa. Prerequisite: Graduate standing or permission of instructor.

ARC 576. 19th and 20th Century Architecture  
3 credits  
Offered Fall Semester  
History of architecture and human settlements. America and Europe during the 19th and 20th centuries; cultural, technological and theoretical development. Prerequisite: Graduate standing or permission of instructor.

ARC 577. The Architecture of Alvar Aalto  
3 credits  
Offered Fall Semester  
An examination of the architecture of Alvar Aalto through the analysis of selected buildings. Prerequisite: Permission of the instructor.

ARC 578. Italian Rationalist Architecture  
3 credits  
Offered By Announcement only  
History of Italian architecture and urban design between 1914 and 1950: cultural, technological, and theoretical developments; relationship between architecture, politics and propaganda; related survey of the period in other countries (France, German, Soviet Union). Prerequisite: ARC 305 or permission of the instructor.

ARC 579. History of Architecture: The Natural and the Man-Made  
3 credits  
Offered By Announcement only  
A review of the relationship between man, the landscape, and architecture from pre-history to the twentieth century. Prerequisite: Graduate standing.
ARC 584. **Special Problems**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Group or individual investigations of significant architectural issues, offered by special arrangement only. Prerequisite: Permission of Program Director.

ARC 585. **Special Problems**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Group or individual investigations of significant architectural issues, offered by special arrangement only. Prerequisite: Permission of Program Director.

ARC 586. **Special Problems**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Group or individual investigations of significant architectural issues, offered by special arrangement only. Prerequisite: Permission of Program Director.

ARC 590. **History of Cities**  
3 credits  
Offered Fall and Spring Semesters  
Historical overview of the origin of cities and the development of cities in the East, West, and New World. Focus on the nature of the industrial revolution and the development of the industrial city and contemporary urban settlements. Prerequisite: Graduate standing or permission of instructor.

ARC 592. **Computing in Design Practice**  
3 credits  
Offered Fall Semester  
Introduction to computer applications specific to the design professional practice and management of computing resources in a design firm. Prerequisite: ARC 213 or 513 or permission of instructor.

ARC 593. **Computer Animation**  
3 credits  
Offered Spring Semester  
Explores the use of computer animation and advanced visualization techniques in architecture with emphasis on texture and lighting, spatial choreography and story-boarding. Prerequisite: ARC 593 or 596 or permission of instructor.

ARC 594. **Geographic Information Systems in Urban Design**  
3 credits  
Offered Spring Semester  
Exploration of Geographic Information Systems (GIS) in urban design. Principles of GIS and their application to spatial analysis, data management and visualization. Prerequisite: ARC 213 or 513 or permission of instructor.

ARC 595. **Database Management Systems and Programming**  
3 credits  
Offered Fall Semester  
Introduction to principles of database management and programming. Instruction of a selected database management program and a programming language. Prerequisite: Graduate standing or permission of instructor.

ARC 596. **Interactive Multimedia in Design**  
3 credits  
Offered Spring Semester  
Integration of text, video, sound, and computer graphics to create an interactive electronic information medium. Prerequisite: ARC 213 or 513 or permission of instructor.

ARC 597. **Computer Visualization**  
3 credits  
Offered Spring Semester  
Focus: Explores the use of various advanced visualization techniques in design. Topic will change from semester to semester. Format: lecture, laboratory and exercises. Prerequisite: ARC 593 or 596 or permission of instructor.
ARC 601. Town Design  
6 credits  
Offered Fall Semester  
Exploration of town design as an alternative to suburban sprawl. Prerequisite: Graduate standing.

ARC 602. Housing Design  
6 credits  
Offered Spring Semester  
Exploration of low and medium density housing with attention to social, environmental, and market issues. Design of housing in different social and environmental conditions. Prerequisite: ARC 601.

ARC 603. Redesign of Suburbia  
6 credits  
Offered First and Second Summer Sessions  
Exploration of design issues and problems related to growth management and the re-development of suburbia. Prerequisite: ARC 602.

ARC 607. Architecture Design  
6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Elective component: student and faculty select areas of in-depth study. Topics include building types, environment, energy, community design, etc. Prerequisite: ARC 503.

ARC 608. Architecture Design  
6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Specialization component: student and faculty select areas of in-depth study in housing. Low-income housing, elderly housing, suburban housing, housing types, etc. Prerequisite: ARC 607.

ARC 609. Architecture Design  
6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Comprehensive project. Programming, design development, formulation of alternative solutions, detailing, presentation. Prerequisite: ARC 608.

ARC 610. Architecture Design Degree Project  
6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Special component: student/faculty selected area of special study. Prerequisite: ARC 609.

ARC 611. Architecture Design and Research  
6 credits  
Offered Fall Semester  
Documentation, investigation and research of the stylistic and constructive characteristics of Roman buildings and monuments. Focus on factual documentation.

ARC 612. Architecture Design and Research  
6 credits  
Offered Spring Semester  
Research and investigation of urbanism and the construction of the city through compositional exercises.

ARC 621. Seminar on Town Design  
3 credits  
Offered Fall Semester  
Introduction to the lexicon of urbanism; analytical presentations of the concepts of: region, town, neighborhood, corridor, district, and building type; interdisciplinary presentations, review, and criticism of current town and urban design projects. Corequisite: ARC 601.
ARC 622. Seminar on Housing  
3 credits          Offered Spring Semester  
Introduction to domestic building typology; exploration of the concepts of low, medium, and high density housing with attention to social, environmental, and economic issues; presentations of current case studies. Corequisite: ARC 602.

ARC 623. Seminar on Redesigning Suburbia  
3 credits          Offered First and Second Summer Sessions  
Introduction to the critical reconstitution of the city; theory and history of the concepts of revitalization and redevelopment; presentations, review, and criticism of current case studies. Corequisite: ARC 603.

ARC 624. Architecture Theory  
3 credits          Offered Spring Semester  
Review and criticism of current theoretical work in architecture. Design theory, language, typology, image, form, context. Prerequisite: Graduate standing or permission of the instructor.

ARC 625. Roman Architecture and Urbanism I  
3 credits          Offered Fall Semester  
Historical overview of architecture and town planning in ancient Rome, from the Etruscan period through the Imperial period.

ARC 652. Management of Professional Practice  
3 credits          Offered Fall Semester  
Overview of the practice and the profession, legal and ethical concerns, business types and management practices, traditional and non-traditional practices and services, contracts and contractual relationships, disputes and risk management. Prerequisite: ARC 502. Limited to Architecture students.

ARC 691. Seminar in Computing and Design  
3 credits          Offered Fall Semester  
Exploration of a range of topics related to computing and design. Future of computing in design, electronic communications, computing and design theory and methods, etc. Prerequisite: ARC 213 or 513 or permission of instructor.

ARC 695. Advanced Topics  
3 credits          Offered Fall and Spring Semesters  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics will be shown in the printed class schedule, following the title "Advanced Topics". Prerequisite: Permission of the Program Director.

ARC 696. Advanced Topics  
3 credits          Offered Spring Semester  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics will be shown in the printed class schedule, following the title "Advanced Topics". Prerequisite: Permission of the Program Director.

ARC 699. Directed Research  
1-6 credits          Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individually supervised projects. Required 6 credit course for all Master of Architecture in Computing students who exercise final project rather than thesis option. Prerequisite: ARC 529 or equivalent, approved thesis or final project proposal and permission of instructor.

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ARC 701. Masters Final Project
6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individually supervised projects. Required as a 6 credit course for all Master of Architecture in Computing students electing a final project. Prerequisite: An approved final project proposal and permission of supervising faculty.

ARC 710. Master's Thesis
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted. Prerequisite: Permission of the Program Director.

ARC 720. Research in Residence
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis or final project for the master’s degree after the student has enrolled for the permissible cumulative total in ARC 699 or ARC 710 (usually six credits). Credit not granted. May be regarded as full-time residence. Prerequisite: Permission of the Program Director.
**ARTS AND SCIENCES**

### Anthropology

**APY 501. Methods of Anthropological Research**

3-6 credits  
Offered Spring Semester  
Concentration on research methods for Cultural, Archaeological, Linguistic, and/or Biological Anthropology. Prerequisite: Six credits in Anthropology at 300 level or above.

**APY 502. Galapagos Political Ecology and Anthropology Field Course**

3-6 credits  
Offered Fall and Spring Semesters and First Summer Session  
Field research in advanced topics in Cultural, Archaeological, Linguistic and/or Biological Anthropology. Preparation of data for professional presentation and publication is stressed. Prerequisite: Six credits in Anthropology at 300 level or above AND written permission from instructor.

**APY 505. Museum Internship**

3 credits  
Offered Fall and Spring Semesters  
Field work and on-site experience in museum studies conducted in conjunction with the major museums in Miami. Training and research in methods and techniques in museology. Prerequisite: Permission of instructor.

**APY 506. Workshop in Anthropology**

3-6 credits  
Offered Fall and Spring Semesters  
This course is designed for upper level and graduate students to participate in special topics in Anthropology and related fields. Prerequisite: Permission of instructor.

**APY 512. Advanced Medical Anthropology**

3 credits  
Offered Fall and Spring Semesters  
Applications of theories and methods of medical anthropology to problems in human health and disease. Prerequisite: APY 413, or three credits in Nursing, or three credits in Epidemiology and Public Health, OR permission of the instructor.

**APY 518. Advanced Seminar in Anthropology**

3 credits  
Offered Fall and Spring Semesters  
Specialized topics in Anthropology to involve students into current research specializations. Prerequisite: Six credits in Anthropology at 300 level OR above or permission of instructor.

### Art

**ART 501. Advanced Painting III**

3 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. Prerequisite: ART 402.

**ART 502. Advanced Painting IV**

3 credits  
Offered Fall and Spring Semesters  
Continuation of ART 501. Prerequisite: ART 501.

**ART 503. Independent Study in Painting**

1-6 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. An independent study course may be repeated. Prerequisite: Permission of instructor.

**ART 504. Independent Study in Drawing**

1-6 credits  
Offered By Announcement only  
Course content decided between student and professor. An Independent Study course may be repeated. Prerequisite: Permission of instructor.
ART 505. **Topics in Painting**  
1-6 credits  
Current readings and/or technical concerns not covered in the regular curriculum. Course content will vary each semester. Prerequisite: Any 400-level painting class.

ART 509. **Independent Study in Other Media**  
1-6 credits  
Course content decided between student and professor. Independent Study course may be repeated. Prerequisite: Permission of instructor.

ART 510. **Advanced Photography III**  
3 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. Prerequisite: ART 411.

ART 511. **Advanced Photography IV**  
3 credits  
Offered Fall and Spring Semesters  
Continuation of ART 510. Prerequisite: ART 510.

ART 512. **Independent Study in Photography**  
1-6 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. An Independent Study course may be repeated. Prerequisite: Permission of instructor.

ART 517. **Advanced Sculpture III**  
3 credits  
Offered Fall and Spring Semesters  
Examination of ongoing work in relationship to historical and contemporary interpretations issues. Prerequisite: ART 418 and permission of instructor.

ART 518. **Advanced Sculpture IV**  
3 credits  
Offered Fall and Spring Semesters  
Continuation of ART 517. Prerequisite: ART 517.

ART 519. **Independent Study in Sculpture**  
1-6 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. An Independent Study course may be repeated. Prerequisite: Permission of instructor.

ART 551. **Intaglio/Relief IV**  
3 credits  
Offered By Announcement only  
Advanced work in intaglio/relief processes: course requirements decided between student and professor. Prerequisite: ART 451.

ART 552. **Lithography IV**  
3 credits  
Offered By Announcement only  
Advanced work in lithography: course requirements decided between student and professor. Prerequisite: ART 452.

ART 553. **Silkscreen IV**  
3 credits  
Offered By Announcement only  
Advanced work in silkscreen. Prerequisite: ART 453.

ART 554. **Computer Assisted Printmaking**  
3 credits  
Offered By Announcement only  
Advanced work in computer assisted printmaking; course requirements decided between student and professor. Prerequisite: ART 454 or permission of instructor.

ART 555. **Topics in Printmaking**  
1-6 credits  
Current readings and/or technical concerns not covered in the regular curriculum. Course content will vary each semester. Prerequisite: Any 400 level printmaking class.
ART 561. Clay Bodies and Glazes  
3 credits  
Offered By Announcement only  
The chemistry of ceramics; students develop, test and use their own clays and low-to-high fire glazes. Prerequisite: ART 461 and 462.

ART 563. Independent Study in Ceramics/Glass  
1- 6 credits  
Offered Fall and Spring Semesters  
Course content decided between student and professor. An Independent Study course may be repeated. Prerequisite: Permission of instructor.

ART 564. Directed Research and Projects in Ceramics/Glass  
3 credits  
Offered Fall and Spring Semesters  
Ceramic/glass approaches from early history to contemporary period, and the development of technical ability. Prerequisite: ART 561 or permission of instructor.

ART 591. Portfolio/Business of Design  
3 credits  
Offered By Announcement only  
Individually supervised graphic design portfolio. Professional practices in design. Prerequisite: ART 491.

ART 592. Special Projects/Multimedia  
3 credits  
Offered By Announcement only  
Video Art and multimedia portfolio includes classroom work. Prerequisite: ART 392, 491, or permission of instructor.

ART 593. Seminar in Professional Practices  
1- 6 credits  
Offered Fall and Spring Semesters  
Advanced course with a required placement in a professional design or multimedia setting. Classroom sessions on professional topics and issues. Portfolio required. Prerequisite: Senior standing.

ART 599. Exhibition Preparation  
3 credits  
A seminar class devoted to the preparatory work needed to plan and promote a solo exhibition, including installation/lighting concerns. Preliminary written assignments will also be given in preparation for ART 710 Thesis. Prerequisite: Permission of instructor.

ART 601. Painting  
3 credits  
Offered Fall and Spring Semesters  
Professional and concentrated experiences in media and subject matter decided in conference between candidate and instructor. Prerequisite: Completion of 500 level painting courses.

ART 602. Painting  
3 credits  
Offered Fall and Spring Semesters  
Continuation of ART 601.

ART 603. Problems in Studio Art  
1- 6 credits  
Offered Fall and Spring Semesters  
Course content will be decided in conference between candidate and instructor. This course may be repeated for credit. Prerequisite: Permission of Chairman.

ART 604. Seminar in Studio Art  
3 credits  
Offered Spring Semester  
Special topics in selected area of studio art. Prerequisite: Permission of Chairman.

ART 610. Photography  
3 credits  
Offered Fall and Spring Semesters  
Content decided in conference between candidate and instructor. Prerequisite: Completion of 500 level Photography courses.
ART 611. Photography
3 credits
Continuation of ART 610. Prerequisite: ART 610.

ART 617. Sculpture
3 credits
Content decided in conference between candidate and instructor. Prerequisite: Completion of 500 level Sculpture courses.

ART 618. Sculpture
3 credits
Continuation of ART 617. Prerequisite: ART 618.

ART 651. Intaglio/Relief V
3 credits
Advanced intaglio/relief processes: course requirements decided between candidate and professor. Prerequisite: Completion of 500 level Intaglio/relief course.

ART 652. Lithography V
3 credits
Advanced lithography. Course requirements decided between candidate and professor. Prerequisite: Completion of 500 level lithography course.

ART 653. Silkscreen V
3 credits
Advanced work in silkscreen. Prerequisite: ART 553.

ART 654. Computer Assisted Printmaking
3 credits
Advanced work in computer assisted printmaking; course requirements decided between candidate and professor. Prerequisite: ART 554 or permission of instructor.

ART 661. Ceramics
3 credits
Content to be decided in conference between candidate and instructor. Prerequisite: Completion of 500 level Ceramics courses.

ART 662. Ceramics
3 credits
Continuation of ART 661. Prerequisite: ART 661 or permission of instructor.

ART 681. Writing About Art
3 credits
Writing about art on a professional level. Prerequisite: Permission of instructor.

ART 691. Graphic Design
3 credits
Advanced graduate projects in graphic design. Prerequisite: Graduate standing.

ART 692. Multimedia
3 credits
Advanced graduate projects in multimedia. Prerequisite: Graduate standing.

ART 710. Master’s Thesis
1- 6 credits
The student working on his/her master's thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.
ART 720. Research in Residence
0 credits
Offered Fall and Spring Semesters
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in ART 710 (usually six credits). Credit not granted. May be regarded as full time residence.

Art History

ARH 505. Problems in Art History
3 credits
Offered Fall and Spring Semesters
A means by which the student of advanced standing may investigate areas of a specialized nature, or those which are not offered as a regular part of the curriculum. Course content will be decided in joint conference between student and instructor. Prerequisite: Any 300-level or 400-level course in Art History and permission of instructor.

ARH 506. Problems in Art History
3 credits
Offered Fall and Spring Semesters
A means by which the student of advanced standing may investigate areas of a specialized nature, or those which are not offered as a regular part of the curriculum. Course content will be decided in joint conference between student and instructor. Prerequisite: Any 300-level or 400-level course in Art History and permission of instructor.

ARH 507. Museum Studies I
3 credits
Offered Fall and Spring Semesters
Administrative functions of local art museums; researching selected art works in their permanent collections. Prerequisite: ARH 131, 132, one 300/400 level course in Art History, or permission of instructor.

ARH 508. Museum Studies II
3 credits
Offered Fall and Spring Semesters
Organizing an art museum exhibition, and participating in the installation. Writing and composing the catalogue. Prerequisite: ARH 507.

ARH 530. Seminar in Art History
3 credits
Offered By Announcement only
Special topics in western and nonwestern art. Semester's topic will be announced. Prerequisite: Permission of instructor.

ARH 560. Seminar in Nineteenth and Twentieth Century Art
3 credits
Offered By Announcement only
Special topics including museum practices and theory, women’s art and contemporary issues. Prerequisite: Permission of instructor.

ARH 570. Seminar in Non-European Art
3 credits
Offered By Announcement only
Special Topics in African, Oriental, Oceanic, Native North or South American art traditions. Prerequisite: ARH 133, 134, or permission of instructor.

ARH 598. Seminar in Contemporary American Art
3 credits
Offered Fall Semester
Issues in Art since 1960: Aesthetic theories and ideological issues generated in contemporary art as expressed in the writing of artists and art critics. Prerequisite: ARH 344. Undergraduates must have permission of instructor.

ARH 605. Problems in Art History
3 credits
Offered Fall and Spring Semesters
Course content will be decided in joint conference between student and instructor.
ARH 606. **Problems in Art History**  
3 credits  
Offered Fall and Spring Semesters  
Course content will be decided in joint conference between student and instructor.

ARH 681. **Directed Reading and Research**  
1-3 credits  
Offered By Announcement only  
Individual supervised research project on a specific artist, work of art, or period.  
Prerequisite: Permission of instructor.

ARH 682. **Directed Reading and Research**  
1-3 credits  
Offered By Announcement only  
Individual supervised research project on a specific artist, work of art, or period.  
Prerequisite: Permission of instructor.

ARH 710. **Master’s Thesis**  
1-6 credits  
Offered Fall and Spring Semesters  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

ARH 720. **Research in Residence**  
0 credits  
Offered Fall and Spring Semesters  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in ARH 710 (usually six credits). Credit not granted. May be regarded as full time residence.

**Biology**

BIL 511. **Biometry**  
3 credits  
Offered By Announcement only  
Descriptive and analytical statistics as used in biology. Emphasizes sampling, presentation of quantitative data, probability theory applications, distributions, parametric and non-parametric test procedures. Prerequisite: One semester of statistics and one year of calculus.

BIL 520. **Evolution**  
3 credits  
Offered By Announcement only  
Evolutionary mechanisms and pathways: sources of hereditary variation, evolutionary forces, origins of adaptations, speciation, macroevolution, origin of life and humankind. Prerequisite: BIL 250.

BIL 521. **Systematics**  
3 credits  
Offered By Announcement only  
Concepts and methods in phylogenetic systematics. Lectures, discussions, and computer labs, 3 hours. Prerequisite: Permission of instructor.

BIL 522. **Plant Evolution**  
3 credits  
Offered By Announcement only  
Role of genetic variation, local adaptation, speciation, hybridization and polyploidy, and life histories in plant evolution. Prerequisite: BIL 250 or permission of instructor.

BIL 523. **Advanced Biology of Marine Invertebrates**  
4 credits  
Offered By Announcement only  
Detailed study of major phyla of marine invertebrates. Special emphasis on taxa found in waters off southern Florida. Field course. Lectures, laboratory, special projects, and seminars. Prerequisite: BIL 235 and 321.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered By</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIL 525</td>
<td>Herpetology</td>
<td>3</td>
<td>Announcement only</td>
<td>Systematics, biogeography, and evolutionary biology of amphibians and reptiles, with emphasis on modern families. Lecture, 2 hours; laboratory, 3 hours. Prerequisite: BIL 235.</td>
</tr>
<tr>
<td>BIL 526</td>
<td>Studies in the Biology of Mycorrhizae</td>
<td>2</td>
<td>Announcement only</td>
<td>Readings, discussions and laboratory exercises concerning the biology of mutualistic root-inhabiting fungi and their plant hosts. Topics will vary by semester, may be repeated for credit. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>BIL 527</td>
<td>Biology of Fungi</td>
<td>4</td>
<td>Announcement only</td>
<td>Physiology and ecology of the major groups of fungi, especially those of importance as pathogens or mutualists. Combined lecture and laboratory. Prerequisite: One year of general biology with laboratory.</td>
</tr>
<tr>
<td>BIL 529</td>
<td>Higher Vascular Plants</td>
<td>4</td>
<td>Announcement only</td>
<td>Anatomy and morphology of higher vascular plants; emphasis on form as related to function and ecology. Lecture plus laboratory, 6 hours. Prerequisite: BIL 235.</td>
</tr>
<tr>
<td>BIL 530</td>
<td>Population Genetics</td>
<td>3</td>
<td>Announcement only</td>
<td>Theories of genes in populations, including an analysis of the genetic basis of microevolution; current examples from natural and experimental populations. Lecture and discussion, 3 hours. Prerequisite: BIL 250 and a year of calculus or their equivalents.</td>
</tr>
<tr>
<td>BIL 531</td>
<td>Advanced Field Ecology</td>
<td>5</td>
<td>Announcement only</td>
<td>Principles of and practical experience in quantitative sampling of community structure, plant and animal populations, and animal activities. Emphasis on individual projects. Lecture, 3 hours; laboratory and field, 10 hours alternate Saturdays plus projects. Prerequisite: One semester of Ecology and BIL 511 or another statistics course.</td>
</tr>
<tr>
<td>BIL 532</td>
<td>Plant Population Biology</td>
<td>3</td>
<td>Announcement only</td>
<td>Contemporary issues in plant population biology: demography, dynamics, life tables, simple models, density-dependence, life history evolution, competition, herbivory, pollination, seed dispersal and biotic defense. Prerequisite: BIL 235 and 250.</td>
</tr>
<tr>
<td>BIL 533</td>
<td>Advanced Conservation Biology</td>
<td>3</td>
<td>Announcement only</td>
<td>Principles of conservation biology including species concept, biodiversity, population genetics, demography, community and ecosystems ecology, habitat loss, conservation reserve design and wildlife management. Project on management planning required. Prerequisite: BIL 235, 251 or equivalents.</td>
</tr>
<tr>
<td>BIL 534</td>
<td>Ecological Abiotic Methods</td>
<td>4</td>
<td>Announcement only</td>
<td>Theory and practice of methods and instrumentation used in ecology. Laboratory and field trips, 9 hours. Prerequisite: Ecology course, one year of chemistry with laboratory, and permission of instructor.</td>
</tr>
</tbody>
</table>
BIL 536.  **Plant Ecology**  
4 credits  
*Offered By Announcement only*
Physiological, morphological, and life history adaptations of plants to the  
environment; the relationship between these adaptations; population processes  
and community structure and dynamics. Lecture, 3 hours; laboratory, 3 hours;  
field trips. Prerequisite: BIL 235 and permission of instructor.

BIL 537.  **Ecosystem Ecology**  
3 credits  
*Offered By Announcement only*
Concepts and models of energy and nutrient flow, food webs, successional  
processes, human influences and effects of spatial heterogeneity. Prerequisite:  
BIL 235 or permission of instructor.

BIL 538.  **Wetland Ecology**  
3 credits  
*Offered By Announcement only*
Nature, development, distribution, and function of wetland ecosystems.  
Prerequisite: BIL 235.

BIL 539.  **Wildlife Resource Philosophy and Policy**  
3 credits  
*Offered By Announcement only*
Attitudes, philosophy, and policies that govern management of wildlife resources  
worldwide. Methods to influence public support for implementation of sound  
wildlife resource management. Prerequisite: BIL 332.

BIL 540.  **Ethology and Behavioral Ecology**  
3 credits  
*Offered By Announcement only*
Evolutionary and comparative approach to concepts in animal behavior  
emphasizing function and mechanism. Topics include genetics of behavior,  
orientation, foraging, communication, and social behavior. Prerequisite: BIL 235  
and either BIL 241 or 341 or permission of instructor.

BIL 541.  **Laboratory and Field Ethology**  
3 credits  
*Offered By Announcement only*
Laboratory and field exercises introduce the quantitative techniques currently  
employed in ethological research. Both principles and practice will be covered and  
a term project is required. Prerequisite: BIL 236.

BIL 550.  **Cell Metabolism: Structure and Function**  
3 credits  
*Offered By Announcement only*
Interactions of cell organelles within the dynamic context of intracellular  
microarchitecture, enzyme kinetics and bioenergetics. Prerequisite: BIL 255.

BIL 551.  **Current Topics in Genetics**  
1- 2 credits  
*Offered By Announcement only*
Research literature in cytogenetics, molecular, human and population genetics.  
Subjects vary from year to year. This course may be repeated for credit.  
Prerequisite: BIL 250 and permission of instructor.

BIL 554.  **Electron Microscopy**  
4 credits  
*Offered Fall Semester*
Techniques in transmission electron microscopy including tissue preparation, use  
of the electron microscope, photography, and interpretation of micrographs.  
Lecture, 1 hour; laboratory, 6 hours. Prerequisite: BIL 255 or 361 and permission  
of instructor.

BIL 555.  **Projects in Electron Microscopy**  
2 credits  
*Offered Spring Semester*
Individual research projects in transmission electron microscopy, 6 hours.  
Prerequisite: BIL 554. Permission of instructor.
BIL 562. **Ornithology**
4 credits  
Offered By Announcement only
Advanced ornithology with stress on quantitative aspects. Prerequisite: BIL 261 or equivalent.

BIL 564. **Advanced Developmental Biology**
3 credits  
Offered By Announcement only
Comprehensive survey of the principles of development and methods of experimental analysis. Lecture, discussion and demonstration, 3 hours. Prerequisite: BIL 364.

BIL 566. **Plant Environmental Physiology**
3 credits  
Offered By Announcement only
Environmental influence on the physical and chemical bases of life processes in plants, including ecosystem consequences. Prerequisite: BIL 255, 265 or permission of instructor.

BIL 567. **Animal Physiological Ecology**
3 credits  
Offered By Announcement only
Physiological interactions of animals with their biotic and abiotic environments: Information integrated from tissue, organ, and whole organism levels. Prerequisite: BIL 265 or permission of instructor.

BIL 569. **Biology of Aging**
3 credits  
Offered By Announcement only
The hypotheses and data relating to the biological basis of aging in invertebrates and vertebrates, including humans. Prerequisite: Senior or graduate status in a biological science.

BIL 571. **Advanced Special Studies in Biology**
1-6 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.

BIL 572. **Advanced Special Studies in Biology**
1-6 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.

BIL 573. **Advanced Special Studies in Biology**
1-6 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.

BIL 574. **Advanced Special Studies in Biology**
1-6 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.

BIL 575. **Advanced Special Studies in Biology**
1-6 credits  
Offered By Announcement only
Content of course will vary by semester. Content in any semester will be indicated via subtitle in the class schedule.

BIL 581. **Survey of the History and Literature of Biology**
2 credits  
Offered By Announcement only
Emphasis on historical development and central concepts of biology. Prerequisite: Senior standing and permission of instructor.

BIL 590. **Studies in Biology**
1-5 credits  
Not offered. Transfer credit only.
Special topics taken at other institutions with no direct equivalents.
BIL 591. Studies in Biology  
1-5 credits  
Not offered. Transfer credit only. Special topics taken at other institutions with no direct equivalents.

BIL 592. Studies in Biology  
1-5 credits  
Not offered. Transfer credit only. Special topics taken at other institutions with no direct equivalents.

BIL 593. Studies in Biology  
1-5 credits  
Not offered. Transfer credit only. Special topics taken at other institutions with no direct equivalents.

BIL 594. Studies in Biology  
1-5 credits  
Not offered. Transfer credit only. Special topics taken at other institutions with no direct equivalents.

BIL 595. Studies in Biology  
1-5 credits  
Not offered. Transfer credit only. Special topics taken at other institutions with no direct equivalents.

BIL 610. Marine Conservation Science  
4 credits  
Offered By Announcement only  
Marine ecology and the science information needs of tropical marine parks and protected areas with a focus on the particular threats to Caribbean protected areas. The course will be taught concurrently with the Universidad Autonoma de Santa Domingo (UASD) in the Dominican Republic. Students from the University of Miami and UASD will be covering the same lecture and reading material; then share nine days for field work in the Dominican Republic. Prerequisite: Permission of instructor.

BIL 620. Seminar in Evolution  
1-2 credits  
Offered By Announcement only  
Current literature in evolutionary biology. This course may be repeated for credit. Prerequisite: Permission of instructor.

BIL 621. Biogeography  
3 credits  
Offered By Announcement only  
Distribution of plants and animals on a world basis, including concepts of long-range distribution. Lecture, 3 hours.

BIL 622. Topics in Arthropod Biology  
2 credits  
Offered By Announcement only  
Areas of current interest will be covered in weekly two-hour seminar-discussions. Prerequisite: BIL 323 or permission of instructor.

BIL 623. Birds of the World  
4 credits  
Offered By Announcement only  
Classification, evolution, distribution, and natural history of the major taxa of birds. Prerequisite: A course in Ornithology or background in Vertebrate Biology.

BIL 626. Pollination Biology  
2 credits  
Offered By Announcement only  
Principles of pollination biology. Prerequisite: Permission of instructor.

BIL 629. Advanced Tropical Botany  
8 credits  
Offered By Announcement only  
A 7-8 week course on the anatomy, morphology, taxonomy, physiology, evolution and adaptation of tropical plants. Offered on main campus, utilizing the Fairchild Tropical Garden and the United States Plant Introduction Station collections or in Costa Rica under the Organization of Tropical Studies. Prerequisite: Approval of instructors.
BIL 630. Population and Community Ecology: Theory  
3 credits **Offered By Announcement only**  
Classical and contemporary theory in population and community ecology including population dynamics, matrix models, life tables, predator-prey models and food webs. Prerequisite: Consent of instructor.

3 credits **Offered By Announcement only**  
Experimental and multivariate approach to the study of the community including the analysis of data sets and the design of field studies. Prerequisite: BIL 630 or permission of instructor.

BIL 632. Population and Community Ecology: Theory II  
3 credits **Offered By Announcement only**  
Classical and contemporary theory in population and community ecology including population dynamics, matrix models, life tables, predator-prey models and food webs. Prerequisite: Permission of instructor.

BIL 633. Seminar in Ecology  
1 credit **Offered By Announcement only**  
Prerequisite: Consent of instructor.

BIL 635. Seminar in Environmental Biology  
1 credit **Offered By Announcement only**

BIL 636. Tropical Biology: An Ecological Approach  
8 credits **Offered By Announcement only**  
The tropical environment and biota; ecologic relations, communities and evolution in the tropics. Conducted in Costa Rica under the Organization for Tropical Studies. Lecture, laboratory, and fieldwork.

BIL 637. Ecologia de Poblaciones  
7 credits **Offered By Announcement only**  
Theory and practice in field study of plant and animal populations in tropical ecosystems. Given in Spanish in Costa Rica under the Organization for Tropical Studies. Prerequisite: One semester of ecology or field biology.

BIL 638. Tropical Managed Ecosystems  
8 credits **Offered By Announcement only**  
Application of ecological principles to problems in agriculture, forestry, conservation and natural resource management in the tropics. Conducted in Costa Rica under the Organization for Tropical Studies. Prerequisite: One semester of ecology or field biology.

BIL 639. Natural Communities of Southern Florida  
3 credits **Offered By Announcement only**  
Analysis of structure, function and problems of natural communities, with emphasis on management. Lecture, 1 hour; six all-day field trips (Saturday). Prerequisite: One semester of ecology with laboratory, and permission of instructor.

BIL 640. Neuroethology  
2 credits **Offered By Announcement only**  
Neuronal, sensory, neuromuscular and integrative foundations of animal behavior. Topics include: orientation, navigation, sensory perception, patterns of movement, learning, memory and communication. Prerequisite: Permission of instructor.
BIL 641. Hormones and Behavior  
2 credits  
Offered By Announcement only  
Mediation of specific behaviors by hormones and other chemical messengers.  
Prerequisite: Permission of the instructor.

BIL 649. Seminar in Behavior  
1 credit  
Offered Fall and Spring Semesters

BIL 651. Genomes  
3 credits  
Offered By Announcement only  
Genome organization and evolution in various cell types. Structure, organization,  
and evolution, including sex chromosomes. Prerequisite: One undergraduate  
general genetics course for science majors.

BIL 652. Seminar in Population Genetics  
1- 2 credits  
Offered By Announcement only  
Discussion of current literature in Population Genetics. This course may be  
repeated for credit. Prerequisite: Permission of instructor.

BIL 653. Seminar in Cell Biology  
1 credit  
Offered By Announcement only

BIL 654. Molecular Evolution  
2 credits  
Offered By Announcement only  
Molecular processes of mutation, transposition, and amplification of DNA  
sequences. An evolutionary perspective on changes at the DNA and chromosomal  
levels that accompany speciation and the divergence of higher taxa, including the  
evolution of repeated DNA sequences, pseudogenes, exon shuffling, concerted  
evolution, and “selfish DNA”. Prerequisite: Permission of instructor.

BIL 655. Techniques in Scanning Electron Microscopy  
3 credits  
Offered By Announcement only  
Tissue preparation, use of the scanning electron microscope, photography, and  
analysis and manipulation of digital images. Lecture 1 hour; laboratory 5 hours.  
Prerequisite: Permission of instructor.

BIL 660. Neurosciences I: Neuronal Mechanisms  
3 credits  
Offered By Announcement only  
Survey of biophysical, biochemical and morphological approaches at the cellular  
level to nervous integration as a basis for behavior. Lecture, 3 hours. Prerequisite:  
Permission of instructor.

BIL 661. Neurosciences II: Nervous System Integration  
3 credits  
Offered By Announcement only  
Survey of neural control mechanisms underlying behavior. Organization and  
synaptic connections of specific neurohistological, neurophysiological and  
neuro-pharmacological procedures. Prerequisite: BIL 660 or PSY 607 or  
permission of instructor.

BIL 664. Seminar in Developmental Biology  
1 credit  
Offered By Announcement only

BIL 665. Advanced Topics in Animal Physiology  
3 credits  
Offered By Announcement only  
Seminars and discussions of current topics in physiology. Prerequisite: Permission  
of instructor.
BIL 671. **Advanced Study in Plant or Animal Sciences**  
1- 6 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Content of course will vary by semester. Content in any semester will be expressed in parenthesis following title “Advanced Study” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 672. **Advanced Study in Plant or Animal Sciences**  
1- 6 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Content of course will vary by semester. Content in any semester will be expressed in parenthesis following title “Advanced Study” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 673. **Advanced Study in Plant or Animal Sciences**  
1- 6 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Content of course will vary by semester. Content in any semester will be expressed in parenthesis following title “Advanced Study” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 674. **Advanced Study in Plant or Animal Sciences**  
1- 6 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Content of course will vary by semester. Content in any semester will be expressed in parenthesis following title “Advanced Study” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 675. **Advanced Study in Plant or Animal Sciences**  
1- 6 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Content of course will vary by semester. Content in any semester will be expressed in parenthesis following title “Advanced Study” in the printed class schedule. Prerequisite: Permission of instructor.

BIL 676. **Current Topics in Biological Research**  
1- 2 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Content will vary by semester. Readings and discussions with eminent scholars temporarily resident in the department’s Distinguished Visiting Professor program.

BIL 677. **Current Topics in Biological Research**  
1- 2 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Content will vary by semester. Readings and discussions with eminent scholars temporarily resident in the department’s Distinguished Visiting Professor program.

BIL 678. **Current Topics in Biological Research**  
1 credit  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Content will vary by semester. Readings and discussions with eminent scholars temporarily resident in the department’s Distinguished Visiting Professor program.

BIL 681. **Ecologia da Floresta Amazonica**  
4 credits  
*Offered By Announcement only*  
One-month field course focusing on the ecological characteristics of the tropical forests of Brazil. An Organization for Tropical Studies course conducted near Manaus, Brazil, and offered to students fluent in Portuguese. Offered annually. Prerequisite: Graduate standing; fluency in Portuguese.
BIL 682. **Ecosistemas Amazonicas**
4 credits
Offered By Announcement only
Intensive one-month field course focusing on the unique ecological characteristics of the flooded and upland forests of the Amazon region of Peru. Conducted in Peru for Spanish-speaking students by the Organization for Tropical Studies. Prerequisite: Graduate standing; fluency in Spanish.

BIL 683. **Molecular Methods in Tropical Ecology**
4 credits
Offered By Announcement only
One-month course addressing issues of population genetics, paternity analysis, and species interactions underlying many important aspects of tropical ecology. Course is conducted at La Selva Biological Station, Costa Rica by the Organization for Tropical Studies. Prerequisite: Graduate standing.

BIL 684. **Ecologia de Ecosistemas Costeros Tropicales**
6 credits
Offered By Announcement only
Six week Field course introducing the ecology and management of tropical coastal ecosystems of the Gulf of Mexico. Course offered in Spanish in Mexico by the Organization for Tropical Studies. Prerequisite: Graduate standing; fluency in Spanish.

BIL 691. **Biology Seminar**
0 credits
Offered Fall and Spring Semesters
Research seminars by distinguished biologists.

BIL 710. **Master’s Thesis**
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

BIL 720. **Research in Residence**
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in BIL 710 (usually six credits). Credit not granted. May be regarded as full time residence.

BIL 730. **Doctoral Dissertation**
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but not for less than a total of 12. Not more than 12 hours of BIL 730 may be taken in a regular semester, nor more than six in a summer session.

BIL 750. **Research in Residence**
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
Chemistry

CHM 520. Physical Organic Chemistry
3 credits Offered Fall Semester
Aspects of chemical bonding, acids and bases, steroeochemistry, aromaticity, pericyclic reactions, linear free energy relationships, transition state theory, excited state chemistry, reactive intermediaries, mechanisms of uni- and bimolecular reactions. Prerequisite: CHM 202 and 360.

CHM 522. Synthetic Organic Chemistry
3 credits Offered Fall Semester

CHM 524. Supramolecular Chemistry
3 credits
Complexation, recognition, and catalysis as applied to bioorganic chemistry. Steric, polar, and lipophilic interactions as well as proximity effects in the design of synthetic enzyme mimics, cationic transport species, etc. Prerequisite: CHM 365 and 520.

CHM 525. Structural Organic Chemistry
3 credits Offered Spring Semester

CHM 541. Principles of Bonding and Reactivity in Inorganic Chemistry
3 credits
Bonding principles necessary to understand the structure, stability, and fundamental reactivity of main group and transition metal inorganic compounds, Prerequisite: CHM 365.

CHM 556. Self-Assembly and Surface Chemistry
3 credits
Methods of preparation of self-assembly monolayers and surface chemistry properties. Prerequisite: CHM 365.

CHM 563. Electronic Structure Methods
1 credit Offered Fall Semester
Basis sets, post-SCF methods, and potential energy surfaces. Thermodynamic, structural, and vibrational predictions, excited states, solvation and hybrid Hamiltonians. Prerequisite: Permission of department.

CHM 564. Molecular Simulations
1 credit Offered By Announcement only
Classical dynamics, force-fields, sampling, periodic and stochastic boundaries, Monte-Carlo and molecular dynamics simulations, and free energy perturbation. Prerequisite: Permission of department.

CHM 565. Principles of Spectroscopic Techniques
3 credits
Spectroscopic techniques: nuclear magnetic resonance (NMR), mass spectra (MS), ultraviolet (UV), visible infrared (IR), fluorescence, and other specialized spectroscopic techniques. Prerequisite: CHM 365.

CHM 570. Advanced Physical Chemistry Topics
3 credits

CHM 579. Special Topics: Chemistry Internship
1-3 credits Offered By Announcement only
CHM 580. Special Topics: Chemistry Internship  
1-3 credits

CHM 591. Topics in Chemistry  
1-3 credits  
Offered By Announcement only  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule following the title, “Topics in Chemistry”. Prerequisite: 20 credits in Chemistry.

CHM 592. Topics in Chemistry  
1-3 credits  
Offered By Announcement only  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule following the title, “Topics in Chemistry”. Prerequisite: 20 credits in Chemistry.

CHM 593. Readings in Chemistry  
1-3 credits  
Offered By Announcement only  
Supervised readings on special topics. Offered by special arrangement. May be repeated for credit. Prerequisite: 20 credits in Chemistry and permission of the Department Chairman.

CHM 594. Readings in Chemistry  
1-3 credits  
Offered By Announcement only  
Supervised readings on special topics. Offered by special arrangement. May be repeated for credit. Prerequisite: 20 credits in Chemistry and permission of the Department Chairman.

CHM 603. Structure and Reactivity of Inorganic Compounds  
3 credits  
Offered By Announcement only  
Current theories of bonding, stereochemistry, and reaction mechanisms as applied to the structures and reactions of inorganic compounds.

CHM 604. Coordination Chemistry  
2 credits  
Offered Fall Semester  
Bonding Theory, vibrational and electron spectra of coordination compounds; enumeration, recognition, and spectra of isomers.

CHM 626. Advanced Organic Topics  
1-3 credits  
Offered By Announcement only  
Special topics in organic chemistry. (Offered occasionally) Prerequisite: Permission of instructor.

CHM 640. Introduction to Crystallography  
1 credit  
Offered By Announcement only  
Crystals, Crystal Systems, 2-d and 3-d Space Groups and Diffraction (5h) Diffraction Principles (3h) Structure solution (direct and Patterson methods) and refinement (3h) Hands-on experiences: SMART 1000 CCD operation and SHELXTL calculation (4h) Reference: Crystal Structure Analysis, A Primer, Glusker and Trueblood, Oxford University Press, 1985.

CHM 641. Inorganic Reaction Mechanism  
1 credit  
Offered By Announcement only  
Substitution reactions Electron transfer reactions Reaction of coordinated ligands Stereochemical Change.

CHM 646. Organometallics  
1 credit  
Offered By Announcement only  
Structure, bonding, and reaction mechanisms in transition metal organometallic complexes. Catalytic hydrogenation, hydroformylation, hydrosilation, oxidation, asymmetric synthesis. Prerequisite: Permission of instructor.
CHM 647. **Advanced Inorganic Topics**  
1- 3 credits  
Offered By Announcement only  
Selected topics in inorganic chemistry. (Offered occasionally) Prerequisite: Permission of instructor.

CHM 649. **Advanced Inorganic Topics**  
2- 3 credits  
Offered By Announcement only  
Study of selected topics in inorganic chemistry. Prerequisite: Permission of instructor.

CHM 650. **Chemical Thermodynamics**  
1 credit  
Offered By Announcement only  
Thermodynamic equations from basic laws and definitions, and their applications to chemical problems. Prerequisite: Permission of department.

CHM 651. **Optical Spectroscopy**  
1 credit  
Offered By Announcement only  
Techniques in Ultraviolet, Visible, and Infrared Spectroscopies. Fluorescence Measurements. Prerequisite: Permission of instructor.

CHM 652. **Chemical Kinetics**  
1 credit  
Offered By Announcement only  
Rate laws and rate constants, integrated rate law mechanisms and reaction rates, transition state theory methods for conventional and fast kinetic determinations.

CHM 653. **Modern Quantum Chemistry**  
1 credit  
Offered By Announcement only  
Many-electron wave functions and operators, Hartree-Fock approximation, density functional theory, configuration interaction, and many-body perturbation theory. Prerequisite: Permission of department.

CHM 654. **Modern Statistical Mechanics**  
1 credit  
Offered By Announcement only  
Statistical thermodynamics, ensembles and fluctuations, partition functions for ideal and nonideal systems, quantum statistics, and distribution functions for liquids. Prerequisite: Permission of Department.

CHM 655. **Electrochemistry**  
2 credits  
Offered By Announcement only  
Modern electrochemical techniques including voltammetry, chronocoulometry, rotating disk electrode, and ultramicroelectrodes. Prerequisite: Permission of instructor.

CHM 660. **Magnetic Resonance**  
3 credits  
Offered By Announcement only  
Theory and practice of nuclear magnetic resonance (NMR) and electron spin resonance (ESR). Prerequisite: Permission of instructor.

CHM 665. **Physical Supramolecular Chemistry**  
3 credits  
Offered By Announcement only  
Intramolecular host-guest complex formation; characterization of supramolecular assemblies. Prerequisite: Permission of instructor.

CHM 670. **Advanced Physical Chemistry Topics**  
1- 3 credits  
Offered By Announcement only  
Special topics in advanced physical chemistry. (Offered occasionally) Prerequisite: Permission of instructor.

CHM 679. **Chemistry Seminar**  
1 credit  
Offered Fall and Spring Semesters  
Participation in the departmental seminar program. Required each semester the student is in residence and not enrolled in CHM 680 (excluding summer sessions).
CHM 680. Chemistry Seminar
1 credit
Offered Fall and Spring Semesters
Participation in the chemistry department seminar program, including an oral presentation of special topics.

CHM 685. Introduction to Research
2 credits
Offered By Announcement only
Research principles and practices, independent study in selected subject areas, and/or oral presentation of a proposed research topic. Open only to graduate students working toward the M.S. or Ph.D. in chemistry. Prerequisite: Permission of Department.

CHM 688. Problems in Research Planning
2 credits
Offered By Announcement only
Formulation of a research program for investigating an original problem not related to the candidate’s major laboratory research. A brief written summary and an oral defense of the plan will be required. Prerequisite: At least 10 credits of research and successful completion of the evaluation examinations.

CHM 693. Directed Readings in Chemistry
1-3 credits
Offered By Announcement only

CHM 694. Directed Readings in Chemistry
1-3 credits
Offered By Announcement only

CHM 705. Research Practices
1-3 credits
Offered Fall and Spring Semesters
Research experiences in special techniques. For students electing the non-thesis M.S. option. May be repeated for a total not to exceed six credits.

CHM 710. Master’s Thesis
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

CHM 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in CHM 710 (usually six credits). Credit not granted. May be regarded as full time residence.

CHM 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but for not less than a total of 12 hours. Up to 12 hours may be taken in a regular semester, but not more than six in a summer session.

CHM 750. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
**Classics**

**CLA 505. Seminar in Ancient Studies**
3 credits
Topics in Greek and Roman studies. Prerequisite: Junior standing or permission of instructor.

**Computer Science**

**CSC 506. Logic**
3 credits
Offered By Announcement only
Propositional and first order logic: completeness. Computational logic: Robinson’s resolution. Formalized theories: arithmetic, Godel’s incompleteness theorem, Tarski’s theorem on undefinability of truth. Prerequisite: MTH 230 or 309 or permission of the instructor.

**CSC 507. Data Security and Cryptography**
3 credits
Access, information flow, and inference controls. Network security and management. Encryption algorithms. Cryptographic techniques. Prerequisite: (CSC 517 or 527) and permission of instructor.

**CSC 517. Data Structures and Algorithm Analysis**
3 credits
Offered Fall and Spring Semesters

**CSC 518. Interpreters and Compiler Theory**
3 credits
Translation of higher-level languages into machine language. Topics in computer translation theory include grammars, parsing, scanners, precedence relations, run-time storage and symbol table organization, semantic routines, chaining and hashing, code generation and optimization, and macro implementation. Prerequisite: CSC 519.

**CSC 519. Program Languages**
3 credits

**CSC 521. Principles of Computer Operating Systems**
3 credits
Offered Fall Semester
Process management. Scheduling and dispatch. Interprocess communication. Memory management. File systems. Device management. Security and protection. System programming for UNIX. Prerequisite: (CSC 314 or 350), (CSC 322 or permission of instructor).

**CSC 523. Principles of Filing and Database Systems**
3 credits
Offered Spring Semester
Information models and systems. Database systems. Data modeling. Relational databases. Relational database design. Database query languages. Prerequisite: CSC 517.

**CSC 524. Computer Networks**
3 credits
Offered Spring Semester
Computer networks and network applications. The protocol stack. Routing, switching and bridging technologies. Models of network computing. Internet standards and protocols. Prerequisite: (CSC 314 or 350), (CSC 322 or permission of instructor).
CSC 527. Theory of Computing
3 credits  Offered Spring Semester
Sets, relations, and languages. Automata theory. Basic computability theory. Turing machines. The complexity classes P and NP. Prerequisite: MTH 309.

CSC 529. Introduction to Computer Graphics
3 credits  Offered By Announcement only

CSC 531. Introduction to Software Engineering
3 credits  Offered Fall Semester

CSC 540. Algorithm Design and Analysis
3 credits  Offered By Announcement only
Design techniques include divide-and-conquer, greedy method, dynamic programming, backtracking. Time and space complexity. Sorting, searching, combinatorial and graph algorithms. Prerequisite: CSC 517.

CSC 545. Introduction to Artificial Intelligence
3 credits  Offered By Announcement only

CSC 547. Computational Geometry
3 credits  Offered By Announcement only
Algorithms for solving geometric problems arising from application domains including graphics, robotics, and GIS. Prerequisite: CSC 517 and permission of instructor.

CSC 555. Multimedia Systems
3 credits  Offered By Announcement only
Specification and requirements of a multimedia hardware system, analog video, digital audio and video fundamentals, graphics file formats, data compression, CD technology, software, and multimedia application development. Prerequisite: CSC 517.

CSC 595. Topics in Computer Science
1-3 credits  Offered By Announcement only

CSC 596. Topics in Computer Science
1-3 credits  Offered By Announcement only

CSC 597. Topics in Computer Science
1-3 credits  Offered By Announcement only

CSC 598. Topics in Computer Science
1-3 credits  Offered By Announcement only

CSC 599. Topics in Computer Science
1-3 credits  Offered By Announcement only
CSC 606. Logic Programming
3 credits  Offered By Announcement only
Programming in Prolog, fix-point semantics, declarative semantics, completeness of SLD-resolution, negation implementation of logic programming languages, deductive databases. Prerequisite: MTH 506 and CSC 517.

CSC 609. Data Security and Cryptography
3 credits  Offered By Announcement only

CSC 611. Theory of Computation
3 credits  Offered By Announcement only
Recursive functions, Markov algorithms, Turing machines. Unsolvability. Prerequisite: MTH 509 and CSC 517.

CSC 612. Complexity Theory
3 credits  Offered By Announcement only
Models of computations, Blum’s axioms, intractibility, NP-completeness. Prerequisite: MTH/CSC 611.

CSC 623. Theory of Relational Databases
3 credits  Offered By Announcement only
Relational operators, dependencies, covers for functional dependencies, and normal forms. Representation theory, query systems, acyclic database schemes. Prerequisite: CSC 523.

CSC 624. Mobile Wireless Systems
3 credits  Offered By Announcement only
Cellular Systems, multiple access techniques, wireless networking, mobile IP, power management, user location information management, TDMA, CDMA, and GSM systems, data broadcasting. Prerequisite: CSC 524.

CSC 628. Parallel Algorithms
3 credits  Offered By Announcement only
Parallel computation models; sorting networks; parallel algorithms for sorting, searching, graph problems, prefix computation, pattern matching, and fast Fourier transforms; theory of P-completeness, the class NC. Prerequisite: CSC 540.

CSC 645. Introduction to Expert Systems
3 credits  Offered By Announcement only
Overview of expert systems, architecture of expert systems, knowledge base and representation, inference engine, expert system tools, reasoning under uncertainty, explaining the reasoning, evaluation of expert systems. Prerequisite: CSC 545.

CSC 646. Neural Computing
3 credits  Offered By Announcement only
Fundamentals of artificial neural networks; perceptrons, backpropagation algorithm, pattern recognition; counterpropagation networks, data compression; Hopfield networks, optimization; bidirectional associative memories; adaptive resonance theory. Prerequisite: CSC 517.

CSC 647. Computational Geometry
3 credits  Offered By Announcement only
Algorithms for solving geometric problems arising from application domains including graphics, robotics, and GIS. Prerequisite: CSC 517.
CSC 648. Automated Reasoning  
3 credits  
Offered By Announcement only  
Propositional and 1st order logic. Reasoning and resolution. More complex inference rules. Using contemporary ATP systems. Prolog as an ATP system and as a programming language. Applications of ATP in research and industry. Prerequisite: CSC 517 or 545.

CSC 655. Advanced Multimedia Systems  
3 credits  
Offered By Announcement only  
Digital-system fundamentals; digital audio, analog and digital video; graphics; data compression algorithms; CD-ROM technology; implementation of multimedia software development tools; architecture and issues for distributed multimedia systems; multimedia communications systems. Prerequisite: CSC 555.

CSC 670. Directed Reading  
2-4 credits  
Offered Fall and Spring Semesters

CSC 685. Topics in Computer Science  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor.

CSC 686. Topics in Computer Science  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor.

CSC 687. Topics in Computer Science  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor.

CSC 688. Topics in Computer Science  
1-3 credits  
Offered By Announcement only

CSC 689. Topics in Computer Science  
1-3 credits  
Offered By Announcement only

CSC 690. Seminar for Beginning Graduate Students  
1-3 credits  
Offered By Announcement only  
Flexible topics of interest to beginning graduate students.

CSC 692. Seminar  
1-2 credits  
Offered By Announcement only

CSC 710. Master’s Thesis  
1-6 credits  
Offered Fall and Spring Semesters  
The student working on his/her master’s thesis enrolls for the number of credits as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

CSC 725. Continuous Registration—Master’s Study  
0 credits  
Offered Fall and Spring Semesters  
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

English

ENG 504. Form in Poetry  
3 credits  
Offered By Announcement only  
Poetic works as literary objects, with attention to poetic trends and the creative process. Prerequisite: Permission of instructor. Six credits in literature or Graduate standing.
ENG 505. Form in Fiction  
3 credits  
Offered By Announcement only  
Fictional works as literary objects with attention to individual styles, Fictional Trends and the creative process. Prerequisite: Graduate students: permission of instructor. Undergraduates: six credits in literature and permission of instructor.

ENG 506. Modern English Grammar  
3 credits  
Offered By Announcement only  
The grammatical forms and structures of modern American English.

ENG 560. Creative Writing: Fiction I  
3 credits  
Offered By Announcement only  
Advanced work in the writing of fiction. Prerequisite: Permission of instructor and, for undergraduate, six credits in English at the 200 level or above.

ENG 561. Creative Writing: Fiction II  
3 credits  
Offered By Announcement only  
Advanced work for students displaying superior ability for prose fiction writing. Admission by recommendation or demonstration of skills. Prerequisite: Permission of instructor.

ENG 562. Creative Writing: Poetry  
3 credits  
Offered By Announcement only  
Advanced work in the writing of poetry. Prerequisite: At least six credits in English at the 200 level or graduate standing.

ENG 590. History of the English Language  
3 credits  
Offered By Announcement only  
Origins, affinities, and subsequent development of the English language from earliest times to the present. Nature and direction of changes in the language with reference to phonology, morphology, syntax, and vocabulary. Prerequisite: Six credits in literature or graduate standing.

ENG 595. Special Topics  
3 credits  
Offered By Announcement only  
Prerequisite: For undergraduates, six credits in literature or permission of instructor; for graduate students, permission of Director of Graduate Studies.

ENG 598. Seminar in Literature  
3 credits  
Offered By Announcement only  
Analysis of special topics in literature. Prerequisite: ENG 105 and 106 and 300-level literature course.

ENG 601. Creative Writing: Fiction III  
3-6 credits  
Offered By Announcement only  
Advanced M.F.A. workshop in the techniques of writing fiction. Prerequisite: Graduate standing and permission of instructor.

ENG 602. Creative Writing: Poetry II  
3-6 credits  
Offered By Announcement only  
Advanced M.F.A. workshop in the techniques of writing poetry. Graduate standing and permission of instructor.

ENG 610. Studies in Old English Language and Literature  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate standing and permission of English Department Graduate Director.
ENG 611. Beowulf
3 credits
In-class analysis and translation of Beowulf; consideration of text-related problems such as paleography, editing, emendation, and translation. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 615. Studies in Chaucer
3 credits
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 616. Studies in Middle English Language and Literature
3 credits
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 620. Studies in Shakespeare
3 credits
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 621. Studies in Elizabethan and Jacobean Drama
3 credits
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 622. Studies in 16th Century Poetry and Prose
3 credits
A survey of predominantly non-dramatic Renaissance literature, with an emphasis on the Sixteenth Century. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 623. Studies in Spenser
3 credits
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 624. Studies in 17th Century Poetry and Prose
3 credits
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 625. Studies in Milton
3 credits
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 630. Restoration and 18th-Century Drama
3 credits
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 631. Studies in Neoclassic Poetry and Prose
3 credits
Various aspects of English literature, thought, and esthetics from the Restoration to the death of Pope. Prerequisite: Graduate standing and permission of English Department Graduate Director.
ENG 633. The Eighteenth-Century British Novel  
3 credits
Survey of the British novel from Defoe to Austen. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 640. Studies in Romantic Poetry and Prose  
3 credits
Study of early romanticism exemplified in the work of Blake, Wordsworth, and Coleridge. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 641. Studies in Romantic Poetry and Prose  
3 credits
Study of later romanticism exemplified in work of Shelley, Byron, and Keats. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 645. Studies in Victorian Poetry and Prose  
3 credits
Victorian poetry and prose exclusive of the novel. Poems by Tennyson, Browning, Arnold, Rossetti, and others. Prose works by writers such as Carlyle, Newman, Mill, Ruskin, and Pater. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 646. Nineteenth-Century British Novel  
3 credits
Survey of the British novel from Austen to Conrad. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 648. Studies in the Novel  
3 credits
Topics in eighteenth-, nineteenth-, and twentieth-century fiction. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 650. Studies in Modern British Literature  
3 credits
Intensive coverage of a limited topic in twentieth-century British or Irish literature. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 651. Studies in Joyce  
3 credits
Close readings of Dubliners, A Portrait of the Artist as a Young Man, Ulysses, and Finnegans Wake; extensive review of Joyce criticism. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 652. Studies in Irish Literature  
3 credits
Intensive coverage of a selected topic in Irish Literature. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 654. Contemporary British Literature  
3 credits
Studies in British prose, poetry, and drama since 1939. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 655. Studies in Contemporary Poetry Since 1950  
3 credits
Prerequisite: Graduate standing and permission of English Department Graduate Director.
ENG 660. Studies in American Literature: Beginnings to 1800
3 credits
Offered By Announcement only
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 661. Studies in American Literature: 1800-1865
3 credits
Offered By Announcement only
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 662. Studies in American Literature: 1865-1914
3 credits
Offered By Announcement only
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 663. Studies in American Literature: 1914 to the Present
3 credits
Offered By Announcement only
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 664. Studies in African-American Literature
3 credits
Offered By Announcement only
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 665. Studies in Faulkner
3 credits
Offered By Announcement only
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 667. Caribbean Literature
3 credits
Offered By Announcement only
Caribbean literature and cultural theory; Caribbean aesthetic. Prerequisite: Permission of English Department Graduate Director.

ENG 668. Studies in Race and Diasporic Literatures
3 credits
Offered By Announcement only
Analysis of race, ethnicity, immigration, and transnationalism in literature and cultural theory. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 669. Women’s Literature
3 credits
Offered By Announcement only
Topic varies by semester. Analysis of gender issues and literary production by women. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 670. The Classical Tradition and English Literature
3 credits
Offered By Announcement only
A study of classical authors such as Homer, Aeschylus, Sophocles, Euripides, Virgil, Ovid, Horace, and Catullus, who have been seminal for English writers from the Middle Ages to the present. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 671. The Rise of the Romance
3 credits
Offered By Announcement only
Consideration of the interconnected traditions that developed from the 12th to 15th centuries on the Continent and in England concerning the matter of Troy, the matter of Britain, and the matter of France. Prerequisite: Graduate standing and permission of English Department Graduate Director.
ENG 672. Comparative Studies in Renaissance and Baroque Literature
3 credits
Offered By Announcement only
Topic varies by semester: e.g., The Renaissance Lyric, The Renaissance Epic, The Rise of Humanism, Baroque Drama. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 673. Eighteenth-Century European Literature
3 credits
Offered By Announcement only
Major literary and aesthetic works of the European Enlightenment. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 674. The Romantic Movement in Europe
3 credits
Offered By Announcement only
A study of the forces and influences of the Romantic Movement in Europe as these intersect English Romanticism. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 675. European Novel I
3 credits
Offered By Announcement only
Forces and influences discernible in the European novel from its beginning to 1870. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 676. European Novel II
3 credits
Offered By Announcement only
Forces and influences discernible in the European novel from 1870 to the present. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 677. Studies in Modern Literature
3 credits
Offered By Announcement only
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 678. Studies in Contemporary Literature
3 credits
Offered By Announcement only
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 680. History of Literary Criticism
3 credits
Offered By Announcement only
A survey of literary criticism and theory from the ancient Greeks to the early twentieth century. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 681. Twentieth-Century Criticism and Theory
3 credits
Offered By Announcement only
Twentieth-century literary theory beginning with the New Criticism and including topics such as semiotics, hermeneutics, deconstruction, feminism, and neopragmatism.

ENG 682. Contemporary Criticism and Theory
3 credits
Offered By Announcement only
Topics in recent criticism and theory. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 683. Literature and Psychoanalysis
3 credits
Offered By Announcement only
The interrelations between literary theory, textual analysis, and psychoanalytic theory. Prerequisite: Graduate standing and permission of English Department Graduate Director.
ENG 684. Theory of Narrative  
3 credits  
Offered By Announcement only  
Analysis of narrative theories, ancient to contemporary. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 685. Feminist Criticism: Theory and Practice  
3 credits  
Offered By Announcement only  
Feminist writing and criticism from the nineteenth century to the present. Supplementary readings in anthropological, psychoanalytic, and socio-political criticism, as well as in theories of poetic tradition and the poetic process. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 686. Studies in Twentieth-Century Literature and Culture  
3 credits  
Offered By Announcement only  
Comparative and interdisciplinary approaches to twentieth-century literature and culture. Themes and topics vary by semester.

ENG 688. Novel Writing  
3 credits  
Offered By Announcement only  
Advanced work in the techniques of writing a novel. Prerequisite: Graduate standing and permission of instructor.

ENG 690. Problems in Bibliography and Literary Research  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 692. Modern Rhetorical Theory  
3 credits  
Offered By Announcement only  
A study of rhetorical theory in the twentieth century, concentrating on the epistemological and ideological essence of discourse. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 693. Teaching College Composition  
3 credits  
Offered Fall Semester  
Rhetorical and literary theory related to composition instruction. Designed primarily for Teaching Assistants in the English Department, but open to all students planning to teach writing. Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 695. Special Topics  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 696. Directed Readings  
1-3 credits  
Offered Fall and Spring Semesters  
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 697. Readings for the Qualifying Examination  
1-3 credits  
Offered Fall and Spring Semesters  
Prerequisite: Graduate standing and permission of English Department Graduate Director.

ENG 710. Master’s Thesis  
1-6 credits  
Offered Fall and Spring Semesters  
The student working on his/her master’s thesis enrolls for credit in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.
ENG 720. Research in Residence
0 credits
Offered Fall and Spring Semesters
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in ENG 710 (usually six credits). Credit not granted. May be regarded as full-time residence.

ENG 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but for not less than a total of 12 hours. Up to 12 hours may be taken in a regular semester, but not more than six in a summer session.

ENG 750. Research in Residence
0 credits
Offered Fall and Spring Semesters
Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Foreign Languages and Literatures

FLL 503. Introduction to Foreign Language Teaching: Theory and Practice
3 credits
Offered Spring Semester
Current trends in foreign language teaching with emphasis on introductory language courses. Topics include: linguistic and psychological foundations, teaching methodologies, language skills development. Prerequisite: Graduate standing in FLL or permission of the Director of Graduate Studies.

FLL 505. Introduction to Literary Theory
3 credits
Offered Fall Semester
An introduction to the major concepts, issues, and debates that inform contemporary literary criticism. Prerequisite: One literature course on the 500-level and permission of the instructor.

FLL 521. Special Topics in Literatures
3 credits
Offered By Announcement only
May be repeated for credit, if topics are different. Prerequisite: Two literature courses on the 300 level and permission of instructor and Director of Graduate Studies.

FLL 597. Readings for the Ph.D. Examinations
1-3 credits
Offered By Announcement only
For Ph.D. students who are preparing for exams. Prerequisite: Permission of Director of Graduate Studies.

FLL 599. Internship
1 credit
Offered By Announcement only
Students work in a community or business setting on issues related to language, culture, and/or teaching.

FLL 601. Romance Philology
3 credits
Offered By Announcement only
Historical and Comparative study of phonology, syntax and semantics from Latin to the early stages of Romance languages. Philological readings of selected texts. Topics may vary.

FLL 603. Advanced Topics in Second Language Acquisition
3 credits
Offered By Announcement only
Second language acquisition theory with emphasis on classroom-based research.
FLL 605. Readings in Literary Theory
3 credits
Representative works of critical theory as related to philosophy, sociology of culture, psychoanalysis, hermeneutics, deconstruction, etc. May be repeated for credit if topics are different.

FLL 612. Topics in Early Modern Comparative Literature
3 credits
Specific genres, works, authors, and movements in comparative perspective in the early modern period (1300-1750). Topics may include: Trans-Atlantic Baroque; Grotesque Literature; Petrarchan Poetry in Italy, France, and England; The Emergence of Professional Theatre in western Europe.

FLL 621. Topics in Comparative Literature
3 credits

FLL 692. Directed Readings
1-3 credits

FLL 693. Teaching Practicum
3 credits

French

FRE 521. Topics in French Literature
3 credits
May be repeated for credit, if topic is different. Prerequisite: Two courses on the 300-level.

FRE 522. Topics in French Cultures
3 credits
May be repeated for credit, if topic is different. Prerequisite: Two courses on the 300-level.

FRE 561. Studies in French Medieval Literature
3 credits
Cultural and literary trends of the Middle Ages. Topics vary; may be taken more than once if topic is different. Prerequisite: FRE 363 and two other courses at the 300-level; or permission of instructor.

FRE 562. Studies in French Renaissance Literature
3 credits
Cultural trends and literary movements of the French Renaissance. Topics vary: poetry, narrative, essay; may be taken more than once, if topic is different. Prerequisite: FRE 363 and two other courses at the 300-level; or permission of instructor.

FRE 563. Studies in 17th Century French Literature
3 credits
Cultural and literary trends in the Seventeenth Century: major writers, dramatists, moralists. Topics may vary; may be taken more than once if topic is different. Prerequisite: FRE 364 and two other courses at the 300-level; or permission of instructor.

FRE 564. Studies in 18th Century French Literature
3 credits
Major authors and cultural and literary trends of the Enlightenment. Topics vary; may be taken more than once, if topic is different. Prerequisite: FRE 364 and two other courses at the 300-level; or permission of instructor.
FRE 565. **Studies in 19th Century French Literature**  
3 credits  
Offered By Announcement only  
Cultural and Literary trends of the period: major novelists, dramatists, and poets from Romanticism to Symbolism. Topics vary; may be taken more than once, if topic is different. Prerequisite: FRE 365 and two other courses at the 300 level; or permission of instructor.

FRE 566. **Studies in 20th-21st Century French Literature**  
3 credits  
Offered By Announcement only  
Major cultural and literary movements of the 20th and 21st Centuries. Topics vary: poetry, theater, the novel; may be taken more than once, if topic is different. Prerequisite: FRE 365 and two other courses at the 300 level; or permission of instructor.

FRE 571. **Women in French Literature**  
3 credits  
Offered By Announcement only  
Women writers and representations of women. Topics may vary; may be taken more than once, if topic is different. Prerequisite: Three literature courses at the 300 level.

FRE 573. **Problems in Cultural Analysis**  
3 credits  
Offered By Announcement only  
French contemporary civilization including literature, aesthetics, the media, etc. May be repeated if topics are different. Prerequisite: FRE 302 and two literature course at the 300-level; or permission of instructor.

FRE 575. **Francophone Literatures**  
3 credits  
Offered By Announcement only  
Francophone literatures and cultures outside of France. Topics vary; may be taken more than once, if topic is different. Prerequisite: Three literature courses at the 300-level. FRE 302 is also recommended; or permission of instructor.

FRE 591. **Directed Readings**  
1-3 credits  
Offered By Announcement only  
Prerequisite: One 500-level course and permission of instructor. May be repeated for credit if topic is different.

FRE 592. **Directed Readings**  
1-3 credits  
Offered By Announcement only  
Prerequisite: One 500-level course and permission of instructor.

FRE 593. **Directed Readings**  
1-3 credits  
Offered By Announcement only  
Prerequisite: One 500-level course and permission of instructor.

FRE 594. **Senior honors Thesis I**  
3 credits  
Directed research for honors thesis. Prerequisite: Must have completed at least nine credits at the 300-level or above towards French major, must meet eligibility for honors in French.

FRE 595. **Senior Honors Thesis II**  
3 credits  
 Directed writing of honors thesis. Prerequisite: FRE 594.

FRE 611. **Topics in French Medieval Literature**  
3 credits  
Offered By Announcement only  
Recent topics: exile, the epic, orientalism, imperialism, monsters.
FRE 612. **Topics in French Renaissance Literature**  
*Offered By Announcement only*  
3 credits  
Specific genres, works, authors, and movements. Possible topics: Melancholy and Madness; Montaigne; Rabelais; Marguerite de Navarre; lyric poetry.

FRE 613. **Topics in 17th Century French Literature**  
*Offered By Announcement only*  
3 credits  
Recent topics: Racine, Moliere, Corneille: Pascal and the Moralist tradition, the birth of the psychological novel, love and war.

FRE 614. **Topics in 18th Century French Literature**  
*Offered By Announcement only*  
3 credits  
Recent topics: Diderot, Rousseau, Sade; exoticism as related to political theory; the epistolary novel; the Enlightenment and postcolonial theory.

FRE 615. **Topics in 19th Century French Literature**  
*Offered By Announcement only*  
3 credits  
Recent topics: Balzac, Stendhal, Flaubert; Dandysm and Decadence; the Symbolist movement.

FRE 616. **Topics in 20th-21st Century French Literature**  
*Offered By Announcement only*  
3 credits  
Recent topics: Paris 1913; Surrealism; Artaud, Beckett, Ionesco, Genet; the Noveau Roman.

FRE 621. **Special Topics in French Studies**  
*Offered By Announcement only*  
3 credits

FRE 625. **Elementary French for Graduate Research**  
*Offered By Announcement only*  
0 credits  
Grammatical structuring, verb tenses, and word families necessary for reading text with minimal use of a dictionary. May fulfill the Foreign Language Reading Competency Requirement (consult your graduate advisor).

FRE 675. **Topics in Francophone Studies**  
*Offered By Announcement only*  
3 credits  
Recent topics: travel narratives, literary historiography, discourses of race, colonialism, multilingualism and literacy, nationalism and culture.

FRE 691. **Writing Practicum**  
*Offered By Announcement only*  
1 credit  
The writing of a publishable research paper under faculty guidance.

FRE 692. **Directed Readings**  
*Offered By Announcement only*  
1-3 credits

FRE 730. **Doctoral Dissertation**  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
1-12 credits  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of FRE 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.
FRE 750. Research in Residence
0 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions

Used to establish residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined the Dean of the Graduate School.

Geography

GEG 501. Place, Region, Nature
3 credits  Offered By Announcement only

Introductory seminar for Graduate students about geographic thought and geographical traditions. Prerequisite: At least six credits in Geography or permission from instructor.

GEG 503. Research Trends in Geography
3 credits  Offered By Announcement only

Contemporary research trends and methodological developments.

GEG 510. Survey Research in Geography
3 credits  Offered By Announcement only

The use of survey research including the choice of a survey mechanism, sampling, questionnaire design, survey logistics, survey analysis, and reporting of results.

GEG 511. Field Studies in Geography
1-6 credits  Offered By Announcement only

One to six weeks of intensive geographic field studies outside the Miami area. Lectures will be given prior to departure. The locations and topics of study will vary. Prerequisite: GEG 105 or any 200-level geography course.

GEG 515. Human Dimensions of Global Environmental Change
3 credits  Offered Fall Semester

Explores the human dimensions of global environmental change using an interdisciplinary approach. The course is reading and writing intensive. Special attention is given to the central role that land-use/cover change plays in the larger realm of global environmental change. Prerequisite: GEG 105 and junior/senior standing.

GEG 520. Immigration to the United States
3 credits  Offered Fall Semester

A description and analysis of current immigration patterns in the United States. Prerequisite: Any 100 or 200 level course or permission from instructor.

GEG 521. Global Trade
3 credits  Offered By Announcement only

Geographic analysis of the distribution of economic activities and capabilities, with emphasis on contemporary trade patterns and policies.

GEG 522. Urbanization in the Developing World
3 credits  Offered Spring Semester

Patterns and processes in large cities in the developing world are examined. Prerequisite: Any 100 or 200 level course in Geography or permission from instructor.

GEG 523. Seminar in Urban Management
3 credits  Offered Fall Semester

Identification of and responses to urban problems in large cities in European and Latin American metropolitan areas. Emphasis is on demographic, cultural/ethnic, service-provision, environmental, transportation, and land-use problems. Approach is via case studies, theory applications, and planning practicalities.
GEG 525. Problems in Geography
1-6 credits
Offered Fall and Spring Semesters
Content and prerequisites announced when offered. Course may be repeated for credit if content varies. Prerequisite: Geography graduate student, major, or minor only.

GEG 535. Internship in Geography
1-4 credits
Offered Fall and Spring Semesters
Students are assigned to work for a local public or private agency. Prerequisite: 15 credits in geography and permission of Department.

GEG 545. Special Topics
3 credits
Offered Fall and Spring Semesters
Prerequisite: Nine credits in geography.

GEG 552. Seminar on the Geography of South Florida
3 credits
Offered By Announcement only
Human and physical geography of South Florida. Prerequisite: Nine credits in Geography.

GEG 570. Gender and Development
3 credits
Offered By Announcement only
Theoretical and empirical examination of gender and development processes through exploration of gender and development evolution as an academic discipline and application in development practice. Prerequisite: Graduate students or permission of instructor.

GEG 582. Advanced Quantitative Methods
3 credits
Offered Spring Semester
Continuation of GEG 481. The use of statistical methods and techniques in the solution of geographic research problems. Prerequisite: GEG 481.

GEG 591. Introduction to GIS (Geographic Information Systems) for graduate students
3 credits
Offered By Announcement only
Overview of basic concepts in GIS (Geographic Information Systems) for students wishing to get graduate credit. This class involves a student project using GIS. There are no prerequisites for this class.

GEG 595. Advanced Seminar on South Asia
3 credits
Offered Spring Semester
Seminar on development-related issues in South Asia. Prerequisite: Permission from instructor (graduate).

GEG 603. Advanced Research Design in Geography
3 credits
Designing and proposing geographic research projects based upon a critical reading of the geographical literature. Students will prepare a master’s thesis (master’s students) or dissertation (doctoral students) project proposal. Prerequisite: GEG 503.

GEG 620. Political Geography
3 credits
Offered By Announcement only
Spatial manifestations of human political behavior. State systems, boundaries, maritime territorial issues. Prerequisite: GEG 420 or equivalent.

GEG 637. Development Studies
3 credits
Offered By Announcement only
Advanced seminar on issues in contemporary development studies. Prerequisite: Any 100 or 200 level Geography course or permission from instructor.
GEG 651. Geopolitics and Geoculture  
3 credits  
Offered By Announcement only  
Advanced graduate seminar about the cultural context of geopolitics and foreign policy. Prerequisite: Any course in Geography or permission from instructor.

GEG 661. Advanced Urban Geography  
3 credits  
Offered By Announcement only  
Analysis of the spatial structure of urban centers, the development of and interaction between functional zones, and the movement of goods and people in urban areas.

GEG 672. Environmental Monitoring and Assessment  
0 credits  
Offered Spring Semester  
Geographic monitoring and assessment of contaminated regions; important background legislation and government actions; pollution monitoring; superfund site remediation; geographic sampling of environmental populations; and, selected case studies. Prerequisite: GEG 591, 592.

GEG 681. Advanced Spatial Statistics  
3 credits  
Offered By Announcement only  
Social and environmental science applications of spatial statistical analysis illustrated with data and numerical (simulation experiments) examples employing interactive software. This course’s focus is on spatial autocorrelation. Prerequisite: GEG 582, 591.

GEG 710. Master’s Thesis  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

GEG 720. Research in Residence  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in GEG 710 (usually six credits). Credit not granted. May be regarded as full time residence.

GEG 725. Continuous Registration—Master’s Study  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

Geological Sciences

GSC 515. Applied Environmental Geology  
3 credits  
Offered Spring Semester  
An advanced undergraduate/graduate course providing knowledge and methods for effective environmental site surveys, to be presented in a weekly 3-hour lecture and discussion. The course will cover policies and regulation including applied practice to comply with safe environmental conduct and valid assessment. Case study, best management practice, and appropriate field equipment and approaches will complement two one-day field trips associated with this course. Prerequisite: Permission of instructor or department chair.

GSC 520. Geology of Florida and the Caribbean  
3 credits  
Offered Fall Semester  
The land and marine geologic history, the natural resources and geologic hazards of Florida and the Caribbean region. Prerequisite: GSC 110, 111, 260.
GSC 540. Geophysics
3 credits  
*Offered Spring Semester*


GSC 545. Introduction to Isotope and Nuclear Geology
4 credits  
*Offered By Announcement only*

Radioactivity and particle counting. The geological time scale. Isotope fractionation in natural systems. Mass spectrometry and the measurements of relative isotopic abundances in the ocean, the atmosphere, and the solid earth. Lecture, 2 hours; laboratory, 4 hours.

GSC 550. Hydrogeology
3 credits  
*Offered Fall Semester*

Movement of subterraneous water. The mechanical, chemical and thermal interaction of water with porous solids, and the transport of energy and chemical constituents. The origin of porosity and permeability. The controls exerted on aquifers by the lithology, stratigraphy and structure of geologic deposits and formations. Prerequisite: 8 credits in Geological Sciences and permission of instructor.

GSC 555. Mathematical Methods for Geoscientists
3 credits  
*Offered Fall Semester*

Background mathematics needed to solve problems in the geosciences. Applications in tectonics, structural geology, geochemical systems, seismology and hydrology. Prerequisite: MTH 112 or 132, 211 or 310, or 312, and PHY 206, or equivalent.

GSC 556. Complexity in Coastal Systems
4 credits  

Different aspects of the coastal system and their interactions using inquiry-based learning; will include remote sensing data as a tool for data analysis and visualization. Prerequisite: Six credits in biology or geological sciences.

GSC 560. Colloquium - Current Topics in the Geosciences
1 credit  
*Offered Fall Semester*

Weekly presentations and discussions. Written and oral presentations required. Prerequisite: Senior standing.

GSC 561. Colloquium - Current Topics in the Geosciences
1 credit  
*Offered Spring Semester*

Weekly presentations and discussions. Written and oral presentations required. Prerequisite: Senior standing.

GSC 565. Fluxes of Energy and Matter in the Earth Systems
3 credits  
*Offered By Announcement only*

Transport phenomena, motions, and deformation in Earth Systems. Prerequisite: GSC 110, 360.

GSC 574. Special Studies
1- 4 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Students engaged in approved field and/or laboratory activities, such as work at sea or in the laboratory under supervision, may register for credit. Prerequisite: Permission of department.
GSC 575. Special Studies  
1- 4 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Students engaged in approved field and/or laboratory activities, such as work at sea or in the laboratory under supervision, may register for credit. Prerequisite: Permission of department.

GSC 576. Special Studies  
1- 4 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Students engaged in approved field and/or laboratory activities, such as work at sea or in the laboratory under supervision, may register for credit. Prerequisite: Permission of department.

GSC 580. Summer Field Geology  
4 credits  
Offered Spring Semester and First and Second Summer Sessions  
An intensive four-week summer field laboratory study of modern geological processes and ancient rock sequences. Mapping, description and interpretation of rock and structural sequences, paleoenvironmental reconstruction, interpretation of tectonic history. Reports required. Touring course. Travel fee required. Prerequisite: 18 credits in geological sciences and/or permission of instructor.

GSC 581. Summer Field Environmental Geology  
2 credits  
Offered Spring Semester and First and Second Summer Sessions  

GSC 582. Field Studies  
1- 4 credits  
Offered By Announcement only  
Conducted field trips to selected geological sites in the United States and abroad. Report required. Prerequisite: Graduate or advanced undergraduate standing and permission of department.

GSC 596. Research in Geology  
1- 4 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Prerequisite: Permission of instructor.

German  

GER 521. Advanced German Studies  
3 credits  
Offered By Announcement only  
German language, literature, culture of the 18th-20th centuries. Involves independent research. May be repeated for credit if topic is different. Prerequisite: GER 363, 364, or 365.

GER 522. Special Topics in German Literature  
3 credits  
Offered By Announcement only  
May be repeated for credit if topic is different. Prerequisite: Two courses on the 300-level; permission of the instructor.

GER 566. German Literature of the Twentieth Century  
3 credits  
Offered By Announcement only  
Major literary movements: prose, poetry, and drama. Prerequisite: GER 363 or 364.
GER 591. Directed Readings
1-3 credits
Prerequisite: Permission of the instructor.
Offered By Announcement only

GER 592. Directed Readings
1-3 credits
Prerequisite: Permission of the instructor.
Offered By Announcement only

GER 593. Directed Readings
1-3 credits
Prerequisite: Permission of the instructor.
Offered By Announcement only

GER 594. Senior Honors Thesis I
3 credits
Directed research for honors thesis. Prerequisite: Must have completed at least nine credits at the 300-level or above towards German major, must meet eligibility for honors in German.

GER 595. Senior Honors Thesis II
3 credits
Directed writing of honors thesis. Prerequisite: GER 594.

GER 625. German for Graduate Research
0 credits
Grammatical structuring, verb tenses, and word families necessary for reading text with minimal use of a dictionary. May fulfill the Foreign Language Reading Competency Requirement (consult your graduate advisor.)

History

HIS 501. Studies in African History
3 credits
Selected topics in African history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.
Offered By Announcement only

HIS 511. Studies in Asian History
3 credits
Selected topics in Asian history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.
Offered By Announcement only

HIS 515. Studies in Chinese History
3 credits
Selected topics in Chinese history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.
Offered By Announcement only

HIS 531. Studies in European History
3 credits
Selected topics in European history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.
Offered By Announcement only

HIS 534. Studies in Ancient History
3 credits
Selected topics in Ancient history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule. Prerequisite: Three credits in history at the 300-level.
Offered By Announcement only
HIS 536. Studies in Medieval History  
3 credits  
Selected topics in Medieval history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in History at the 300-level.

HIS 538. Studies in Early Modern European History  
3 credits  
Selected topics in European history before the French Revolution. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in History at the 300-level.

HIS 544. Studies in Modern European History  
3 credits  
Selected topics in European history after the French Revolution. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in History at the 300-level.

HIS 551. Studies in Latin American History  
3 credits  
Selected topics in Latin-American history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in History at the 300-level.

HIS 553. Studies in Colonial Latin American History  
3 credits  
Selected topics in the colonial period of Latin-American history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in History at the 300-level.

HIS 554. Studies in Modern Latin American History  
3 credits  
Selected topics in Latin-American history before and after Independence. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in History at the 300-level.

HIS 561. Studies in United States History  
3 credits  
Selected topics in United States history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule. Prerequisite: Three credits in History at the 300-level.

HIS 564. Studies in American Intellectual and Cultural History  
3 credits  
Selected topics in American intellectual and cultural history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule. Prerequisite: Three credits in History at the 300-level.

HIS 565. Studies in American Political and Diplomatic History  
3 credits  
Selected topics in American political and diplomatic history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule. Prerequisite: Three credits in History at the 300-level.

HIS 569. Studies in African-American History  
3 credits  
Selected topics in African-American history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in History at the 300-level.
HIS 570. Studies in Public History
3 credits
Selected topics in public history. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 591. Studies in Comparative History
3 credits
Selected topics in Comparative History. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 592. Transfer Credits
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents.

HIS 593. Transfer Credits
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents.

HIS 594. Transfer Credits
1-5 credits
Not offered. Transfer credit only.
Courses taken at other institutions with no direct equivalents.

HIS 595. Studies in Visual History
3 credits
Selected topics in the use of photographs and other visual evidence for historical purposes. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title. Prerequisite: Three credits in history at the 300-level.

HIS 599. Independent Research
3 credits
Not offered. Transfer credit only.
Prerequisite: Permission of instructor.

HIS 601. Directed Readings in African History
1-3 credits
Not offered. Transfer credit only.
Prerequisite: Permission of instructor.

HIS 622. Directed Readings in Asian History
1-3 credits
Not offered. Transfer credit only.
Prerequisite: Permission of instructor.

HIS 631. Directed Readings in European History
1-3 credits
Not offered. Transfer credit only.
Prerequisite: Permission of instructor.

HIS 633. Seminar in European History
3 credits
Not offered. Transfer credit only.
Selected topics in European History.

HIS 634. Seminar in Ancient History
3 credits
Not offered. Transfer credit only.

HIS 636. Seminar in Medieval History
3 credits
Not offered. Transfer credit only.

HIS 641. Field Preparation: Colonial Latin America
3 credits
An introduction to central historical issues and historiographical debates in the field of Colonial Latin America.
HIS 642. Field Preparation: Modern Latin America  
3 credits  
An introduction to central historical issues and historiographical debates in the field of Modern Latin America.

HIS 643. Field Preparation: Colonial and Revolutionary America  
3 credits  
An introduction to central historical issues and historiographical debates in the field of Colonial and Revolutionary America.

HIS 644. Field Preparation: Modern America  
3 credits  
An introduction to central historical issues and historiographical debates in the field of Modern America.

HIS 645. Field Preparation: Early Modern Europe  
3 credits  
An introduction to central historical issues and historiographical debates in the field of Early Modern Europe.

HIS 646. Field Preparation: Modern Europe  
3 credits  
An introduction to central historical issues and historiographical debates in the field of Modern Europe.

HIS 651. Directed Readings in Latin-American History  
1- 3 credits  
Prerequisite: Permission of instructor.  
Offered By Announcement only

HIS 653. Seminar in Latin-American History  
3 credits  
Offered By Announcement only

HIS 661. Directed Readings in American History  
1- 3 credits  
Prerequisite: Permission of instructor.  
Offered By Announcement only

HIS 663. Seminar in United States History  
3 credits  
Offered By Announcement only

HIS 691. Directed Readings in Comparative History  
1- 3 credits  
Prerequisite: Permission of instructor.  
Offered By Announcement only

HIS 693. Seminar in Comparative History  
3 credits  
Offered By Announcement only

HIS 695. Historiography  
3 credits  
The philosophy, theory, and practice of history.  
Offered By Announcement only

HIS 710. Master’s Thesis  
1- 6 credits  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.  
Offered Fall and Spring Semesters

HIS 720. Research in Residence  
0 credits  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in HIS 710 (usually six credits). Credit not granted. May be regarded as full time residence.  
Offered Fall and Spring Semesters
HIS 725. Continuous Registration—Master’s Study
0 credits
Offered Fall and Spring Semesters
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

HIS 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but for not less than a total of 12 hours. Up to 12 hours may be taken in a regular semester, but not more than six in a summer session.

HIS 740. Research Project
1-6 credits
Offered Fall and Spring Semesters
Required of all candidates for the Doctor of Arts degree. Student enrolls for credit as determined by advisor. Credit is not awarded until the doctoral project has been accepted. Total enrollment may not exceed six credits.

HIS 750. Research in Residence
0 credits
Offered Fall and Spring Semesters
Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

International Studies

INS 503. Int Relations Topics
3 credits
Offered By Announcement only
Selected topics in International Relations Theory. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title.

INS 504. Int Rel Topics II
3 credits
Offered By Announcement only
Selected topics in International Relations Theory. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title.

INS 510. ISSUES IN INS
3 credits
Offered By Announcement only
Analysis of current issues of international importance. Prerequisite: INS 201, INS core, or permission of instructor.

INS 511. Issues in INS II
3 credits
Offered By Announcement only
Analysis of current issues of international importance. Prerequisite: INS 201, INS core, or permission of instructor.

INS 512. International Administration
3 credits
Offered Fall Semester
Introductory course for the Master of Arts in International Administration. Prerequisite: Graduate students only.

INS 513. Information and Communication in International Relations
3 credits
Offered Fall Semester
First semester offering for students in the Master of Arts in International Administration program. Prerequisite: Graduate students only.
INS 514. World Affairs  
3 credits  
Offered Fall Semester
Explores the complexity of world affairs in relation to international administrative fields. First semester offering for students in the Master of Arts in International Administration program. Prerequisite: Graduate students only.

INS 515. Independent Study  
1- 6 credits
Prerequisite: INS core and minimum of 3.0 cumulative GPA required and permission of instructor.

INS 516. Strategically Thinking, Negotiation and Bargaining  
3 credits  
Offered Spring Semester
Second semester offering for students in the Master of International Administration program. Prerequisite: Graduate students only.

INS 517. Practicum in International Administration  
3 credits  
Offered By Announcement only
Each student in the Master of Arts in International Studies (with a specialization in International Administration) is required to complete a three (3) credit practicum/internship during the summer months subsequent to their completion of the fall and spring semester. The purpose of the practicum is to give each student the necessary skills to help advance their professional careers. Prerequisite: Permission of program coordinator.

INS 519. Internship  
1- 3 credits
Prerequisite: Permission of instructor.

INS 520. Microeconomics for INS  
3 credits  
Offered By Announcement only
Microeconomics for students of international studies. Topics will include rationality, market failure and comparative advantage. Prerequisite: Graduate student or permission of instructor.

INS 521. INT’L ECON TOPICS II (International Economic System Topics)  
3 credits  
Offered By Announcement only
Selected topics in International Economics. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title.

INS 522. Latin American Political Economy  
3 credits
Latin American political economy including analysis of market reform and integration of the region into the world economy. Prerequisite: Graduate student or permission of instructor.

INS 523. Economics of Terrorism  
3 credits
Economic resources of terrorist movements today: their financing, acquisition of tools, recruitment, and operations. Prerequisite: Graduate student or INS 102 or permission of instructor.

INS 524. INTL ECON Topics  
3 credits
Prerequisite: Graduate student or permission of instructor.
INS 530. **Comparative Analysis**
3 credits  
Advanced overview of the comparative method. Required for students specializing in Comparative Studies at the graduate level. Prerequisite: Graduate student or permission of instructor.

INS 531. **Dictatorship and Human Rights**
3 credits  
How have societies coped with traumatic pasts, and how have they faced the tension between remembering and forgetting? This course will explore these issues with a view to various approaches and scenarios. Prerequisite: Graduate student or permission of instructor.

INS 532. **Globalization and Human Rights**
3 credits  
The integration of markets has many concerned for the political and economic rights of the common citizen. This course examines the effect of globalization on the human rights standards throughout the world. Prerequisite: Graduate student or permission of instructor.

INS 533. **Transnational Social Movements**
3 credits  
Focuses on global civic activism and contentious politics, with particular attention to transnational non-state actors - NGOs, social movements, environmental protection, and the emergence of a global civil society. Prerequisite: Graduate student or permission of instructor.

INS 534. **Military, State and Society**
3 credits  
The role of the military in state formation; questions of military rule, civilian control, and social structures in contemporary world politics. Prerequisite: Graduate student or permission of instructor.

INS 536. **Comparative Political Regimes**
3 credits  
Literature concerned with the transition from authoritarianism to democracy in various parts of the world. Prerequisite: Graduate student or permission of instructor.

INS 537. **Comparative Political Economy**
3 credits  
Compares how domestic politics and macroeconomic policies interact with globalization. Case studies include welfare states in the U.S. and Europe, East Asian development, postcommunist transitions and market restructuring in Latin America and Africa. Prerequisite: Graduate student or permission of instructor.

INS 540. **National Security**
3 credits  
The central issues concerning European security since World War II, with emphasis on the period since the end of the cold war. Prerequisite: Graduate student or permission of instructor.

INS 541. **The Role of Intelligence in U.S. National Security**
3 credits  
Required alternate for students concentrating in Strategic Studies. Explains what is intelligence, how it is collected and analyzed, and what it contributes to U.S. national security. Discusses the issue of secret intelligence activities in a democratic society.
INS 542. Drug-Trafficking in the Americas  
3 credits  
Offered By Announcement only  
The political economy of the U.S.-Latin American drug trade in the 20th Century along with the dynamics of the U.S.-led war on drugs through the first years of the Twenty First Century. Prerequisite: Graduate student or permission of instructor.

INS 543. National Security and Foreign Policy  
3 credits  
Explores alternative conceptualizations of “security” and the new challenges to U.S. national security that have emerged in the Post-Cold War era. Prerequisite: Graduate student or permission of instructor.

INS 550. Non-Western Regional Topics  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate student or INS 201 or permission of instructor.

INS 551. Regional Topics II  
3 credits  
Offered By Announcement only  
Selected topics in International Business. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title.

INS 560. US Foreign Policy  
3 credits  
The leading approaches to the analysis of American foreign policy. Particular emphasis will be placed on the post-Cold War period and the new challenges to U.S. foreign policy of the 21st century. Prerequisite: Graduate student or permission of instructor.

INS 561. Negotiation and Bargaining  
3 credits  
Examines the nature of diplomatic negotiation through readings and discussion of international negotiation and through the case method, selecting several cases of high-level policy issues in which the United States has been a principal actor. Prerequisite: Graduate student or permission of instructor.

INS 562. International Peace and Conflict Resolution  
3 credits  
The major sources of conflict, and what resources are available for making and keeping the peace? This class introduces students to the most fundamental concerns of the field of International Relations (IR), and especially of its subfield IPCR. Prerequisite: Graduate student or permission of instructor.

INS 563. International Organizations  
3 credits  
The role, function, and impact on states of international governmental and non-governmental organizations in critical areas like peace and security, human rights, economic development, and environmental degradation. Prerequisite: Graduate student or permission of instructor.

INS 564. International Law  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
How international law affects the conduct of states. Issues include jurisdiction, diplomatic immunity, the use of armed force, peaceful dispute settlement among states, human rights, and the International Criminal Court. Prerequisite: Graduate student or permission of instructor.
INS 565. The World Before European Domination  
3 credits  
The historical roots of the contemporary international system. Its objective is to question the standard Eurocentric perspective on the rise of the West to a dominant position in the global system. Prerequisite: 15 credits in advanced level social sciences or permission of instructor.

INS 566. US-Latin American Relations  
3 credits  
Political, economic and strategic aspects of U.S.-Latin American relations; the historical experience and contemporary issues, including the influence of extra-regional parties such as Europe and China. Prerequisite: Graduate student or permission of instructor.

INS 567. Foreign Policy Topics  
3 credits  
Prerequisite: Graduate student or INS 201 or permission of instructor.

INS 570. Globalization and Health  
3 credits  
Offered Fall Semester  
Globalization and its benefits and threats to public health; the relationship between global economic, political, social, cultural, environmental and technological changes and their impact on human health. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 571. International Development and Human Welfare  
3 credits  
Offered Spring Semester  
Health and development links; macroeconomic policies and their impact on social equity; poverty and structural inequities; and other key issues that influence human development. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 572. Global Health Policy and Ethics  
3 credits  
Offered Fall and Spring Semesters  
National, regional and global health policies with special consideration to ethical and human rights issues; policies and the moral considerations that shape public health policy. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 573. Disasters, Terrorism and Global Public Health  
3 credits  
The historical processes and present trends of disasters, terrorism, humanitarian emergencies and their impact on health, safety and security. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 580. Latin American Comparative Politics  
3 credits  
Offered Fall Semester  
The major intellectual debates shaping the field of comparative politics including: (1) development, (2) military politics, (3) democratization and (4) the emergence of new social movements. Prerequisite: Graduate student or permission of instructor.

INS 581. Politics and Ideology in Latin America  
3 credits  
Offered By Announcement only  
The roles played by both "class" and the "new social movements" in the emergence of new modes of political representation. Prerequisite: Graduate student or permission of instructor.
INS 582. Problems of Latin American Democracies
3 credits
Offered By Announcement only
The Left and the Right, business, and indigenous movements along with issues such as transitional justice, state reform, public security, human rights and the politics of memory. Prerequisite: Graduate student or permission of instructor.

INS 583. Chile: Politics and Society
3 credits
Changes in Chilean politics and society. The three chronological parts of Chilean history: pre-1973, the years of dictatorship and the contemporary transition to democracy since 1990. Prerequisite: Graduate student or permission of instructor.

INS 584. Latin American Thought
3 credits
Offered Spring Semester and First Summer Session
The evolution of Latin American thought through political and intellectual history; the classical writings of the main “pensadores”, and a comparative analysis of contemporary ideological trends. Prerequisite: Graduate student or INS 201 or POL 212 or permission of instructor.

INS 585. Dilemmas of Mexican Democracy
3 credits
Contemporary politics in Mexico and US-Mexican relations first-hand during visits to Mexico City and Oaxaca. Meetings with Mexican scholars and civil society leaders are included. Prerequisite: Graduate student or permission of instructor.

INS 586. Brazil in Transition
3 credits
The social, economic, cultural transformations shaping Brazilian politics. In addition to visiting Rio de Janeiro and Salvador, there will be seminars with Brazilian academics and social and political activists. Prerequisite: Graduate students or permission of instructor.

INS 587. Politics in Central America
3 credits
The domestic issues of the Central American republics and their relationships with the United States, other western hemisphere countries and the global system. Prerequisite: Graduate student or permission of instructor.

INS 588. Politics in the Andes
3 credits
The domestic issues of the Andean republics and their relationships with the United States, other western hemisphere countries and the global system. Prerequisite: Graduate student or permission of instructor.

INS 589. Argentine Politics and Society
3 credits
Seminar offered in Buenos Aires covering dilemmas of democratic consolidation, social justice, and market reform. Students will meet with Argentine social scientists and leaders of major social, economic, and political movements. Prerequisite: Graduate student or permission of instructor.

INS 591. The European Union
3 credits
Offered Fall and Spring Semesters
The European Union’s history, institutions, policies and contemporary issues. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.
INS 592. **European Union and the World**  
3 credits  
The European Union’s development, its main institutions and policies followed by an analysis of the main features of the European Union’s external relations. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 593. **European Security**  
3 credits  
Regional security in Europe, focusing on NATO expansion, EU expansion, Russian foreign policy, and related issues. Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 594. **European Topics**  
3 credits  
Prerequisite: Graduate student, upper level undergraduate or permission of instructor.

INS 595. **European Social Movements**  
3 credits  
The major social movements active today throughout Europe including those concerned with the environment, agriculture, poverty, racism, defending social democracy, the rights of workers, minorities, and women. Prerequisite: Graduate student, upper level student or permission of instructor.

INS 599. **Special Topics**  
3 credits  
Offered By Announcement only

INS 601. **IR Theory**  
3 credits  
Introduces students to key historic events, themes, concepts, and theories that have animated the practice and scholarship of international relations. Prerequisite: Graduate standing.

INS 603. **Dissertation Proposal**  
3 credits  
A workshop designed to assist doctoral students in the preparation of a proposal for their dissertation research projects. Prerequisite: Graduate standing.

INS 610. **Graduate Seminar in INS**  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate standing.

INS 611. **INT RELATNS METH II (International Relations Methodology II)**  
3 credits  
Advanced multivariate analysis techniques applicable to the study of international phenomena. Successful completion counts as fulfillment of second foreign language requirement for doctoral students. Prerequisite: INS 610 or permission of instructor.

INS 615. **Independent Study**  
1-3 credits  
Prerequisite: Graduate standing.

INS 620. **Economics of the International System**  
3 credits  
The essentials of International Economics providing students with an operational understanding of the theory of comparative advantage and its applications to policy issues. Prerequisite: Graduate standing.
INS 621. Economics Development  
3 credits  
Offered By Announcement only  
International economics; rigorous but nontechnical presentation of international trade theory; globalization; commercial policy; determination of exchange rates; the international monetary system. Prerequisite: Graduate standing.

INS 622. Advanced Seminar in International Economics  
3 credits  
Offered By Announcement only  
This is a seminar in International Economics at the graduate level. The first part consists of a rigorous but nontechnical presentation of international trade theory, followed by a discussion of the main arguments for protection and their validity. The third part of the course analyzes the process of globalization; its meaning, measurement and effects. A final brief section is devoted to the determination of exchange rates and the international monetary system. Prerequisite: Graduate standing.

INS 630. Advanced Seminar in Comparative Studies  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate standing.

INS 640. Conflict and its Alternatives  
3 credits  
Offered Fall Semester  
Historical, theoretical, and empirical analyses of violent conflict. Alternatives to violent conflict are explored including the prevention and control of war, preventive diplomacy, crisis management and conflict transformation. Prerequisite: Graduate standing.

INS 641. Advanced ISC Seminar  
3 credits  
Offered By Announcement only

INS 650. Advanced Regional Seminar  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate standing.

INS 660. Foreign Policy Analysis  
3 credits  
Offered By Announcement only  
Develops skills in conceptualization, description, explanation, evaluation and prescription, concentrating on leading foreign policy issues, sources, and research techniques. Prerequisite: Graduate standing.

INS 670. Advanced Seminar in International Health  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate standing.

INS 680. Advanced Seminar on Latin America  
3 credits  
Offered By Announcement only  
Prerequisite: Graduate standing.

INS 692. ADV SEMINAR - EUROPE (Advanced Seminar on Europe)  
3 credits  
Offered By Announcement only

INS 699. Readings in International Studies  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

INS 710. Master’s Thesis  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.
INS 720. Research in Residence  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in INS 710 (usually six credits). Credit not granted. May be regarded as full time residence.

INS 725. Continuous Registration—Master’s Study  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
To establish residence for non-thesis master's students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

INS 730. Doctoral Dissertation  
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
A total of 12 hours of INS 730 is required of all candidates for the Ph.D. Not more than 12 dissertation credits may be taken during the Fall or Spring semesters, nor more than six in a summer session.

INS 740. Research Project  
1-6 credits  
Offered By Announcement only  
Required of all candidates for the Doctor of Arts degree. Student enrolls for credit as determined by advisor. Credit is not awarded until the doctoral project has been accepted. Total enrollment may not exceed six credits.

INS 750. Research in Residence  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Italian  
ITA 591. Directed Readings  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of the instructor.

ITA 592. Directed Readings  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of the instructor.

ITA 593. Directed Readings  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of the instructor.

ITA 625. Italian for Graduate Research  
0 credits  
Offered By Announcement only  
Grammatical structuring, verb tenses, and word families necessary for reading text with minimal use of a dictionary. May fulfill the Foreign Language Reading Competency Requirement (consult your graduate advisor).

Latin  
LAT 625. Elementary Latin for Graduate Research  
0 credits  
Offered By Announcement only  
Grammatical structures, verb tenses, and word families necessary for reading texts with minimal use of a dictionary. May fulfill the Foreign Language Reading Competency Requirement (consult your graduate advisor).
**Latin American Studies**

**LAS 501. Interdisciplinarity in Latin American Studies**
3 credits
Offered Fall and Spring Semesters
Interdisciplinary methods and politics of Latin American area studies. Prerequisite: Graduate status, or, for undergraduates: LAS 301 and six more credits in LAS or LAS-approved courses at or above the 300-level.

**LAS 502. Interdisciplinary Research Methods in Latin American Studies**
3 credits
Interdisciplinary research methods and skills in Latin American Studies. Prerequisite: Graduate status, or, for undergraduates: LAS 301 and six more credits in LAS or LAS-approved courses at or above the 300-level.

**LAS 503. Program Seminar in Latin American Studies**
3 credits
Content of course will vary by semester. Prerequisite: Graduate status, or, for undergraduates: LAS 301 and six more credits in LAS or LAS-approved courses at or above the 300-level.

**LAS 505. Internship in Latin American Studies**
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
On-site experience in business, governmental organization, or non-profit organization dealing with Latin America. Prerequisite: Declared major or minor in Latin American Studies; six credits in LAS or LAS-approved courses at or above the 300-level, and permission of LAS director.

**LAS 710. Master’s Thesis**
1-6 credits
Offered By Announcement only
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

**Liberal Studies**

**MLS 595. Special Topics**
3 credits
Offered Fall and Spring Semesters

**MLS 596. Special Topics**
3 credits

**MLS 597. Special Topics**
3 credits

**MLS 601. Aspects of Creative and Reflective Thought**
3 credits
Offered Fall and Spring Semesters
Selected aspects of creative and reflective thought, based on materials from the arts, the humanities, the sciences, the social sciences and history. The focus will be on themes and issues represented in a variety of cultural traditions.

**MLS 602. Perspectives on Human Nature**
3 credits
Offered Fall and Spring Semesters
Basic theories of human nature proposed by the humanities, the sciences, and the social sciences. The course deals with fundamental issues regarding the concept of human nature, such as the nature of the self and its relation to society, the impact of culture on self perception and the relation of thought to human action.
MLS 603. Theories of the Physical Universe
3 credits
Offered Fall and Spring Semesters
Various understandings of the nature of the universe and their impact on human culture. The course will deal with critical issues addressed in the various attempts to understand the physical world, such as fundamental structures and processes, the limitation of human perception, and the interaction between the human species and its environment.

MLS 611. Studies in the Humanities
3 credits
Offered Fall and Spring Semesters
Interdisciplinary study of selected topics in the Humanities.

MLS 612. Studies in the Social Sciences
3 credits
Offered By Announcement only
Interdisciplinary study of selected topics in the Social Sciences.

MLS 613. Studies in the Sciences
3 credits
Offered By Announcement only
Interdisciplinary study of selected topics in the sciences.

MLS 621. Studies in the Humanities
3 credits

MLS 622. Studies in the Social Sciences
3 credits

MLS 623. Studies in the Sciences
3 credits

MLS 631. Studies in the Humanities
3 credits

MLS 696. Directed Readings
1- 3 credits
Offered Fall and Spring Semesters
Prerequisite: Graduate standing and permission of the Director of the Program.

MLS 697. Directed Readings
1- 3 credits
Offered Fall and Spring Semesters
Prerequisite: Graduate standing and permission of the Director of the program.

MLS 698. Seminar in Liberal Studies
3 credits
Offered By Announcement only

MLS 699. Seminar in Liberal Studies
3 credits

MLS 710. Master’s Thesis
1- 6 credits
Offered Fall and Spring Semesters
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MLS 715. MALS Project
1- 6 credits
Offered Fall and Spring Semesters
The student working on his/her MALS project enrolls for credit, not to exceed 6, as determined by his/her advisor. Credit is not awarded until the project has been accepted.
MLS 720. Research in Residence  
0 credits  
Offered Fall and Spring Semesters  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in PSY 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MLS 725. Continuous Registration-Master’s Study  
0 credits  
Offered By Announcement only  
To establish residence for non-thesis students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

Mathematics

MTH 502. History of Mathematics  
3 credits  
Offered Fall Semester  
The development of mathematics from its earliest beginnings through the first half of the twentieth century. Numeral systems, geometry, algebra, analysis and set theory. Prerequisite: Two courses in mathematics at the 200 level or above.

MTH 504. Foundations of Geometry  
3 credits  
Offered Fall Semester  
Axiom systems and models of Euclidean and Non-Euclidean geometry. Prerequisite: MTH 230 or 309.

MTH 505. Theory of Numbers  
3 credits  
Offered Spring Semester  
Divisibility, primes; congruences, quadratic residues and reciprocity; Diophantine equations. Applications to cryptography. Prerequisite: MTH 210 or 504.

MTH 506. Logic  
3 credits  
Offered By Announcement only  
Propositional and first-order logic: completeness. Computational logic: Robinson’s resolution. Formalized theories: arithmetic, Gödel’s incompleteness theorem, Tarski’s theorem on undefinability of truth. Prerequisite: MTH 230 or 309 or permission of the instructor.

MTH 508. Survey of Modern Algebra  
3 credits  
Offered Spring Semester  
Algebraic systems, equivalence classes, groups, rings, fields, unique factorization domains. Prerequisite: MTH 210 and 230. Not open to students with credit in MTH 509 or 561.

MTH 509. Discrete Mathematics II  
3 credits  
Offered By Announcement only  
Groups and combinatorics; applications of group theory to computer design and error correcting codes; Semigroups and applications to finite state machines; rings and fields; applications of Boolean algebra to computer design. Prerequisite: MTH 210, 309.

MTH 510. Linear Algebra  
3 credits  
Abstract vector spaces, bases and dimensions, linear maps, eigenvalues and eigenvectors, inner product spaces, operators, spectral theorems, canonical forms. Prerequisite: MTH 210; transition course in logical reasoning such as MTH 230 or 309 recommended but not required.

MTH 512. Elementary Complex Analysis  
3 credits  
Offered Spring Semester  
Complex variables; conformal mapping, contour integration. Prerequisite: MTH 211 or 310.
MTH 513. Partial Differential Equations I
3 credits  Offered Fall Semester
Derivation, well posedness, and qualitative properties of initial value and boundary value problems for the heat, wave and Laplace equations. Energy methods, causality, maximum principles, heat kernels, Fourier series, and potential theory. Prerequisite: MTH 210, 311 and either MTH 310 or 312.

MTH 514. Partial Differential Equations II
3 credits  Offered Spring Semester
Continuation of MTH 513. Approximations of solutions, distributions and integral transform methods, spectral theory and scattering. Applications to physical problems. Nonlinear equations and phenomena. Prerequisite: MTH 513 or permission of the instructor.

MTH 515. Ordinary Differential Equations
3 credits  Offered Fall Semester
Linear systems, equilibria and periodic solutions, stability analysis, bifurcation, phase plane analysis, boundary value problems, applications to engineering and physics. Prerequisite: MTH 311 and either MTH 211 or 310.

MTH 516. Dynamics and Bifurcations
3 credits  Offered Spring Semester
Bifurcation of equilibria and periodic solutions, global theory of planar systems, planar maps, nonlinear vibrations, forced oscillations, chaotic solutions, Hamiltonian systems, applications to engineering and physics. Prerequisite: MTH 515 or permission of the instructor.

MTH 517. Data Structures and Algorithm Analysis
3 credits  Offered By Announcement only
Data abstraction, formal specification, trees, B-trees, balanced binary trees, graphs, searching and sorting. Algorithm analysis. Memory management. Prerequisite: MTH 112, 220, and 309.

MTH 520. Numerical Analysis I
3 credits  Offered By Announcement only
Numerical linear algebra including the algebraic eigenvalue problem. Prerequisite: MTH 320 or permission of department chairman.

MTH 521. Numerical Analysis II
3 credits  Offered By Announcement only
Numerical solution of ordinary and partial differential equations. Prerequisite: MTH 320 or 520 or permission of department chairman.

MTH 524. Introduction to Probability Theory
3 credits  Offered Fall Semester
Probability spaces, random variables, expectation, limit theorems. Prerequisite: MTH 310 or permission of department chairman.

MTH 525. Introduction to Mathematical Statistics
3 credits  Offered Spring Semester
Probability distributions, theory of sampling and hypothesis testing. Prerequisite: MTH 524.

MTH 527. Theory of Automata
3 credits  Offered By Announcement only
Finite-state automata, context-free grammars, pushdown automata, Turing machines and computability. Prerequisite: MTH 309 or 508.

MTH 528. Combinatorics
3 credits  Offered By Announcement only
Permutations and combinations, generating functions, enumerative analysis. Prerequisite: One of the following: MTH 508, 509 or 561.
MTH 531. Topology I
3 credits  
Offered Fall Semester
Set theory, topological spaces, compactness, connectedness, separation properties, quotient spaces, Tychonoff Theorem, compactification, Urysohn Lemma and Tietze Extension Theorem, function spaces. Prerequisite: Permission of department chair.

MTH 532. Topology II
3 credits  
Offered Spring Semester
Differential and topological manifolds, classical groups and associated manifolds, tangent and tensor bundles, vector fields, differential forms, transversality, Sard’s theorem, Stokes’ Theorem. Prerequisite: MTH 210 and 531.

MTH 533. Introduction to Real Analysis I
3 credits  
Offered Fall Semester
Numerical sequences and series; continuity; differentiation; integration; sequences and series of functions; Fourier series; functions of several variables; implicit and inverse function theorems. Prerequisite: MTH 211 (or 310) and 230.

MTH 534. Introduction to Real Analysis II
3 credits  
Offered Spring Semester
Continuation of MTH 533. Prerequisite: MTH 533.

MTH 540. Algorithm Design and Analysis
3 credits  
Offered By Announcement only
Design techniques include divide-and-conquer, greedy method, dynamic programming, backtracking. Time and space complexity. Sorting, searching, combinatorial and graph algorithms. Prerequisite: MTH 517.

MTH 542. Statistical Analysis
3 credits  
Offered By Announcement only
Statistical inference about one or two populations from interval, ordinal and categorical data; analysis of variance; simple and multiple linear regression; designing research studies. Prerequisite: MTH 224, 310 (or 211 or 312).

MTH 551. Introduction to Differential Geometry
3 credits  
Offered By Announcement only
Geometry of curves and surfaces in Euclidean space. Local space curve theory, intrinsic and extrinsic curvature of surfaces, geodesics, parallelism, and differential forms. Prerequisite: MTH 210 and one of MTH 211, 310, 312, or permission of instructor.

MTH 561. Abstract Algebra I
3 credits  
Offered Fall Semester
Groups; rings; linear algebra; modules. Prerequisite: MTH 210 and permission of department chairman.

MTH 562. Abstract Algebra II
3 credits  
Offered Spring Semester
Continuation of MTH 561. Prerequisite: MTH 561.

MTH 571. Directed Readings in Mathematics
1- 3 credits
Readings in special topics. Prerequisite: Graduate standing; permission of department chair.

MTH 572. Directed Readings in Mathematics
1- 3 credits
Readings in special topics. Prerequisite: Graduate standing; permission of department chair.
MTH 591. Topics in Mathematics  
1- 3 credits  
Offered By Announcement only

MTH 592. Topics in Mathematics  
1- 3 credits  
Offered By Announcement only

MTH 593. Topics in Mathematics  
1- 3 credits  
Offered By Announcement only

MTH 594. Topics in Mathematics  
1- 3 credits  
Offered By Announcement only

MTH 609. Cryptography and Data Security  
3 credits  
Offered By Announcement only
Encryption algorithms; cryptographic techniques; access, information flow and inference controls. Prerequisite: MTH 509.

MTH 611. Theory of Computation  
3 credits  
Offered By Announcement only
Recursive functions, Markov algorithms, Turing machines. Unsolvability. Prerequisite: MTH 509 and at least one programming course.

MTH 612. Complexity Theory  
3 credits  
Offered By Announcement only
Models of computations, Blum’s axioms, intractability, NP-completeness. Prerequisite: MTH 611.

MTH 621. Mathematical Probability  
3 credits  
Offered By Announcement only
Development of the measure-theoretic approach to probability. Random variables, central limit theory, laws of large numbers, martingales. Prerequisite: Permission of department chairman.

MTH 625. Multivariate Analysis  
3 credits  
Offered By Announcement only
Sampling theory for multivariate normal populations. Component and factor analysis. Stochastic difference equations. Prerequisite: MTH 525.

MTH 630. Real Variables  
3 credits  
Offered By Announcement only
Lebesgue measure and the Lebesgue Integral for R1, Banach Spaces. General measure theory. topological groups and Haar Measure. Prerequisite: MTH 532.

MTH 631. Real Variables  
3 credits  
Offered By Announcement only
Lebesgue measure and the Lebesgue Integral for R1, Banach Spaces. General measure theory. topological groups and Haar Measure. Prerequisite: MTH 532.

MTH 632. Complex Variables  
3 credits  
Offered By Announcement only
Complex numbers line or transformations, analytic function, conformality. Cauchy’s Theorem, representation theorems, harmonic functions. Prerequisite: MTH 531.

MTH 633. Complex Variables  
3 credits  
Offered By Announcement only
Complex numbers line or transformations, analytic function, conformality. Cauchy’s Theorem, representation theorems, harmonic functions. Prerequisite: MTH 531.
MTH 638. Stochastic Processes  
3 credits  
Offered By Announcement only  
Prerequisite: MTH 631.

MTH 640. Algebraic Topology  
3 credits  
Offered By Announcement only  
Homotopy, covering space, Eilenberg-Steenrod axioms for (co) homology theories, Mayer-Vietoris sequences, Universal Coefficient theorem, Kunneth formula, computations and applications. Prerequisite: MTH 532.

MTH 641. Algebraic Topology  
3 credits  
Offered By Announcement only  
Homotopy, covering space, Eilenberg-Steenrod axioms for (co) homology theories, Mayer-Vietoris sequences, Universal Coefficient theorem, Kunneth formula, computations and applications. Prerequisite: MTH 532.

MTH 647. Computational Geometry  
3 credits  
Offered By Announcement only  
Algorithms for solving geometric problems arising from application domains including graphics, robotics, and GIS. Prerequisite: MTH 517 or permission of instructor.

MTH 651. Differential Geometry  
3 credits  
Offered By Announcement only

MTH 652. Differential Geometry  
3 credits  
Offered By Announcement only

MTH 657. Lie Groups  
3 credits  
Offered By Announcement only

MTH 661. Abstract Algebra  
3 credits  
Offered By Announcement only  
Prerequisite: MTH 562.

MTH 662. Abstract Algebra  
3 credits  
Offered By Announcement only  
Prerequisite: MTH 562.

MTH 670. Directed Readings or Research  
2- 4 credits  
Offered By Announcement only

MTH 680. Topics in Analysis  
3 credits  
Offered By Announcement only

MTH 681. Topics in Analysis  
3 credits  
Offered By Announcement only

MTH 682. Topics in Topology  
3 credits  
Offered By Announcement only

MTH 683. Topics in Topology  
3 credits  
Offered By Announcement only

MTH 685. Topics in Algebra  
3 credits  
Offered By Announcement only

MTH 686. Topics in Mathematics  
3 credits  
Offered By Announcement only
MTH 687. Topics in Mathematics
3 credits
Offered By Announcement only

MTH 690. Seminar for Beginning Graduate Students
1- 3 credits
The selection of topics will be flexible but will be of interest to beginning graduate students.
Offered By Announcement only

MTH 692. Seminar
1- 2 credits
Offered By Announcement only

MTH 710. Master’s Thesis
1- 6 credits
Offered Fall and Spring Semesters
The student working on his/her master’s thesis enrolls for the number of credits as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MTH 725. Continuous Registration—Master’s Study
0 credits
Offered Fall and Spring Semesters
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

MTH 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but for not less than a total of 12 hours. Up to 12 hours may be taken in a regular semester, but not more than six in a summer session.

MTH 740. Research Project
1- 6 credits
Offered Fall and Spring Semesters
Required of all candidates for the Doctor of Arts degree. Student enrolls for credit as determined by advisor. Credit is not awarded until the doctoral project has been accepted. Total enrollment may not exceed six credits.

MTH 750. Research in Residence
0 credits
Offered Fall and Spring Semesters
Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Philosophy

PHI 510. Formal Logic
3 credits
Offered Spring Semester
First and second-order quantification theory; metalogic. Prerequisite: Three courses at the 200 level or above, including PHI 210.

PHI 530. Ethical Theory
3 credits
Offered By Announcement only
G. E. Moore to the present. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 330.

PHI 533. Political Philosophy
3 credits
Offered By Announcement only
A survey of some central issues and developments in political philosophy. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 330.
PHI 540. Epistemology
3 credits
Offered By Announcement only
A survey of the basic topics and questions in epistemology: knowledge acquisition and justification, perception, fallibilism, and skepticism. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 340, 343.

PHI 541. Mind and Language
3 credits
Offered By Announcement only
Philosophical problems about signs, linguistic and mental representations, intentionality, action, and consciousness. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 341, 344, 374.

PHI 543. Induction, Probability, and Scientific Method
3 credits
Offered By Announcement only
Foundations of inductive reasoning and role of experiment in science. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 340, 343.

PHI 545. Metaphysics
3 credits
Offered By Announcement only
A selection of topics dealing with the main problems of metaphysics: existence, modality, universals, identity and persistence through time, causation, the self and physicalism. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 341, 344, 345.

PHI 555. Philosophy of Education
3 credits
Offered By Announcement only
Problems concerning the nature and aims of education. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 330, 331, 340, 344.

PHI 560. History of Logic
3 credits
Offered By Announcement only
Aristotle, the Stoics, the Scholastics, Leibniz, Boole, DeMorgan, Peirce, Frege, and Russell and Whitehead. Prerequisite: Three courses at the 200 level or above, including PHI 210.

PHI 562. History of Ethics
3 credits
Offered By Announcement only
A selection of ethical theories from Aristotle to Rawls. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 330.

PHI 570. Presocratics and Plato
3 credits
Offered By Announcement only
Fragments from the Presocratics and the dialogues of Plato. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 271.

PHI 571. Aristotle and Hellenistic Philosophy
3 credits
Offered By Announcement only
A survey of central philosophical topics in Aristotle and Hellenistic Philosophers (Epicureans, Stoics, and Skeptics). Prerequisite: Three courses at the 200 level or above, including PHI 210 and 271.

PHI 572. Medieval Philosophy
3 credits
Offered By Announcement only
The patristic period through the scholasticism of the late middle ages. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 271, 272.
PHI 573. **Early Modern Philosophy**

3 credits  
Offered By Announcement only
An examination of early modern philosophy from Hobbes and Descartes to Hume. Prerequisite: Three courses at the 200 level or above, including PHI 210 and 272.

PHI 575. **Kant**

3 credits  
Offered By Announcement only
An examination of selected issues in Kant’s theoretical or practical philosophy. Prerequisite: Three Courses at the 200 level or above, including PHI 210 and 272.

PHI 581. **Pragmatism**

3 credits  
Offered By Announcement only
Peirce, James, Dewey, and others. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 340, 345.

PHI 582. **History of Analytic Philosophy**

3 credits  
Offered By Announcement only
The development of analytic philosophy from its beginnings in the work of Frege and Russell through logical positivism to contemporary philosophy. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 341, 344, 345, 374.

PHI 583. **The Phenomenological Tradition**

3 credits  
Offered By Announcement only
An examination of the phenomenological movement (Edmund Husserl, Martin Heidegger, Maurice Merleau-Ponty, and others) and of its impact on contemporary thought. Prerequisite: Three courses at the 200 level or above, including PHI 210 and at least one of the following: PHI 272, 344, 381.

PHI 591. **Special Topics**

3 credits  
Offered By Announcement only
A selected philosopher or philosophical problem. May be repeated for credit. Prerequisite: Six credits in Philosophy and junior standing.

PHI 592. **Special Topics**

3 credits  
Offered By Announcement only
A selected philosopher or philosophical problem. May be repeated for credit. Prerequisite: Six credits in Philosophy and junior standing.

PHI 594. **Independent Study in Philosophy**

1-3 credits  
Offered By Announcement only
Directed reading on a topic or philosopher. May be repeated for credit. Prerequisite: Six credits in Philosophy and junior standing.

PHI 610. **Topics in Logic**

3 credits  
Offered By Announcement only
Problems in philosophical logic; non-standard logics.

PHI 630. **Seminar in Ethics**

3 credits
Problems in normative ethics, meta-ethics, and value theory.

PHI 633. **Seminar in Social and Political Philosophy**

3 credits  
Offered By Announcement only
Morality and politics, rights and obligations, sources and limits of political obligation, and the function of the state. Prerequisite: Graduate standing.

PHI 636. **Values, Norms, and Actions**

3 credits  
Offered By Announcement only
The role of values and norms in practical reasoning and decision making.
PHI 640. Seminar in Epistemology  
3 credits  
Problems concerning knowledge: skepticism, belief, certainty, truth, and justification.

PHI 641. Seminar in Philosophy of Language  
3 credits  
Nature and uses of language; concepts of reference, truth, and meaning.

PHI 643. Philosophy of Science  
3 credits  
Selected topics in the philosophy of science, such as realism, explanation, and conceptual and methodological issues in the special sciences.

PHI 644. Seminar in Philosophy of Mind  
3 credits  
Problems concerning mental phenomena: theories of perception, action, consciousness.

PHI 645. Seminar in Metaphysics  
3 credits  
Problems related to the nature and kinds of being.

PHI 651. Seminar in Philosophy of Art  
3 credits  
Problems related to beauty and the philosophy of art.

PHI 652. Seminar in Philosophy of Religion  
3 credits  
Problems in philosophy of religion: the existence and attributes of God, the rationality of theistic belief, the problem of evil.

PHI 671. Seminar in Ancient Philosophy  
3 credits  
A discussion of selected topics in ancient philosophy.

PHI 675. Seminar in Modern Philosophy  
3 credits  
A discussion of selected topics in modern philosophy from Hobbes and Descartes to Kant.

PHI 682. The Origins of Contemporary Continental and Analytic Philosophy  
3 credits  
A study of selected topics in the philosophical tradition originating from Franz Brentano and his contemporaries and students.

PHI 691. Seminar in Special Topics  
3 credits  
A selected philosopher or philosophical problem. May be repeated for credit.

PHI 692. Seminar in Special Topics  
3 credits  
A selected philosopher or philosophical problem. May be repeated for credit.

PHI 694. Independent Study in Philosophy  
1-3 credits  
Directed reading on a topic or philosopher. May be repeated for credit.
**PHI 710. Master’s Thesis**

*Offered Fall and Spring Semesters*

The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

**PHI 720. Research in Residence**

*Offered Fall and Spring Semesters*

Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in PHI 710 (usually six credits). Credit not granted. May be regarded as full time residence.

**PHI 725. Continuous Registration—Master’s Study**

*Offered Fall and Spring Semesters*

To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

**PHI 730. Doctoral Dissertation**

*Offered Fall and Spring Semesters*

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but for not less than a total of 12 hours. Up to 12 hours may be taken in a regular semester, but not more than six in a summer session.

**PHI 750. Research in Residence**

*Offered Fall and Spring Semesters*

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Physics**

**PHY 500. Research**

*Offered By Announcement only*

Project course introducing methods of research, individual investigation of current problems.

**PHY 505. Advanced Laboratory**

*Offered Fall Semester*

Advanced experiments such as properties of the electron, optical spectra, electrical measurements, radioactive decay, absorption, etc. Prerequisite: PHY 208. Prerequisite or corequisite: PHY 360.

**PHY 506. Advanced Laboratory**

*Offered Spring Semester*

Advanced experiments such as properties of the electron, optical spectra, electrical measurements, radioactive decay, absorption, etc. Prerequisite: PHY 208. Prerequisite or corequisite: PHY 360.

**PHY 515. Mathematical Techniques in Physics**

*Offered Spring Semester*

Complex variables and applications. Infinite series and their uses, particularly in differential equations. Multiple integrals and Fourier series. Prerequisite: PHY 206, 207; MTH 311, and 310 or 312.

**PHY 516. Readings in Physics**

*Offered Fall and Spring Semesters*

Prerequisite: Permission of department chairman.
PHY 517. **Readings in Physics**  
1-3 credits  
Offered Spring Semester  
Prerequisite: Permission of department chairman.

PHY 518. **Readings in Physics**  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of department chairman.

PHY 520. **Solid State Physics**  
3 credits  
Offered By Announcement only  
Crystal structure, quantum theory of the electronic structure of solids, mechanical, electric, magnetic and optical properties of solids. Prerequisite: PHY 560.

PHY 530. **Plasma Physics I**  
3 credits  
Offered By Announcement only  
Kinetic theory of plasmas, adiabatic motion of charged particles magnetofluid dynamics, transport properties of plasmas in electromagnetic fields. Prerequisite: PHY 340, 351, 360.

PHY 540. **Classical Mechanics II**  
3 credits  
Offered Fall Semester  
Lagrangian formulation, rigid body dynamics. Topics selected from fluid dynamics, non-linear oscillations, normal modes, phase plane analysis. Prerequisite: PHY 340.

PHY 552. **Optical Physics**  
3 credits  
Offered By Announcement only  
Geometric optics, interference and diffraction, polarized light, optical pumping, coherence phenomena, applications to modern physical research. Prerequisite: PHY 351, 360.

PHY 560. **Quantum Mechanics and Modern Physics I**  
3 credits  
Offered Fall Semester  
Introductory theory with applications to simple systems. Perturbation theory and atomic structure. Prerequisite: PHY 350.

PHY 561. **Quantum Mechanics and Modern Physics II**  
3 credits  
Offered Spring Semester  
Applications of quantum mechanics to atomic and molecular spectroscopy, quantum statistical mechanics, and nuclear physics. Prerequisite: PHY 560.

PHY 601. **Condensed Matter Physics Seminar**  
1 credit  
Offered Fall and Spring Semesters

PHY 602. **Optical Physics Seminar**  
1 credit  
Offered Fall and Spring Semesters

PHY 603. **Particle Physics Seminar**  
1 credit  
Offered By Announcement only

PHY 604. **Plasma Physics Seminar**  
1 credit  
Offered By Announcement only

PHY 610. **Special Topics in Physics**  
1-3 credits  
Offered By Announcement only  
Topics are typically selected from fluid dynamics, applied mathematics, particle theory, nuclear physics.
PHY 611. Special Topics in Physics
1-3 credits
Offered By Announcement only
Topics are typically selected from fluid dynamics, applied mathematics, particle theory, nuclear physics.

PHY 612. Special Topics in Physics
1-3 credits
Offered By Announcement only
Topics are typically selected from fluid dynamics, applied mathematics, particle theory, nuclear physics.

PHY 615. Methods of Mathematical Physics I
3 credits
Offered By Announcement only
A continuation of PHY 515. Prerequisite: PHY 515.

PHY 616. Methods of Mathematical Physics II
3 credits
Offered By Announcement only
A continuation of PHY 515. Different topics from PHY 615. Prerequisite: PHY 515.

PHY 620. Advanced Solid State Physics
3 credits
Offered By Announcement only
Electronic structure, electron-electron interactions, phonons, many-body problems, transport properties, magnetism, superconductivity. Prerequisite: PHY 520, 560.

PHY 623. Statistical Mechanics I
3 credits
Offered By Announcement only
Equilibrium state, irreversibility, statistical description of an ensemble, entropy, partition functions. Prerequisite: PHY 321, 561.

PHY 624. Statistical Mechanics II
3 credits
Offered By Announcement only
Statistical description of many body problems, specific heats, Brownian motion in liquids and fields, nonequilibrium states, superconductivity. Prerequisite: PHY 623.

PHY 630. Plasma Physics II
3 credits
Offered By Announcement only
Plasmas oscillations and waves, interaction of electromagnetic waves, with plasmas in magnetic fields, plasma turbulence, beam-plasma interactions, methods of experimental investigation. Prerequisite: PHY 530.

PHY 650. Electromagnetic Theory 1
3 credits
Offered By Announcement only
Electrostatics, magnetostatics, Maxwell’s equations, continuous media, waves, antennas, resonant cavities, wave guides. Prerequisite: PHY 351, 515.

PHY 651. Electromagnetic Theory II
3 credits
Offered By Announcement only
Relativistic effects, interaction of radiation with matter, multipole radiation, radiation reaction. Prerequisite: PHY 650.

PHY 654. General Relativity Theory
3 credits
Offered By Announcement only
Einstein’s theory of gravitation. Includes basic differential geometry and tensor analysis, the Einstein field equations, the motion of particles in gravitational fields, tests of general relativity, black holes, and cosmology.

PHY 666. Elementary Particles
3 credits
Offered By Announcement only
The Standard Model of elementary particles. Classical theory of fields for spin 0, 1/2, 1; Feynman rules. The Standard Model Lagrangian is postulated, and some of its basic consequences are explored. Prerequisite: PHY 540, 561, 650.
PHY 670. Quantum Theory I
3 credits  
Transformation theory, linear operators and linear vector spaces. Schrodinger's equation, rotation group and angular momentum, statistics (Bose-Einstein and Fermi-Dirac), isotopic spin, multiplet structure of levels, approximation methods. Prerequisite: PHY 540, 561, 615.

PHY 671. Quantum Theory II
3 credits  
One particle relativistic theory; Lorentz group; symmetries of particles; elementary scattering theory; many body problems; Greens's function techniques; S-matrix. Prerequisite: PHY 670.

PHY 672. Quantum Field Theory
3 credits  
Canonical and path-integral quantization; renormalization; gauge theories. Prerequisite: PHY 540, 651, 671.

PHY 680. Directed Readings or Research
1-4 credits  
Offered Fall and Spring Semesters

PHY 710. Master’s Thesis
1-6 credits  
The student working on his/her master's thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

PHY 720. Research in Residence
0 credits  
Offered By Announcement only
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in PHY 710 (usually six credits). Credit not granted. May be regarded as full time residence.

PHY 725. Continuous Registration—Master's Study
0 credits  
Offered By Announcement only
To establish residence for non-thesis master's students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

PHY 730. Doctoral Dissertation
1-12 credits  
Offered Fall and Spring Semesters
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but for not less than a total of 12 hours. Up to 12 hours may be taken in a regular semester, but not more than six in a summer session.

PHY 740. Research Project
1-6 credits  
Offered By Announcement only
Required of all candidates for the Doctor of Arts degree. Student enrolls for credit as determined by advisor. Credit is not awarded until the doctoral project has been accepted. Total enrollment may not exceed six credits.

PHY 750. Research in Residence
0 credits  
Offered Fall and Spring Semesters
Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
**Portuguese**

POR 591. **Directed Readings in Portuguese**  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of the instructor.

POR 592. **Directed Readings in Portuguese**  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of the instructor.

POR 593. **Directed Readings in Portuguese**  
1-3 credits  
Offered By Announcement only  
Prerequisite: Permission of the instructor.

POR 625. **Portuguese for Graduate Research**  
0 credits  
Offered By Announcement only  
Grammatical structuring, verb tenses, and word families necessary for reading text with minimal use of a dictionary. May fulfill the Foreign Language Reading Competency Requirement (consult your graduate advisor).

**Psychology**

PSY 501. **History and Systems of Psychology**  
3 credits  
Offered By Announcement only  
Development of psychology as a science. Prerequisite: 12 credits in Psychology.

PSY 502. **Culture, Values, Religiosity, and Mental Illness**  
3 credits  
Cultural differences in the manifestation, course, and outcome of serious mental disorders; the relationship between chronic mental disorders and ethnicity, religious values, family cohesion, attributions of control, and world view; cultural differences in societies’ reactions to and treatment of mentally ill patients. Prerequisite: PSY 110; 316, 352.

PSY 590. **Special Topics**  
3 credits  
Offered By Announcement only  
Prerequisite: Nine credits in Psychology.

PSY 600. **Sensory Processes**  
3 credits  
Offered By Announcement only  
Mechanisms of vertebrate sensation, with emphasis on the structure and function of the peripheral organs. Lecture, 2 hours; laboratory, 2 hours. Prerequisite: Graduate standing.

PSY 601. **Comparative Psychology**  
3 credits  
Offered By Announcement only  
Attention is focused on comparing among diverse animals critical or sensitive period phenomena, behavior of the newly-hatched or just born, behavior of embryos, and psychogenetics. Lecture and laboratory. Prerequisite: PSY 605, 620, 625, 640.

PSY 602. **Analysis of Behavior**  
3 credits  
Offered By Announcement only  
Basic learning and behavioral operations and processes. Elementary conditioning relations to memory, language, and cognition. Emphasis may include behavior analysis, instruction, behavior change, and behavioral pharmacology. Prerequisite: Graduate standing.

PSY 603. **Verbal Behavior**  
3 credits  
Offered By Announcement only  
A behavioristic analysis of language and biological foundations of verbal behavior.
PSY 604. Cognition and Emotion
3 credits
Study of basic cognitive processes of attention and memory, the function of emotions, and the role of cognitive mechanisms in the processing of affective information.

PSY 605. Cognitive Neuroscience
3 credits
Brain mechanisms in cognition and behavior, including sensory encoding and perception, attention, motivation, emotion, learning/memory, language, executive functions, and mental disorders.

PSY 606. Psychophysiology
3 credits
A review of current research and experimental procedures in psychophysiology. Emphases are upon behavioral and environmental situations that influence physiological functioning. These include the study of stress-induced hypertension, ulceration, and other psychophysiological disorders. Prerequisite: PSY 605 or permission of instructor.

PSY 607. Neurosciences I: Neuronal Mechanisms
3 credits
Biophysical, biochemical and morphological approaches at the cellular level to nervous integration as a basis for behavior. Lecture, 3 hours. Prerequisite: Permission of instructor.

PSY 608. Neurosciences II: Nervous System Integration
3 credits
Survey of neural control mechanisms underlying behavior. Organization and synaptic connections of specific invertebrate, brain and spinal cord control systems using neurohistological, neurophysiological and neuro-pharmacological procedures. Prerequisite: BIL 660 or PSY 607 or permission of instructor.

PSY 609. Psychopharmacology
3 credits
Basic methods and current issues in psychopharmacology. Prerequisite: PSY 605 or permission of instructor.

PSY 610. Behavioral Medicine
3 credits
Psychological factors in the etiology, pathogenesis, diagnosis, prevention and treatment of physical disorders. Prerequisite: PSY 605 or permission of instructor.

PSY 611. Social Psychology of Health and Illness
3 credits
Topics in behavioral medicine, including social and personality factors affecting disease susceptibility, health related beliefs and behaviors; the doctor-patient relationship; evaluation of health care systems and patient compliance. Prerequisite: Permission of instructor.

PSY 612. Stress, Emotions, and Motivation
3 credits
Prerequisite: PSY 605 or equivalent.

PSY 613. Psychoneuroimmunology
3 credits
Structural and functional aspects of the immune system that are sensitive to neural and psychological processes. Interactions between the nervous and immune systems are examined in relation to empirical associations between psychological factors (i.e., stress) and immune-mediated processes in diseases such as cancer and AIDS. Prerequisite: PSY 605 or permission of instructor.
PSY 620. Developmental Psychology
3 credits
Offered By Announcement only
Emphasis on applied research and interventions.

PSY 621. Theories of Development
3 credits
Offered Fall Semester
Theoretical aspects of psychological development throughout the life span.
Prerequisite: PSY 620.

PSY 622. Deviant Intellectual Development
3 credits
Offered By Announcement only
Disorders of intellectual development: Mental retardation, learning problems, and language delays (etiology, epidemiology, and prognosis). Does not include clinical applications.

PSY 623. Deviant Communicative Development
3 credits
Offered By Announcement only
The nature of deviant acquisition of communication systems. Specific language and speech problems of developmentally disabled, sensorily impaired and physically handicapped children. Intervention methods utilizing traditional and nonverbal approaches. Prerequisite: Graduate standing or permission of the instructor.

PSY 624. Atypical Social Development
3 credits
Offered Spring Semester
The theoretical and empirical literature on social development in children with psychopathology, mental retardation, and/or those who have experienced trauma. Prerequisite: PSY 620.

PSY 625. Social Psychology
3 credits
Offered Fall Semester
Overview of the major substantive areas and theories of social psychology. Emphasis on applications to health-related concerns.

PSY 626. Social Influence Processes
3 credits
Offered By Announcement only
The major elements reviewed are source, message and target. The various processes include persuasion threats, promises and activation of normative commitments. Sub-areas of social psychology included are conformity, leadership, propaganda, social conflicts, decision theory, and social power. Prerequisite: PSY 625.

PSY 627. Interpersonal Attraction
3 credits
Offered By Announcement only
A review of theories, methods and empirical findings related to the study of interpersonal affiliation and affect. Prerequisite: PSY 625.

PSY 628. Theories of Personality
3 credits
Offered By Announcement only
A thorough comparative study of the major theoretical positions in the field of personality in terms of units of analysis, the structure of personality, the development of personality, the relation of personality to other fields of Psychology, the relation of personality to fields of knowledge outside psychology, (biology, sociology, anthropology) and the heuristic value of the theory. Prerequisite: PSY 640.

PSY 630. Advanced Psychological Methods
1-3 credits
Offered Fall Semester
Fundamentals of behavioral research including experimental, and non-experimental design, measurement theory, and statistical methods. Computer applications of univariate statistical techniques. Prerequisite: PSY 316, 318, or equivalent, or permission of instructor.
PSY 631. Psychological Statistics, Research Methods and Design
3 credits  Offered Fall Semester
Statistics for experimental design with uncorrelated independent variables. Review of t-tests; designs and applications of analysis of variance; including one-way, factorial, repeated-measures, and mixed designs; post hoc comparisons among means. Prerequisite: PSY 630 or permission of instructor.

PSY 632. Multiple Regression and Multivariate Statistics
3 credits  Offered Spring Semester
Techniques for the analysis of multiple quantitative measurements including multiple regression, multivariate analysis of variance, discriminant analysis and canonical correlation. Computer application of these techniques to the behavioral sciences. Prerequisite: PSY 630 or EPS 568 and 653 or permission of instructor.

PSY 633. Multivariate Correlation Methods in Psychology
3 credits  Offered By Announcement only
Applied quantitative analysis based upon correlation methods. Includes zero order correlation, multiple regression, discriminant analysis and an overview of factor analysis. Includes use of standard statistical computer packages in these areas. Prerequisite: PSY 632.

PSY 634. Program Evaluation
3 credits  Offered By Announcement only
Alternative models. Appropriate research methods. Constructive versus adversary roles of evaluators. Evaluation as a planning tool. Adapting evaluation methods to different types of programs: mental health; educational day care and services to special groups such as the very young, the elderly, the handicapped; business and industrial. Report preparation.

PSY 635. Data-Base Management Systems in the Psychological Sciences
3 credits  Offered By Announcement only
Management of large data sets in the psychological sciences, including evaluation research, clinical client data, epidemiological studies, demographic studies and laboratory research. Prerequisite: Graduate standing in Psychology or permission of the instructor.

PSY 636. Developmental Methodology
3 credits  Offered Fall Semester
Concepts and research design problems for the analysis of developmental data from infancy through adolescence. Prerequisite: PSY 620 or equivalent.

PSY 637. Methods in Social Psychology
3 credits  Offered By Announcement only
Methodology of experimental research in social psychology, including problems of research setting, sampling, experimenter-subject relationships, and methods of collecting social psychological data. Lecture, seminar, and laboratory. Prerequisite: PSY 625.

PSY 638. Psychology of Infant Development
3 credits  Offered By Announcement only
Theory, research, and methodology pertaining to psychological development in the first two years of life. Applied research on infancy as it pertains to individual differences in cognitive, social, and emotional development. Prerequisite: Graduate standing or permission of instructor.

PSY 639. Psychology of Mental Retardation and Developmental Disabilities
3 credits  Offered By Announcement only
Learning disabilities, autism and other developmental disabilities with an emphasis on mental retardation. Definitions, causal factors, societal attitudes and services from an historical perspective.
PSY 640. **Adult Psychopathology**  
3 credits **Offered Fall Semester**  
Theories, models, history, and research relevant to various patterns of problematic behavior, with a focus on adults. The influences of family systems as well as cultural and other diversity factors (e.g., ethnicity, sexual orientation) are included.

PSY 641. **Child and Adolescent Psychopathology**  
3 credits **Offered Fall Semester**  
Theories, models, and research relevant to the development and the course of behavioral disorders and other problems (e.g., maltreatment, exposure to violence and poverty) that emerge in childhood and adolescence. The influences of family and peer systems as well as cultural and other diversity factors (e.g., ethnicity, sexual orientation) are included.

PSY 642. **Advanced Adult Psychopathology**  
3 credits **Offered Fall Semester**  
Theory and research on risk factors and etiological models of mental disorders. Socioenvironmental (cultural, social support, life events), psychological (temperament, cognitive biases), and biological (genes, neurotransmitters) models of risk, research methodology, and design are discussed. Prerequisite: Graduate standing in Psychology or permission of instructor.

PSY 643. **Behavioral Medicine and Developmental Disabilities**  
3 credits **Offered Fall and Spring Semesters**  
Processes influencing diagnosis and management of developmental disabilities: genetics, embryology/fetology, physical growth and development, nutrition, hearing and speech pathology, family dynamics, cognition and psycho-educational assessment.

PSY 645. **Introduction to Psychological Evaluation**  
3 credits **Offered Fall Semester**  
Measurement theory; introduction to the administration and interpretation of widely-used intelligence and personality tests, with attention to issues of ethics and diversity. Prerequisite: Permission of Director of Clinical Psychology Training Program.

PSY 646. **Psychological Evaluation of Adults**  
3 credits **Offered Spring Semester**  
Issues of diversity, ethics, and personality theory as they pertain to psychological evaluation of adults. Emphases on the use of projective and objective personality assessment methods. Prerequisite: PSY 645 and permission of Director of Clinical Psychology Training Program.

PSY 647. **Psychological Evaluation of Children and Families**  
3 credits **Offered Spring Semester**  
Clinical and developmental theory and methods pertaining to the evaluation of children, adolescents, and families including intelligence tests, structured diagnostic instruments, personality and behavioral check lists, observational formats, interviewing, and projective assessment. Attention to issues of ethics and diversity. Prerequisite: PSY 645 and permission of Director of Clinical Psychology Training Program.

PSY 648. **Psychological Evaluation in Physical Disorders**  
3 credits **Offered Spring Semester**  
Administration, interpretation, and psychometric evaluation of psychological tools and procedures used in the evaluation of physical disorders. Attention to issues of ethics and diversity. Prerequisite: 610 or 645 or permission of instructor.
PSY 649. Evaluation of the Mentally Retarded and Brain-Damaged Child  
3 credits Offered By Announcement only  
Special diagnostic and evaluative procedures and techniques used with the intellectually inefficient child. Laboratory required. Prerequisite: PSY 441, 645 or equivalent.

PSY 651. Infant Assessment  
3 credits Offered By Announcement only  
Background, history, purpose, and utility of infant assessments. Evaluation of various methods of assessing cognitive, social, language, and emotional development on conceptual, psychometric, empirical and practical grounds.

PSY 655. Counseling and Psychotherapy  
3 credits Offered By Announcement only  
Theory and research on traditional and modern therapeutic methods. Prerequisite: PSY 604 or permission of instructor.

PSY 656. Introduction to Evidence-Based Psychological Treatments  
1- 3 credits Offered Fall Semester  
Theories, history, and techniques of psychological and behavioral therapies, with emphasis on evidence-based approaches. Prerequisite: PSY 640.

PSY 657. Introduction to Psychotherapy, Ethics, and Professional Issues  
3 credits Offered Spring Semester  
Introductory experience in clinical interviewing, therapeutic communication, ethics, and case conceptualization. Consideration of client-and-therapist culture, gender, and diversity are also emphasized. Prerequisite: Permission of Director of Clinical Psychology Training Program.

PSY 658. Introduction to Clinical Methods II  
3 credits Offered By Announcement only  
Continuation of PSY 657. Prerequisite: PSY 657 and permission of Director of Clinical Psychology Training Program.

PSY 659. Evidence-Based Psychological Treatments for Adults  
3 credits Offered By Announcement only  
Continuation of PSY 656 with emphasis on a broad range of research pertaining to the efficacy and effectiveness of psychological treatments for adults. Prerequisite: PSY 656 and permission of Director of Clinical Psychology Training Program.

PSY 660. Evidence-Based Psychological Intervention with Children and Families  
3 credits Offered Fall Semester  
Theories, history, and techniques of psychological and behavioral therapies, with emphasis on evidence-based approaches with children, adolescents, and families. Understanding normative and deviant development, with attention to issues of diversity, ethics, and domestic violence. Prerequisite: PSY 656 or permission of instructor.

PSY 661. Interventions in Pediatric Psychology  
3 credits Offered Spring Semester  
Pediatric psychology and basic learning theory. Medical and behavioral aspects of child and adolescent health disorders, psychological assessment, and evidence-based treatment approaches. Prerequisite: PSY 656 and permission of Director of Clinical Psychology Training Program.
PSY 662. Health Psychology Interventions  
3 credits  
Offered Fall Semester  
Clinical interventions and research relevant to health problems and lifestyle, with emphasis on critical evaluations of past research and the design and implementation of intervention protocols. The origins of health psychology and the role of the health psychologist in medical systems. Prerequisite: PSY 610 or 656 or permission of instructor.

PSY 663. Cognitive Behavior Therapy  
3 credits  
Offered By Announcement only  
Theory, history, research, and practice in cognitively oriented forms of therapy, including cognitive restructuring, rational emotive therapy, and cognitive behavior modification. Prerequisite: PSY 656 and permission of Director of Clinical Psychology Training Program.

PSY 664. Group Psychotherapy  
3 credits  
Offered By Announcement only  
Procedures, techniques, and theoretical perspectives. Prerequisite: PSY 656 or permission of Director of Clinical Training.

PSY 665. Family Therapy  
3 credits  
Offered By Announcement only  
History of family therapy, including theoretical perspectives, methods, and techniques associated with each. Includes behavioral, cognitive, dynamic, interpersonal, and systems family therapeutic approaches, in addition to a focus on family developmental process. Attention to ethics and diversity. Prerequisite: PSY 656 or permission of Director of Clinical Training.

PSY 666. Research and Theory of Early Intervention  
3 credits  
Offered Fall Semester  
Theories, models, methods, purposes, and utility of intervention in young children. Includes illustrative examples from contemporary intervention research literature. Prerequisite: Permission of instructor.

PSY 670. Practicum in Clinical Psychology  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Supervised experience in evaluating and treating psychological problems of children, adolescents, families, and/or adults behavior. For students placed at the U.M. Psychological Services Clinic there is a weekly case conference that focuses on ethics case conceptualization. Course may be repeated for credit. Prerequisite: Permission of Director of Clinical Psychology Training Program.

PSY 671. Practicum in Clinical Psychology II  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Continuation of PSY 670. Prerequisite: Permission of Director of Clinical Psychology Training Program.

PSY 672. Advanced Practicum in Clinical Psychology  
1-3 credits  
Offered Fall and Spring Semesters  
Advanced experience in special clinical techniques and clinical supervision. Primarily for post-internship clinical students. The advisor may direct that PSY 672 be repeated, but no more than six credits may be applied toward a degree. Prerequisite: PSY 671 and permission of Director of Clinical Psychology Training Program.
PSY 673. **Advanced Practicum in Professional Psychology I**  
**1- 3 credits**  
Offered Fall and Spring Semesters  
Advanced experience in special clinical techniques, supervision and/or teaching. No more than a total of six credits in PSY 673 and 674 may be counted toward the required 90 credits for the Ph.D. degree. Prerequisite: Permission of Department Chairman.

PSY 674. **Advanced Practicum in Professional Psychology II**  
**1- 3 credits**  
Offered Fall and Spring Semesters  
A continuation of PSY 673. No more than a total of six credits in PSY 673 and 674 may be counted toward the required 90 credits for the Ph.D. degree. Prerequisite: Permission of Department Chairman.

PSY 675. **Field Experience in Behavioral Medicine**  
**3 credits**  
Offered By Announcement only  
Observation, assessment, and/or health psychology intervention opportunities in physical health care settings. Prerequisite: PSY 605, 640. Corequisite: PSY 612 or 623.

PSY 676. **Practicum on Mental Retardation**  
**3 credits**  
Offered By Announcement only  
Specialized practicum especially in the evaluation or counseling, both individual and group with retardates. Prerequisite: PSY 670.

PSY 680. **Research**  
**1- 4 credits**  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Investigation of an original problem. Prerequisite: Permission of Department Chairman.

PSY 681. **Research**  
**1- 4 credits**  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Investigation of an original problem. Prerequisite: Permission of Department Chairman.

PSY 682. **Special Projects**  
**2- 4 credits**  
Offered Fall and Spring Semesters  
Designed to allow students to earn credit in special projects of educational nature which do not fit readily into existing course offerings. Not to be used as a substitute for other courses. Prerequisite: Graduate standing and permission of Chairman.

PSY 683. **Special Topics**  
**3 credits**  
Offered Fall and Spring Semesters  
Topics in selected areas of specialization. Prerequisite: Permission of instructor.

PSY 684. **Readings in Psychology**  
**3 credits**  
Offered Fall and Spring Semesters  
Supervised readings in selected topics. Prerequisite: Permission of Department Chairman.

PSY 685. **Seminar in Clinical Psychology**  
**3 credits**  
Offered Fall and Spring Semesters

PSY 686. **Seminar in Clinical Psychology**  
**3 credits**  
Offered Fall and Spring Semesters

PSY 687. **Seminar in Clinical Psychology**  
**3 credits**  
Offered By Announcement only
PSY 688. Seminar in Developmental Psychology
3 credits
Offered By Announcement only

PSY 689. Seminar in Developmental Psychology
3 credits
Offered By Announcement only

PSY 690. Seminar in Developmental Psychology
3 credits
Offered By Announcement only

PSY 691. Seminar in Social Psychology
3 credits
Offered By Announcement only

PSY 692. Seminar in Personality
3 credits
Offered By Announcement only

PSY 693. Seminar in Behavioral Medicine
3 credits
Offered Spring Semester

PSY 694. Seminar in Behavioral Medicine
3 credits
Offered Fall Semester

PSY 695. Seminar in Learning
3 credits
Offered By Announcement only

PSY 696. Seminar in Motivation
3 credits
Offered By Announcement only

PSY 697. Seminar in Biological Psychology
3 credits
Offered Fall Semester

PSY 698. Seminar in Quantitative Psychology
3 credits
Offered Fall Semester

PSY 704. Internship in Clinical Psychology
1 credit
Offered Fall and Spring Semesters
Supervised internship in clinical psychology. May not be counted as part of the 90 hours required for the Ph.D. degree. Prerequisite: Permission of Director of Psychology Training Program.

PSY 705. Postdoctoral Practicum
1-3 credits
Advanced clinical psychology training for individuals who have completed a clinical psychology Ph.D. or PsyD. from an APA-accredited doctoral program. Supervision of clinical activity by licensed faculty members. Prerequisite: Permission of the Director of Clinical Psychology Training Program.

PSY 706. Summer Research Practicum
1 credit
Faculty-supervised research during the summer for students in the Psychology Ph.D. Program. Prerequisite: Permission of the Psychology Department’s Director of Graduate Studies.

PSY 710. Master's Thesis
1-6 credits
Offered Fall and Spring Semesters
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.
PSY 720. Research in Residence
0 credits
Offered Fall and Spring Semesters
Research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in PSY 710 (usually six credits). Credit not granted. May be regarded as full time residence.

PSY 725. Continuous Registration—Master’s Study
0 credits
Offered Fall and Spring Semesters
To establish residence for non-thesis master's students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

PSY 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but for not less than a total of 12 hours. Up to 12 hours may be taken in a regular semester, but not more than six in a summer session.

PSY 750. Research in Residence
0 credits
Offered Fall and Spring Semesters
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Religious Studies

REL 501. Supervised Reading in Religious Literature or Texts
1-3 credits
Independent study to enable students to read extensively in an area of personal interest in religious literature or texts. Prerequisite: Permission of instructor.

REL 502. Supervised Reading in Religious or Historical Traditions
1-3 credits
Independent study to enable students to read extensively in an area of personal interest in religious or historical traditions. Prerequisite: Permission of instructor.

REL 503. Supervised Reading in Religious Issues or Problems
1-3 credits
Independent study to enable students to read extensively in an area of personal interest in religious issues or problems. Prerequisite: Permission of instructor.

REL 505. Seminar in Ancient Studies
3 credits
Various topics in Greek and Roman Studies. Prerequisite: Junior standing or permission of instructor.

REL 510. Seminar in Hebrew Bible and Ancient Judaism
3 credits
Offered By Announcement only
Selected topics in Hebrew Bible and Ancient Judaism. Prerequisite: Junior standing and six credits in Religious Studies; permission of the instructor.

REL 520. Seminar in New Testament and Early Christianity
3 credits
Offered By Announcement only
Selected topics in New Testament and Early Christianity. Prerequisite: Junior standing and six credits in Religious Studies; permission of instructor.

REL 530. Seminar in Religious or Historical Traditions
1-3 credits
Selected topics in religious or historical traditions. Prerequisite: Junior standing and six credits in Religious Studies; permission of instructor.
REL 550. Seminar in Religious Ethics  
**3 credits**  
Selected issues in religious ethics and their social implications. Prerequisite: Six credits in Religious Studies and junior standing.

REL 560. Seminar in Contemporary Religious Issues  
**1-3 credits**  
Selected topics in contemporary religious issues. Prerequisite: Junior standing and six credits in Religious Studies; permission of instructor.

**Sociology**

SOC 501. Sociological Theory  
**3 credits**  
Offered Fall and Spring Semesters  
Classical sociological concepts and theory from the eighteenth century to the present. Prerequisite: Nine credits in Sociology and senior standing.

SOC 502. Sociology of Science  
**3 credits**  
Offered By Announcement only  
Culture of science, sociology of knowledge, various positions on the nature of knowledge, causality, and the relationship between theory and social research. Prerequisite: Graduate standing or permission of instructor.

SOC 511. Sociological Statistics  
**3 credits**  
Offered By Announcement only  
Probability theory, descriptive statistics and tests of independence. Prerequisite: Graduate status or permission of instructor.

SOC 530. Advanced Social Psychology: Sociological Perspective  
**3 credits**  
Offered By Announcement only  
Major theoretical perspectives in sociological social psychology including symbolic interaction and role theory, social structure and personality, psychoanalytic, and ethnomethodology. Selected research is reviewed. Prerequisite: Nine credits in Sociology or graduate standing.

SOC 550. Theories of Family Structure  
**3 credits**  
Offered By Announcement only  
Prerequisite: Nine credits in Sociology.

SOC 570. Theories of Criminology  
**3 credits**  
Offered By Announcement only  
Review and critique of central criminological theories. Evaluation of these theories in view of recent criminological research.

SOC 591. Special Topics  
**3 credits**  
Offered By Announcement only  
The content of this course will vary by semester. In any given semester its content will be expressed in parentheses following the title “Special Topics” in the printed class schedule. Prerequisite: Senior standing.

SOC 592. Special Topics  
**3 credits**  
Offered By Announcement only  
The content of this course will vary by semester. In any given semester its content will be expressed in parentheses following the title “Special Topics” in the printed class schedule. Prerequisite: Senior standing.

SOC 601. Contemporary Sociological Theory  
**3 credits**  
Offered By Announcement only  
Major orientations of modern sociology with emphasis upon structural and functional theories.
SOC 602. Contemporary Sociological Theory
3 credits
Offered By Announcement only

SOC 603. Selected Topics in Social Theory
3 credits
Offered By Announcement only
Prerequisite: SOC 601, 602.

SOC 604. Proseminar in Sociology
1 credit
Introduction to Sociology: the research process, departmental resources, and the graduate program. Prerequisite: Graduate standing.

SOC 610. Advanced Research Methods
3 credits
Offered By Announcement only
Quantitative techniques for the measurement of theoretical constructs, the consequences of technique selection, and the relationships between method and underlying theory. Prerequisite: Graduate status or consent of instructor.

SOC 611. Advanced Sociological Statistical Analysis I
3 credits
Introduction to the general linear model for continuous variables in sociological research. Foundations of the model and computerized applications. Prerequisite: Graduate status or permission of instructor.

SOC 612. Advanced Sociological Statistics II
3 credits
Offered By Announcement only
Multiple linear regression and regression diagnostics, analysis of categorical dependent variables, count dependent variables, simultaneous equations, and panel data models. Prerequisite: SOC 611 or permission of instructor.

SOC 613. Qualitative Research Methods
3 credits
Offered By Announcement only
Qualitative methods, based in a grounded theory orientation, focusing on participant observation and interviewing; methods for the collection of data in naturalistic social settings, with simultaneous data analysis; the history of such approaches; ties between methods and theory; the basic methods used in qualitative research, and typical analytic approaches; current issues and debates relevant to this set of approaches to generating knowledge. Prerequisite: SOC 610 or permission of instructor.

SOC 614. Evaluation Research
3 credits
Offered By Announcement only
Conceptualizing, designing, conducting, and interpreting the results of evaluation research programs in health and human service agencies. Prerequisite: SOC 610, 611 or equivalents.

SOC 615. Class Structure and Social Stratification
3 credits
Offered By Announcement only
Theoretical and research approaches to class structure and social stratification, with a focus on the U.S. Examines the conflict perspective(s) and major alternative views including economic class, status and power, gender and race. Prerequisite: Graduate standing or permission of instructor.
SOC 616. **Social Psychology: Sociological Perspectives**  
3 credits  
Offered By Announcement only  
Sociological theories and research explaining the influence of human groups and social processes on personality and human social behavior. Prerequisite: Graduate status or permission of instructor.

SOC 617. **Social Organization**  
3 credits  
Offered By Announcement only  
Effects of industrial downsizing on occupational structure, family income, and social mobility are examined and related to changes in class, ethnic, and racial identity. Prerequisite: Graduate status or permission of instructor.

SOC 620. **Social Epidemiology**  
3 credits  
Offered By Announcement only  
Theories, issues and methods of study pertinent to health and illness in society. Social factors implicated in patterns of disease occurrence.

SOC 622. **Teaching Seminar in Sociology**  
3 credits  
Pedagogical techniques for teaching Sociology at the college/university level. Prerequisite: Graduate standing.

SOC 632. **Social Psychology of Health and Illness**  
3 credits  
Offered By Announcement only  
Social and psychological factors affecting susceptibility to illness, health related beliefs and behaviors: the doctor-patient relationship: evaluation of health care systems and patient compliance. Prerequisite: Graduate standing and permission of instructor.

SOC 635. **Special Topics in Health and Society**  
3 credits  
Offered By Announcement only  
Topics will vary according to interests of faculty and students and may include health promotion and disease prevention, cross-cultural patterns of health and illness, psychiatric sociology.

SOC 642. **Contemporary Health Care Systems**  
3 credits  
Offered By Announcement only  
Components of the health care systems in the US compared with those in other countries.

SOC 650. **Social Analysis of Race Relations**  
3 credits  
Offered By Announcement only  
The impact of race relations research on the discipline of sociology.

SOC 651. **Race Relations: Social Psychological Perspectives**  
3 credits  
Offered By Announcement only  
Social psychological perspectives on the nature, causes, and consequences of racial inequality in American society.

SOC 652. **Theories of Race and Ethnic Relations**  
3 credits  
Offered By Announcement only  
Micro- and macro-level theories of race and ethnic relations. Prerequisite: Graduate standing or permission of instructor.

SOC 660. **Social Gerontology**  
3 credits  
Offered By Announcement only  
Personal issues, problems and crises of middle-age and aging, and the interrelation of those personal crises with the larger societal structures and processes. Prerequisite: Nine credits in Sociology.
SOC 670. The Criminal Justice System: Theory and Practice  
3 credits  
Offered By Announcement only  

SOC 671. Seminar on Criminology  
3 credits  
Offered By Announcement only  
Selected issues, topics, theories, and recent research in criminology.

SOC 672. Research in Crime and Delinquency  
3 credits  
Offered By Announcement only  
Measurement issues; effects of race, gender, age, and socio-economic status on criminality; extra-legal factors affecting criminal justice decision making. Prerequisite: SOC 610 and 611.

SOC 690. Directed Studies  
1- 3 credits  
Offered By Announcement only  
Individually supervised readings or research on special topics. Offered by arrangement with the instructor. Prerequisite: By arrangement with individual instructor. Graduate standing.

SOC 691. Special Topics and Current Issues in Medical Sociology  
1- 3 credits  
Offered By Announcement only  
Seminar topics will be announced in schedule of classes. Prerequisite: Graduate status or permission of instructor.

SOC 692. Special Topics and Current Issues in Criminology  
1- 3 credits  
Offered By Announcement only  
Seminar topics will be announced in schedule of classes. Prerequisite: Graduate status or permission of instructor.

SOC 693. Special Topics and Current Issues in Race/Ethnic Relations  
1- 3 credits  
Offered By Announcement only  
Seminar topics will be announced in schedule of classes. Prerequisite: Graduate status or permission of instructor.

SOC 710. Master’s Thesis  
1- 6 credits  
Offered Fall and Spring Semesters  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

SOC 720. Research in Residence  
0 credits  
Offered Fall and Spring Semesters  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in SOC 710 (usually six credits). Credit not granted. May be regarded as full time residence.

SOC 725. Continuous Registration—Master’s Study  
0 credits  
Offered Fall and Spring Semesters  
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

SOC 730. Doctoral Dissertation  
1-12 credits  
Offered Fall and Spring Semesters  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but for not less than a total of 12 hours. Up to 12 hours may be taken in a regular semester, but not more than six in a summer session.
SOC 750. Research in Residence  
0 credits  
*Offered Fall and Spring Semesters*

Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Spanish**

SPA 521. Topics in Hispanic Literature  
3 credits  
*Offered By Announcement only*

May be repeated for credit if topic is different. Prerequisite: Three courses at the 300-level.

SPA 522. Topics in Hispanic Cultures  
3 credits  
*Offered By Announcement only*

May be repeated for credit if topic is different. Prerequisite: Three courses at the 300-level.

SPA 553. Studies in Colonial Literature  
3 credits  
*Offered By Announcement only*

Major writers, chroniclers, and poets of the colonial period. Topics vary; may be taken more than once, if topic is different. Prerequisite: SPA 353, and two other courses at the 300-level; or permission of instructor.

SPA 555. Studies in 19th Century Latin American Literature  
3 credits  
*Offered By Announcement only*

Topics vary: major trends in theater, poetry, and the novel; may be taken more than once, if topic is different. Prerequisite: SPA 353 or 354, and two other courses at the 300-level; or permission of instructor.

SPA 561. Studies in Spanish Medieval Literature  
3 credits  
*Offered By Announcement only*

Cultural and literary trends of the Middle Ages. Topics vary; may be taken more than once if topic is different. Prerequisite: SPA 363, and two other courses at the 300-level; or permission of instructor.

SPA 563. Studies in the Golden Age  
3 credits  
*Offered By Announcement only*

Cultural and literary movements of the 16th and 17th centuries. Topics vary: theater, poetry, prose; may be taken more than once if topic is different. Prerequisite: SPA 363, and two other courses at the 300-level; or permission of instructor.

SPA 565. Studies in 18th and 19th Century Spanish Literature  
3 credits  
*Offered By Announcement only*

Principal works, schools, and movements of the 18th and 19th centuries. Topics vary; may be taken more than once if topic is different. Prerequisite: SPA 364, and two other courses at the 300-level; or permission of instructor.

SPA 566. Studies in 20th and 21st Century Spanish Literature  
3 credits  
*Offered By Announcement only*

Major writers and trends from 1898 to the present. Topics vary: theater, poetry, fiction, essay; may be taken more than once, if topic is different. Prerequisite: SPA 364, and two other courses at the 300-level; or permission of instructor.

SPA 571. Women in Spanish and Latin American Literature  
3 credits  
*Offered By Announcement only*

Women writers and representations of women. Topics vary; may be taken more than once, if topic is different. Prerequisite: Three courses at the 300-level; or permission of instructor.
SPA 573. Problems in Cultural Analysis
3 credits
Offered By Announcement only
Studies in Spanish and Latin American contemporary civilization, including literature, aesthetics, the media, etc. Prerequisite: Two courses at the 300-level. SPA 302, 303, or 322 recommended. May be repeated for credit if topics are different.

SPA 591. Directed Readings
1-3 credits
Offered By Announcement only
Prerequisite: One 500-level course and the permission of the instructor.

SPA 592. Directed Readings
1-3 credits
Offered By Announcement only
Prerequisite: One 500-level course and the permission of the instructor.

SPA 593. Directed Readings
1-3 credits
Offered By Announcement only
Prerequisite: One 500-level course and the permission of the instructor.

SPA 594. Senior Honors Thesis I
3 credits
Directed research for honors thesis. Prerequisite: Must have completed at least nine credits at the 300-level or above towards Spanish major, must meet eligibility for honors in Spanish.

SPA 595. Senior Honors Thesis II
3 credits
Directed writing of honors thesis. Prerequisite: SPA 594.

SPA 611. Topics in Spanish Medieval Literature
3 credits
Offered By Announcement only
Recent topics: Libro de Buen a mor, the epic, Berceo, cancionero poetry.

SPA 613. Topics in the Golden Age
3 credits
Offered By Announcement only
Recent topics: culteranismo and conceptismo, La Celestina, Cervantes, the picaresque, sixteenth-century theatre.

SPA 615. Topics in 18th-19th Century Spanish Literature
3 credits
Offered By Announcement only
Recent topics: neoclassicism, romantic theatre, Spain and the European Enlightenment, Galdos, realism, postromantic poetry.

SPA 616. Topics in 20th Century Spanish Literature
3 credits
Offered By Announcement only
Recent topics: the generation of 1898, Garcia Lorca, the post-war novel, contemporary theater.

SPA 621. Special Topics in Hispanic Studies
3 credits
Offered By Announcement only

SPA 633. Topics in Colonial Literature
3 credits
Offered By Announcement only
Recent topics: the chronicles, Sor Juana Ines de la Cruz, Baroque of the Indies.

SPA 635. Topics in 19th Century Latin American Literature
3 credits
Offered By Announcement only
Recent topics include: romanticism, modernist poetry, anti-slavery novel.
SPA 636. **Topics in 20th Century Latin American Literature**  
3 credits  
Offered By Announcement only  
Recent topics: modernism, magic realism, the short story, the novel of the Mexican Revolution, the Boom and post-Boom.

SPA 691. **Writing Practicum**  
1 credit  
Offered By Announcement only  
The writing of a publishable research paper under faculty guidance.

SPA 692. **Directed Readings**  
1- 3 credits  
Offered By Announcement only

SPA 693. **Teaching Practicum**  
3 credits  
Offered By Announcement only

SPA 730. **Doctoral Dissertation**  
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of SPA 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

SPA 750. **Research in Residence**  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Theatre Arts**

THA 561. **Advanced Directing I**  
3 credits  
Offered By Announcement only  
Continuation of THA 462. Developing a philosophy of theatrical production. Case studies in practical directing problems. The student directs a short play. Prerequisite: THA 462 or permission of instructor.

THA 612. **Acting Techniques IV**  
3 credits  
Offered By Announcement only

**Women's and Gender Studies**

WGS 501. **Senior Research Project**  
3 credits  
A student initiated research project with a faculty member of the student’s choice and approved by the Program director. Writing Credit. Prerequisite: WGS major or minor, and senior status, and WGS 201 and 301.
WGS 505. Senior Thesis
3 credits
Women’s and Gender Studies majors with a cumulative GPA of at least 3.5 in WGS courses and an overall GPA of at least 3.0 may earn departmental honors by completing an honors thesis instead of the senior research project. Candidates for departmental honors are responsible for finding a faculty member who is willing to serve as thesis adviser and then must complete a thesis proposal of approximately 400 words which must be approved by the thesis adviser and then the program director. Most students will take this course twice, for a total of six credits. Writing Credit. Prerequisite: WGS major; senior status, and WGS 201 and 301, and approval of program director.
BUSINESS ADMINISTRATION

Accounting

ACC 501. Advanced Cost Accounting
3 credits  Offered Spring Semester
The latest developments in cost and managerial accounting are studied. Using case studies, the course focuses on activity based product cost allocation methodology in terms of: (1) basic concepts and rationale, (2) applicability in both manufacturing and service industries, (3) strategic cost analyses, and (4) applicability in total quality management programs. Other topics include cost pools, two stage costing methodologies, and the behavioral aspects of cost systems. Finally, students implement an activity based cost system using commercially developed software. Prerequisite: ACC 301.

ACC 505. Current Issues in Accounting Practice
3 credits  Offered Second Summer Session
Course develops a student's understanding of the theory and practice of relational database management systems in the accounting view of enterprise-wide databases. With a focus on controls, students build accounting system elements related to main accounting transaction cycles, the revenue cycle, and the purchase cycle. Prerequisite: Permission of instructor.

ACC 506. Internal Auditing
3 credits  Offered By Announcement only
Course explores the unique issues associated with the internal audit function. Additionally, the ethical code applicable to internal auditors is discussed. Prerequisite: ACC 402.

ACC 511. Advanced Accounting
3 credits  Offered Spring Semester and Second Summer Sessions
The primary focus on the course is on business combinations and preparing consolidated financial statements. Additionally, there is coverage of the accounting principles and practices applied to foreign operations and partnerships. Prerequisite: ACC 312.

ACC 522. Advanced Issues in Auditing
3 credits  Offered Spring Semester
Course covers advanced issues which arise in audit practice including audit reporting issues, fraud detection and reporting, attestation engagements, special reporting issues, compilation and review engagements, scope of services issues, and other new issues which have a significant impact on audit practice. Prerequisite: ACC 402.

ACC 523. International Accounting and Taxation
3 credits  Offered Fall Semester and First Summer Session
International Accounting Theory, practices and tax laws, international investment, credit and trade, and the accounting problems involved are discussed.

ACC 524. Accounting for Governmental and Not-for-Profit Entities
3 credits  Offered Fall Semester and First Summer Session
Accounting within the environment of all levels of modern government. Emphasis is placed on governmental program objectives, managerial activities, appropriations, allotments, and funds. Prerequisite: ACC 312.
ACC 525. **Trends in Present Day Accounting**  
*3 credits*  
Recent developments in accounting thought and advanced accounting theory. The analysis of trends as disclosed by recent releases of the Securities and Exchange Commission, the American Institute of Certified Public Accountants, and the Financial Accounting Standards Board are discussed. Other topics include terminology, current trends in the measurement, presentation of financial data to meet the needs of third parties, and surveys accounting literature. Prerequisite: ACC 312.

ACC 550. **Accounting Internship**  
*2-3 credits*  
Offered Fall and Spring Semesters and First Summer Session  
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Prerequisite: Permission of Department Chairman.

ACC 599. **Directed Readings**  
*1-3 credits*  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individually supervised research projects in selected fields. Approval of supervising professor as to topic and evaluation of project is required at time of registration. Prerequisite: Senior standing.

ACC 600. **Accounting for Decision-Making and Control**  
*3 credits*  
The course focuses on the use and understanding of basic financial and managerial accounting reports. Coverage of basic accounting assumptions and current issues affecting accounting processes and reporting are included, but detailed accounting procedures are not emphasized. Completion of the course should permit students to understand accounting information and to communicate with professional accountants. Limited to Executive MBA students only. Does not satisfy any accounting requirements needed to sit for the CPA exam in Florida.

ACC 601. **Trends in Present Day Accounting**  
*3 credits*  
Offered First Summer Session  
Recent developments in accounting thought and advanced accounting theory. The analysis of trends as disclosed by recent releases of the Securities and Exchange Commission, the American Institute of Certified Public Accountants, and the Financial Accounting Standards Board are discussed. Other topics include terminology, current trends in the measurement, presentation of financial data to meet the needs of third parties, and surveys accounting literature. Prerequisite: ACC 312.

ACC 602. **Analysis of Financial Statements**  
*3 credits*  
Offered Spring Semester and Second Summer Sessions  
The course emphasizes the fundamental techniques of financial statement analysis. Building upon core accounting and investment concepts, the course covers the analysis (including ratio analysis) and interpretation of financial accounting information including the balance sheet, income statement, and statement of cash flows. The course also examines the use of accounting information in investment and credit decisions. Prerequisite: ACC 600 for Executive MBA students. ACC 312 for MPrA and MST students.

ACC 603. **Studies in Financial Reporting Issues**  
*3 credits*  
Offered Spring Semester  
An exploration of complex financial reporting issues using the case method. Prerequisite: ACC 312.
ACC 604. Seminar in Cost Accounting
3 credits  
Course covers four major segments. First, the historical development of cost and managerial accounting is explored. Second, problems arising from utilization of current cost accounting methodologies are examined. Third, the course explores activity based costing, a recent, revolutionary development in cost accounting. Fourth, the course addresses the relationship of cost and managerial accounting to organizational control. Prerequisite: ACC 301.

ACC 605. Enterprise Resource Planning (ERP) Financial Systems
3 credits  
Course emphasizes the use of Enterprise Resource Planning Systems to collect, monitor, and evaluate financial and managerial data. Students are introduced to how data is captured from the purchasing function through the sales function and how business activities impact the financial statements. The course also utilizes the Enterprise Resource Planning Systems to evaluate managerial performance and financial performance using concepts such as Activity Based Costing, Data Warehousing, and Key Performance Indicators. ERP systems installations are introduced using case materials. Prerequisite: ACC 212.

ACC 606. Internal Auditing
3 credits  
Course explores the unique issues associated with the internal audit function. Additionally, the ethical code applicable to internal auditors is discussed. Prerequisite: ACC 402.

ACC 607. Accounting
1 credit  
Basic concepts of accounting designed to increase understanding of the function of accounting statements and their limitations. Prerequisite: Limited to Executive MBA only.

ACC 608. Managerial Accounting
3 credits  
Current managerial accounting techniques and theories. Topics include the use of accounting data in making decisions and planning and control systems for implementation of decisions. Prerequisite: ACC 600 or equivalent.

ACC 610. Accounting Theory
3 credits  
Course examines the foundations and applications of accounting theory as it relates to financial accounting and reporting. The course draws upon existing research which provides evidence about the applicability of accounting theory to the financial reporting process for business enterprises which prepares financial statements in accordance with generally accepted accounting principles. Prerequisite: ACC 312.

ACC 611. Auditing Seminar
3 credits  
Practical applications of auditing and research into audit matters. Emphasis of the course is placed on cases involving audit failures, appropriate auditing procedures, reporting, and exercise of audit judgment. Prerequisite: ACC 402.

ACC 612. Contemporary Issues in Financial Accounting
3 credits  
Doctoral seminar investigating financial reporting issues and their implications in the behavior of users and preparers of the financial statements. Course focuses on research methodologies used to investigate these issues and discuss alternative approaches. Prerequisite: Limited to doctoral students using Accounting as a major or minor field of study or permission of instructor.
ACC 614. Contemporary Issues in Cost/Managerial Accounting
3 credits
Offered By Announcement only
Doctoral seminar investigating the use and implications of cost and managerial accounting systems in an organizational context. Course emphasizes the behavioral aspects of accounting systems. Prerequisite: Limited to Accounting Doctoral students or permission of instructor.

ACC 615. Personal Financial Planning
3 credits
Offered Fall Semester and First Summer Session
Fundamentals of personal financial planning. Overview of the financial planning process including regulation and ethical considerations. Topics include an introduction to tax planning, insurance planning, investment planning, retirement planning, and estate planning.

ACC 616. Insurance and Retirement Planning
3 credits
Offered Spring Semester
Course covers the fundamentals of insurance and retirement planning including tax and investment implications. In addition, various types of employee plans available are discussed.

ACC 622. Advanced Issues in Auditing
3 credits
Offered Fall Semester
Course covers advanced issues which arise in audit practice including audit reporting issues, fraud detection and reporting, attestation engagements, special reporting issues, compilation and review engagements, scope of services issues, and other new issues which have a significant impact in audit practice. Prerequisite: ACC 402.

ACC 623. International Accounting and Taxation
3 credits
Offered Fall Semester and First Summer Session
Course covers accounting, tax, and business considerations in the global business environment. Tax issues involved in doing business or working across national borders, the Foreign Corrupt Practices Act, and uses of accounting information in managing an international business is also discussed. Prerequisite: ACC 670 and 671 for MBA students.

ACC 624. Accounting for Governmental and Not-for-Profit Entities
3 credits
Offered Fall Semester and First Summer Session
Accounting within the environment of all levels of modern government is discussed. Emphasis is placed on governmental program objectives, managerial activities, appropriations, allotments, and funds. Prerequisite: ACC 312.

ACC 631. Accounting for Decision-Making and Control II
3 credits
Offered By Announcement only
Continuation of ACC 600. A further study of the generally accepted accounting principles governing the preparation of financial statements. Not for credit in MPA or MST Programs. Prerequisite: ACC 600.

ACC 639. Income Tax and Business Decisions
3 credits
Offered By Announcement only
Structured for nonaccounting undergraduate majors who are taking an accounting specialization in the MBA program and/or those who are pursuing a certificate in personal financial planning. The business applications of tax laws, income concepts, corporation income taxes, small business corporations, partnerships, estates, and trusts are discussed. Other topics include timing and types of income, important tax planning areas of depreciation, inventory methods, investment credit and employee benefit plans, tax effects of corporate organizations, reorganizations, distributions, liquidations and U.S. corporations, and foreign tax credits. Prerequisite: Not open to students with credit in ACC 303 or equivalent.
ACC 640. Corporations I
3 credits  
Offered Fall Semester
Course covers treatment of the corporate form of organization, its related opportunities, and problem areas, including formation, tax formula, non-liquidating and liquidating distributions, capital structure, redemptions, alternative minimum tax, S corporation election, and operation. Prerequisite: ACC 404 or permission of instructor.

ACC 641. Corporations II
3 credits  
Offered Spring Semester
An in-depth study of taxable and nontaxable corporate reorganizations. An introduction to affiliated corporations, requirements for consolidated returns, and their associated problems and opportunities are discussed. Prerequisite: ACC 640 or permission of instructor.

ACC 642. Seminar in Taxation
3 credits  
Offered By Announcement only
Investigation of significant major topical areas in taxation, such as taxation of individuals and planning considerations, pension and deferred compensation plans, accounting for income taxes, and specialized topics. Prerequisite: ACC 404 or permission of instructor.

ACC 643. Tax Research
3 credits  
Offered Spring Semester
Study of the tax practice environment including the Treasury Department, the Courts, and the legislative history of the Internal Revenue Code. Ethics in tax practice are also examined. Course includes training in the use of tax services such as RIA Checkpoint and LEXIS, in performing tax research. A research methodology for solving tax problem cases is studied and cases to be researched are assigned. Prerequisite: ACC 404 or permission of instructor.

ACC 645. Partnerships
3 credits  
Offered Fall Semester
Taxation of partners and partnerships, formation, termination, distributions, liquidations, and sales of partnership interests are covered. Limited partnerships in conjunction with their use as tax shelters are discussed as well as family partnerships, limited liability companies, and LLPs. Prerequisite: ACC 404 or permission of instructor.

ACC 647. Estates and Gift Taxes
3 credits  
Offered First Summer Session
Estate and gift planning for shifting wealth from one individual to another by death, gift, or by the use of trusts. Property included in the decedent’s gross estate valuation methods, gifts in contemplation of death, jointly held property, life insurance, transfers with retained life estates, bequests, revocable transfers, the marital deduction, powers of appointment, gifts of present and future interest, and gifts to minors are covered. Prerequisite: ACC 404 or permission of instructor.

ACC 649. Issues in Tax Policy
3 credits  
Offered Second Summer Session
A study of tax policy issues inherent in individual and corporate income taxes, consumption taxes, wealth, and wealth transfer taxes. Focus is placed on the purposes of taxation and the development of a “good” tax system.

ACC 650. Accounting Internship
1-3 credits
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences required.
ACC 662. Taxation of Multinational Corporations
3 credits
Offered Spring Semester
Course topics include taxation of foreign persons conducting business in the U.S. including FIRPTA, source of income rules, and residency requirements. Taxation of U.S individuals and businesses doing business abroad including FSCs, CFCs, FHP Co.s, and possessions corporations are also addressed. Prerequisite: ACC 640 or permission of the instructor.

ACC 670. Financial Reporting and Analysis
2 credits
Offered Fall and Spring Semesters
The course focuses on the analysis and use of financial accounting information in the evaluation of corporate performance. The course initially demonstrates the accounting process and resulting generation of financial statements. Building on these core accounting concepts, the course emphasizes the understanding of financial statements prepared under U.S. and International Accounting Standards and the analysis of these financial statements including common size analysis, ratio analysis, the impact of taxes, and credit analysis. Completion of the course enhances the student’s ability to read, interpret, and analyze financial statements for making investment, credit, acquisition, and other evaluation decisions.

ACC 671. Accounting for Decision Making
2 credits
Offered Fall and Spring Semesters
The course focuses on the use of accounting information in reporting managerial performance and making business decisions. The course covers the preparation and use of managerial accounting information for use in planning, budgeting, control, break-even analysis and pricing, including the impact of taxes. Completion of the course will enhance the student’s ability to understand managerial accounting reports and use this information in making business decisions. Limited to MBA students and Executive MBA students. Prerequisite: ACC 670.

ACC 672. Advanced Financial Analysis and Valuation
2 credits
Offered Spring Semester
Advanced Financial Analysis and Valuation builds on the analytical techniques developed in the basic financial statement analysis course, Accounting 670: Financial Reporting and Analysis, to augment your understanding of more complex financial reporting issues and to introduce you to the valuation of equity investments. The viewpoint is that of the user of financial statements, particularly from the standpoint of an equity investor or purchaser of a business. We discuss each financial reporting issue in terms of its effect on assessments of a firm’s profitability and risk. This course is designed primarily for students who expect to be intensive users of financial statements as part of their professional responsibilities. Prerequisite: Second year MBA status.

ACC 673. Taxation for Business and Investment Decisions
2 credits
Offered Spring Semester
This course is intended as an elective for all MBA students. The primary focus is tax concepts and planning applications related to investments, individuals, and business entities. Coverage includes individuals, corporations, partnerships and estates, and gift tax. A sample of topics includes employee fringe benefits and retirement planning, corporate formations, liquidations and mergers, choice of form of business organization, capital gains and losses, inventory costing and tax depreciation methods. Completion of this course will enhance the students’ appreciation of the role of taxation to making investment, employment related, and business decisions. Prerequisite: Second year MBA status.
ACC 697. Ph.D. Colloquium
0 credits
Offered By Announcement only
Doctoral colloquium required of all Ph.D. students. Course serves as a forum for faculty, Ph.D. students, and visiting researchers to present their research and for Ph.D. students to critique and evaluate such research. Prerequisite: Open only to Ph.D. students.

ACC 698. Selected Topics
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

ACC 699. Directed Readings
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individually supervised research projects in selected fields. Approval of supervising professor as to topic and evaluation of project required at time of registration. Required of all M.B.A. Candidates.

ACC 730. Doctoral Dissertation
1-12 credits
Offered By Announcement only
Required of all candidates for the PhD. The student will enroll for credit as determined by their advisor, but not for less than a total of 24. Not more than 12 hours of ACC 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed their (a) qualifying examinations, and (b) is engaged in an assistantship, they may still take the maximum allowable credit stated above.

ACC 750. Research in Residence
0 credits
Offered By Announcement only
Used to establish research in residence for the PhD after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Business Law

BSL 550. Business Law Internship
2-3 credits
Offered By Announcement only
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Prerequisite: Permission of Department Chairman.

BSL 575. Advanced Business Law
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Legal problems encountered by Certified Public Accountants, Finance, Management and Marketing Executives, including agency, commercial paper, bank deposits and collections, secured transactions, suretyship, bankruptcy, partnership, corporations, contracts, anti-trust, insurance, property, wills and estates, SEC law, and accountants’ legal responsibility. Special attention is given to the commercial law segment of the Uniform Public Accountant Examination. Prerequisite: BSL 212 or equivalent and senior standing.

BSL 612. Legal Aspects of International Business
3 credits
Offered Fall and Spring Semesters and First Summer Session
International legal framework, transactional legal issues in finance, marketing, management, distribution, and a review of theory and practice of negotiations. Case studies on such topics as legal implications of GATT, European Competition, C.I.S.G., and Export Import Rules are also included.
BSL 616. **Law of Business Organizations**
3 credits  
Offered By Announcement only
The Law of Business Organizations provides an examination of the legal and social issues involved in the organization, operation, and governance of the various forms of business organizations, including corporations, limited and general partnerships, syndicates, and trusts. The course is also designed to supply a background in law relating to investments and capital markets.

BSL 617. **Telecommunications: Law and Regulation**
3 credits  
Offered By Announcement only
A study and analysis of law and regulation governing the telecommunications industry. Topics include state and federal legislation, administrative law, antitrust, rate regulation as well as those principles which constitute the industry’s legal environment such as contracts, employment rules, and defamation.

BSL 676. **Legal Aspects of Real Estate Development**
3 credits  
Offered By Announcement only
An examination of the legal issues encountered by the real estate professional involved in the development of commercial real estate, i.e. ownership vehicles, acquisition, financing, governmental regulation, land use, construction, and sales contracting. Case study analysis is used to detail the legal factors of developing a real estate project from land acquisition to final sale.

BSL 685. **Legal Aspects of Health Administration**
3 credits  
Offered Fall Semester
Derivation of rule of law governing health providers, vicarious liability of administrative and medical personnel, informed consent, and other related problems are discussed.

BSL 690. **Legal and Ethical Implications of Business Decision Making**
2 credits  
Offered Fall and Spring Semesters
The course provides an introduction to our legal and governmental regulatory system, as well as a review of constitutional considerations for businesses. Morality and ethics are defined and distinguished. Applied philosophy is then introduced, to give the student a foundation upon which to analyze the ethical dimensions of common business questions. The relationship between the letter and the spirit of the law is examined. Specific business topics and their legal and ethical aspects are then addressed. This includes, but is not limited to, discussion of the following areas: consumer relationships; business organizations; the balancing of corporate vs. individual power (employee rights and responsibilities, employment discrimination); and the emerging ethic of a global economy.

BSL 691. **The Public Corporation: Legal Perspectives**
2 credits  
Offered Fall and Spring Semesters
The Public Corporation: Legal Perspectives reviews the laws governing the formation, operation, regulation, and governance of the public corporation with the objective of providing the graduate business student a sophisticated examination of the legal and social aspects of managing the money of others. Further, the course examines the rules and regulations governing the raising of capital from the public through the sale of securities for the development of and investment in a private enterprise. Prerequisite: Status second year MBA student.
BSL 692. Legal Implications of International Business Transactions
2 credits  Offered Fall and Spring Semesters
International legal framework, transactional legal issues in finance, marketing, management, and distribution. Case studies in substantive international legal topics such as international sales contracts, international documentary sale, international terms of trade, legal implications and substantive rules governing international finance, collections, payments, and letter of credit, the resolution of international disputes with a particular emphasis and examination upon the management of litigation, enforcement of foreign judgments, and alternative dispute resolution are also included.

BSL 693. Legal Principles of Commercial Contracting
2 credits  Offered Fall and Spring Semesters
Course examines the fundamentals of all business dealings including the law of contracts. Reported court cases are presented and analyzed in order to assist the student’s understanding of basic commercial contracting principles. This methodology is intended to develop the graduate student’s critical thinking process as well as their skills in oral and written communication. Prerequisite: Second year MBA status.

BSL 694. Real Estate Law
2 credits  Offered Fall and Spring Semesters
Course focuses on the U.S. legal system as it relates to the buying, selling, and financing of real property. In addition to traditional text material, the analysis of U.S. court cases is used to detail the legal factors of ownership rights and liabilities, specific interests in real property, contracting issues related to the purchase and sale of real property, as well as financing and closing the real estate transaction. The course provides a problem-solving experience, which is intended to develop graduate which is intended to develop graduate communication. Prerequisite: Second year MBA status.

BSL 695. Legal Implications in Executive Decision Making
3 credits  Offered By Announcement only
Law and legal process are examined as they mix with the politics and ethics of business, including the weight given to legal implications in the executive decision-making process.

BSL 696. Legal and Ethical Implications in Executive Decision Making
3 credits  Offered Fall and Spring Semesters
Business and public administration cases requiring identification of the legal, ethical, and social elements as well as the determination of the weight such elements should have in setting policy are discussed. Integration of law and ethics with public and business administration is also included.

BSL 698. Selected Topics
1- 3 credits  Offered By Announcement only
Topics in selected areas of specialization.

Computer Information Systems

CIS 523. Database Management Systems
3 credits  Offered Fall and Spring Semesters
Course covers the fundamental concepts of database management systems using the Oracle DBMS. Topics include database theory and terminology, logical modeling, normalization, SQL language, database design and implementation, database administration, data security, database transaction/concurrency, and data backup. Prerequisite: CIS 360 or 620.
CIS 550. **Computer Information Systems Internship**  
1-3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Student is individually assigned to operating business firm or other organization to gain insight in information technology practice in the area of career interest. Periodic reports and conferences are required. This course can only be taken as “credit only.” Prerequisite: Permission of department chairman.

CIS 590. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 591. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 592. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 593. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 594. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 595. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 596. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 597. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 598. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 599. **Topics in Computer Information Systems**  
1-3 credits  
*Offered By Announcement only*  
Topics in selected areas of specialization.

CIS 610. **Foundations of Management Information Systems**  
2 credits  
*Offered Fall Semester*  
Course is designed to provide the foundations in management information systems information systems required to understand and effectively use an enterprise wide information system. Topics include the role of the CIO, managing Information Technology (IT) as a strategic resource, business process reengineering, IT planning, IT governance and communication, the Internet, and eBusiness.
CIS 612. **Enterprise Technologies**  
2 credits  
Offered Fall and Spring Semesters  
Course addresses the needs of business students who wish to expand their understanding of information technology fundamentals. Focusing upon their use in today’s enterprises, the course aims to provide students with knowledge of a variety of technological concepts commonly used in the IT Organization’s systems development initiatives and enables students to understand the implications of deploying such technologies within the enterprise. Prerequisite: Second year MBA status.

CIS 613. **Business Intelligence Technologies**  
2 credits  
Offered Fall and Spring Semesters  
Course facilitates business decision makers in their understanding of data analysis tools that operate over data warehouses and ‘data marts’ more commonly referred to as Business Intelligence. Course focuses upon using technologies to drive effective data driven decision making through effective mining of corporate data warehouses, thus improving operational efficiency and ultimately increasing profitability. Students are exposed to the concepts, analysis techniques, data cubes, and manipulation of information extracted from a data warehouse that enables the formulation and execution of business strategies. Data analysis case studies are used to reinforce students’ understanding and strategic use of results to accomplish business objectives. Prerequisite: Second year MBA status.

CIS 616. **IT Systems Modeling**  
2 credits  
Offered Fall and Spring Semesters  
Overview of the systems development life cycle (SDLC). Topics include concepts, tools, and techniques of systems analysis modeling with an emphasis on data and process modeling. Modeling is accomplished by using both structured and object-oriented tools and techniques. Students work in groups to model an application system for a business related problem using CASE tools. Prerequisite: Second year MBA status.

CIS 617. **Information Technology Project Management**  
2 credits  
Offered Fall and Spring Semesters  
Course covers the identification and development of information technology plans for projects supporting the organization’s business objectives and all activities required in the initiating, planning, executing, controlling, and closing phases of the project’s lifecycle. Course is intended to provide the body of knowledge and best practices necessary for a new Consultant, Business Analyst or Project Manager to successfully perform his/her responsibilities on a wide variety of IT enterprise projects. Prerequisite: Second year MBA status.

CIS 618. **IT Security for Managers**  
2 credits  
This course provides a systematic and practical approach for establishing, managing and operating a comprehensive Information Assurance (IA) program. It is designed to provide INFOSEC managers, IT managers, CIOs, Business owners, organizations that provide the outsourcing of IT, organizational senior and general managers with an understanding of the essential issues required to develop and apply a targeted information security posture for both public and private corporations and government-run agencies. Prerequisite: Second year MBA status.

CIS 620. **Information Systems Analysis and Design**  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Overview of the systems development life cycle (SDLC). Topics include concepts, tools, techniques of systems analysis and design, data modeling, process modeling, prototyping, file/database design, physical process modeling, CASE tools, and the role of the system analyst in the organization. Students work in groups to analyze and design an application system for a business related problem. Prerequisite: Knowledge of a high level programming language.
CIS 621. Management Information Systems
3 credits Offered Fall and Spring Semesters and First Summer Session
Course is designed to give prospective managers a foundation in MIS sufficient to understand and effectively use information systems. Topics include types of information systems, role of MIS in organizations, CIO issues, ERP systems, and electronic commerce.

CIS 630. Fundamentals of Local and Wide Area Networks
3 credits Offered Fall and Spring Semesters
Course provides the graduate student the necessary knowledge to understand the design, integration, technologies, and services of local and wide area net works (LANs and WANs) in the business environment. Topics include signal transmission and propagation, standards and protocols, data communications media and devices, layered/encapsulated communications based on the hybrid TCP/IP-OSI standards, small and large-site PC LANs, Frame Relay, ATM, Virtual Private Networking (VPN), Telephony, Internet technologies, and network security.

CIS 631. Computer and Network Security
3 credits Offered Fall and Spring Semesters
Protection of computers and networks against unauthorized access, access control, encryption, firewalls, proxy, digital certificates, and software security are discussed. Prerequisite: A high-level programming language course with a grade of C or better and CIS 630 (or equivalent).

CIS 640. Data Communications and Networking
3 credits Offered Fall and Spring Semesters
Course addresses advanced topics in computer networks from the perspective of a business decision-maker. The course begins with a focus on signal propagation, media characteristics, and digital and analog encoding techniques. It continues with a study of datalink, network, and transport layer functions as defined by the OSI and TCP/IP models. The architecture of the Internet is explored and routing algorithms for wired, wireless, and peer-to-peer networks are introduced. Course concludes with a high-level overview of the top OSI layers. After taking the class the students should be able to critically evaluate network solutions based on the capabilities and limitations of the equipment. Prerequisite: CIS 630 (or equivalent) or permission of instructor.

CIS 646. IT Planning and Project Management
3 credits Offered Fall and Spring Semesters
Course covers the development of information technology strategic and tactical plans for projects supporting the organization’s business objectives and project management as applied to planning, implementing, controlling networking, information systems and e-commerce projects. Course is intended to provide a body of knowledge necessary for a new Consultant or Project Manager to successfully initiate, plan, manage, control, and report on a variety of project types. People skills required in the areas of team selection, structure, conflict resolution, and leadership is also covered. Prerequisite: A prior graduate CIS or IT course.

CIS 650. Advanced Topics in Database
3 credits Offered By Announcement only
In depth treatment of database design and performance, data administration, dictionaries, distributed database, database machines, and other current database topics. Prerequisite: CIS 523 or equivalent.
CIS 660. Computer Information Systems Graduate Internship
1- 3 credits
Offered By Announcement only
Student is individually assigned to an operating business firm or other organization to gain insight and experience in information technology practice in area of career interest. Periodic reports and conferences are required. This course can only be taken as “satisfactory/unsatisfactory.” Prerequisite: Permission of department chairman.

CIS 661. Introduction to Expert Systems for Management
3 credits
Offered Fall and Spring Semesters
An introduction to the fundamental techniques of Artificial Intelligence (AI) that are used in the creation of expert systems. The techniques include problems as game trees and knowledge engineering and management of expert system projects. Prerequisite: A high-level programming language course with a grade of C or better or permission of instructor.

CIS 680. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 681. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 682. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 683. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 684. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 685. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 686. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 687. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 688. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 689. Topics in Computer Information Systems
3 credits
Offered By Announcement only
Topics in selected areas of specialization.

CIS 690. Directed Study in Computer Information Systems
1- 3 credits
Offered By Announcement only
Investigation and research in special areas of interest. Offered by special arrangement. Prerequisite: Permission of Department Chairman.
CIS 691. **Directed Study in Computer Information Systems**  
1-3 credits  
Offered By Announcement only  
Investigation and research in special areas of interest. Offered by special arrangement. Prerequisite: Permission of Department Chairman.

CIS 692. **Directed Study in Computer Information Systems**  
1-3 credits  
Offered By Announcement only  
Investigation and research in special areas of interest. Offered by special arrangement. Prerequisite: Permission of Department Chairman.

CIS 699. **Directed Study**  
1-3 credits  
Offered by special arrangement. Prerequisite: Permission of Department Chairman.

CIS 710. **Master’s Thesis**  
1-6 credits  
Offered By Announcement only  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

CIS 725. **Continuous Registration—Master’s Study**  
0 credits  
Offered By Announcement only  
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full-time residence.

CIS 730. **Doctoral Dissertation**  
1-12 credits  
Offered By Announcement only  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of CIS 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

CIS 750. **Research in Residence**  
0 credits  
Offered By Announcement only  
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Economics**

ECO 507. **Taxation and Government Expenditure**  
3 credits  
Offered By Announcement only  
The incentive and equity effects of taxation and public expenditures. Efficiency aspects of various tax and expenditure programs and the application of cost-benefit analysis to such areas as health, education, and welfare programs, both domestic and foreign, are discussed. Prerequisite: ECO 302.

ECO 510. **Mathematical Economics**  
3 credits  
Offered Fall Semester  
Introduction to mathematical techniques commonly employed in economic analysis. Topics include simultaneous linear equation systems, linear algebra, expansions of polynomials, logarithmic and exponential equations, differential calculus, and optimization theory. A substantial part of the course focuses on the comparative static analysis of both macroeconomic and microeconomic problems. Prerequisite: A semester course in calculus. ECO 301 and 302.
ECO 511. Labor Economics (II)  
3 credits  
Offered Spring Semester  
A theoretical and empirical analysis of how labor markets operate. A survey of the literature, problems, and methodology of modern labor economics. Human capital analysis, the wage structure, job search and job-matching models, time-allocation models, the economic impact of labor unions, labor market discrimination, the determinants of labor demand and supply, and the factors affecting government policy relating to the labor sector is also included. Prerequisite: ECO 302.

ECO 512. Mathematical Economics (II)  
3 credits  
Offered Spring Semester  
Economics 512 will be sequential to the introductory Mathematical Economics I (ECO 510). Topics include integral calculus, differential equations, difference equations, Kuhn-Tucker conditions, solutions to general equilibrium systems, optimization under uncertainty, and an introduction to dynamic optimization. Applications of mathematical techniques to economic analysis will be stressed. Prerequisite: ECO 510 or its equivalent.

ECO 520. Econometrics  
3 credits  
Offered Fall Semester  
Statistical methods of estimating and testing mathematical model of economic relationships. Prerequisite: ECO 301 and 302, a course in statistics and permission of instructor.

ECO 521. Graduate Macroeconomic Theory  
3 credits  
Offered Fall Semester  
The primary objective of this course is to introduce the student to the mathematical presentation of the major Classical, Neo-classical, Keynesian, and Neo-Keynesian macroeconomic models. Prerequisite: Intermediate Macroeconomic Theory and permission of instructor.

ECO 532. History of Economic Thought  
3 credits  
Offered By Announcement only  
Historical development of economic doctrines and theory. Topics and individuals discussed include mercantilism, physiocracy, Adam Smith, Thomas Malthus, David Ricardo, J. S. Mill, Karl Marx, marginal analysis, Alfred Marshall, and J. M. Keynes. Special emphasis is placed on the effect of historical insights upon the contemporary core of economic theory. Prerequisite: ECO 301 and 302.

ECO 533. Advanced Microeconomic Theory  
3 credits  
Offered Fall Semester  
An introduction to the mathematical approach to microeconomic theory. Topics include consumer/household behavior, the theory of the firm, resource allocation, welfare economics, and uncertainty theory. Prerequisite: ECO 302, and permission of instructor.

ECO 545. Natural Resources Economics II  
3 credits  
Offered By Announcement only  
This course surveys the economics of natural resource use, and is targeted to upper-division undergraduate and graduate students in economics. Topics include the economics of pollution control, the application of cost/benefit analysis to the marine environment, the economics of non-renewable and renewable resource extraction, and international environmental problems. Prerequisite: ECO 345 or MAF 502.

ECO 586. Economics of Health  
3 credits  
Offered By Announcement only  
A survey of the literature on the health care market. Economic theory is used to analyze public policy alternatives. Prerequisite: ECO 302 or 691, or consent of instructor.
ECO 603. Monetary Theory and Policy
3 credits Offered Fall Semester
Current monetary theory and its use and application in fiscal and monetary policymaking. Topics include the rational expectations hypothesis, time inconsistency, and the role of the government budget constraint. Prerequisite: ECO 621.

ECO 604. Topics in Applied Macroeconomics
3 credits Offered By Announcement only
Course acquaints students with current, substantive issues in macroeconomics. Topics include consumption determination, savings behavior, bequest behavior, fiscal policy effects on interest rates, consumption, real exchange rates, trade balances, and inflation. Prerequisite: Graduate level microeconomics and macroeconomics, and at least one course in econometrics or consent of instructor.

ECO 611. Labor Economics (III)
3 credits Offered By Announcement only
The formulation and testing of models of labor markets. The application of the tools of microeconomics and econometrics to the analysis of labor markets. Leading contributions in the areas of dynamic analysis of labor markets, human capital investment, the determinants of the wage structure, time allocation and search models, dual and internal labor market models, and analysis of government policy are discussed. Prerequisite: ECO 620, 633 and 511 or permission of the instructor.

ECO 620. Advanced Econometrics
3 credits Offered Spring Semester
Advanced econometric methods including advanced techniques in multiple regression, Bayesian methods, maximum likelihood estimators, distributed lag models, spectral analysis, and Monte Carlo studies are discussed. Prerequisite: ECO 520 or permission of instructor.

ECO 621. Advanced Macro Analysis
3 credits Offered Spring Semester
Theory of the determination of national income, employment, and price levels. Course emphasizes mathematical solutions of Classical, Keynesian, and other economic models. Prerequisite: ECO 301 and 302. A course in calculus is required.

ECO 625. Applied Econometrics
3 credits Offered Fall Semester
Practical applications of econometrics are surveyed. Computer packages are used to examine economic data. Topics include the series analysis, limited dependent variable modes, pooling cross section and time series data, model selection, and rational expectations models. Prerequisite: ECO 620.

ECO 633. Advanced Micro Analysis
3 credits Offered Spring Semester
Theory of the behavior of firms and households and the determination of prices and resource allocation in a decentralized economy.

ECO 634. Advanced Micro Analysis II
3 credits Offered Fall Semester
Continuation of ECO 633. Advanced analysis of theory of the household and firm emphasizing recent approaches. Analysis of decisions over time, duality relationships, advanced demand theory, risk and uncertainty, behavioral theories of the firm, and technological change are covered. Prerequisite: ECO 633.
ECO 635. Special Topics in Advanced Microeconomic Theory  
3 credits  
Offered Spring Semester
Examination of situations where welfare economics associated with a perfectly competitive market must be modified and where non-market rationing devices are often used. Emphasis is placed on allocation structures that may supplement the market mechanism, such as: government, non-profit enterprises, and the family. Prerequisite: ECO 621 and 633.

ECO 641. Problems of Economic Development  
3 credits  
Offered By Announcement only
Economic change and growth in relation to theory and empirical evidence. Emphasis is placed on problems of actual vs. potential output and income of developing countries. Discussion of policies associated with promoting the full use of productive resources under various internal and external constraints is also included.

ECO 642. Inflation and Financial Markets in Developing Countries  
3 credits  
Offered By Announcement only
Monetary and financial aspects of economic development and stabilization policies in the Third World. Topics include rural financial markets, savings mobilization, effects of interest rate restrictions, and the political economy of financial policies in Third World countries. Prerequisite: Intermediate economics; ECO 301; 302; or permission of instructor.

ECO 660. International Trade  
3 credits  
Offered By Announcement only
The theory and practice of international trade. Comparative advantage, tariffs, quotas, non-tariff barriers (NTBs) to trade, and the regulatory framework (GATT/WTO, the US Harmonized Tariff Schedule, customs clearance procedures, special trade regimes free-trade zones, bonded warehouses, and letters of credit) are discussed. Prerequisite: ECO 660 or equivalent by waiver.

ECO 661. International Economics II  
3 credits  
Offered Spring Semester
Continuation of ECO 660. Modern developments in pure trade theory, international factor movements, the external adjustment mechanism, policies for external and internal balance, trade and growth, and recent developments in international monetary relations are discussed. Prerequisite: ECO 660.

ECO 665. Economic Analysis of Law  
3 credits  
Offered By Announcement only
Economic analysis of the evolution, nature, and consequences of the law, including liability rules, contractual and exchange relations, and remedies.

ECO 675. Economic Problems of Latin America  
3 credits  
Offered By Announcement only
Analysis of the economic, political, and social forces at work in the changing economies in Latin America.

ECO 680. Essentials of Economics  
2 credits  
Offered Fall Semester
Course provides an introduction to the core concepts of economics. Topics include allocation of scarce resources by the laws of supply and demand, use of the market place as the principle organizing and distribution tool of the economy, externalities, and market failure. Pollution of the environment is treated as a needed correction to be done by public regulation through taxation and legislation. The principal forms of firm organization and dissolution are also discussed. Applications of the laws of supply and demand are made to forecasting demand and analyzing cost structure. The entry and exit of firms and the valuation of the firm is also covered.
ECO 681. Directed Readings  
1- 3 credits  
Offered By Announcement only

ECO 682. Macroeconomics  
1 credit  
Offered By Announcement only  
Course topics include the definition and measurement of full employment, price stability, economic growth, and Gross National Product. The definition and rationale for anti-inflationary and anti-recessionary fiscal and monetary policy is also covered. Prerequisite: Executive MBA only.

ECO 685. Managerial Economics in a Global Economy  
2 credits  
Offered Fall Semester  
Modern techniques of economic analysis and decision science are applied management of the firm in a global environment. Business planning and valuation are an integral part of the course. The principal forms of business organization and dissolution are reviewed. The major issues confronted by the firm: principal-agent problem (or how to motivate managers to act in the best interest of the owners, the shareholders), moral hazard, discounting of free cash flow and terminal value, economies of scale and scope, and strategic management decision making are covered. Prerequisite: ECO 680. Second year MBA status.

ECO 687. Health Care Organization, Economics, and Ethics  
3 credits  
Offered By Announcement only  
Course provides insight into organizational and behavioral aspects of various sectors and agents within the health care industry. Understanding how such aspects affect performance measured in terms of both economic and ethical criteria is included. Prerequisite: For MBA Health Administration Students.

ECO 690. Essentials of Economic Theory  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
An economic study of the environment in which the decision making process takes place in management and the functional areas. Structured especially for students without an undergraduate background in economics. Credit not applicable toward 36-credit professional MBA component.

ECO 691. Managerial Economics  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Application of economic analysis to the formulation and solving of management problems and the determination of business policy. Prerequisite: ECO 690 or equivalent and MAS 110 or equivalent.

ECO 698. Selected Topics  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Topics in selected areas of specialization.

ECO 710. Master’s Thesis  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

ECO 720. Research in Residence  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in ECO 710 (usually six credits). Credit not granted. May be regarded as full time residence.
ECO 725. **Continuous Registration—Master’s Study**  
0 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full-time residence.

ECO 730. **Doctoral Dissertation**  
1-12 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of ECO 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

ECO 740. **Research Project**  
1-6 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Required of all candidates for the Doctor of Arts degree. Student enrolls for credit as determined by advisor. Credit is not awarded until the doctoral project has been accepted. Total enrollment may not exceed six credits.

ECO 750. **Research in Residence**  
0 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

ECO 760. **The Theory of International Trade**  
3 credits  
*Offered Fall Semester*  
Prerequisite: ECO 533, 633.

**Executive and Special Programs**

ESP 500. **Review Module**  
0 credits  
*Offered Fall Semester*  
A non-credit review session to provide students with the skills necessary to prepare for the successful completion of the common body of knowledge courses.

ESP 501. **Fundamentals of Accounting**  
3 credits  
*Offered Spring Semester*  
The generally accepted principles governing the preparation of financial reports, the use of accounting information systems in collecting financial, and cost data used in investment decisions and controlling an enterprise are discussed. Prerequisite: Limited to students in overseas program.

ESP 510. **Introduction to Business Statistics**  
3 credits  
*Offered First Summer Session*  
Data analysis, probability concepts, distributions, sampling, estimation, hypothesis testing, simple and multiple regression, and correlation analysis are discussed. Prerequisite: Limited to students in overseas program.

ESP 521. **Introduction to Information Systems**  
3 credits  
*Offered By Announcement only*  
Computer information system concepts, including spreadsheets, data management, and word processing. Prerequisite: Limited to students in overseas program.
ESP 551. **Organizational Behavior**  
3 credits  
*Offered Spring Semester*  
Exploration of relevant concepts, research findings and pragmatic implications of the behavioral sciences for the management of complex socio-technical systems. Prerequisite: Limited to students in overseas program.

ESP 560. **Fundamentals of Marketing**  
3 credits  
*Offered Fall Semester*  
Marketing problems experienced by top executives are examined. Fundamental problem-solving concepts are developed. Students consider problems of consumer needs, product planning, promotion, distribution, and pricing. The discovery and application of marketing management skills are developed through the use of cases and a major planning project. Prerequisite: Limited to students in overseas program.

ESP 590. **Macro- and Microeconomics**  
3 credits  
*Offered First Summer Session*  
An economic study of the environment in which the decision-making process takes place in management and the functional areas. Course is structured especially for students without an undergraduate background in economics. Prerequisite: Limited to students in overseas program.

ESP 601. **MBA Math Module**  
0-3 credits  
*Offered By Announcement only*  
This course provides the student with the necessary mathematical skills to progress toward an MBA degree. The course begins with a review of algebra and continues with the fundamentals of differential and integral calculus. The focus is on applying these concepts in solving business problems. Prerequisite: Limited to students in the Executive M.B.A. programs.

ESP 700. **Internship Directed Research**  
3 credits  
*Offered By Announcement only*  
This course consists of a directed research done by the student within the company/country where his/her internship is practiced. The study will be supervised and graded by a faculty member. Project requires in-depth research into the company, its role in globalization, and the culture's role in the company structure and purpose.

ESP 734. **Research Project**  
1-6 credits  
*Offered Spring Semester*  
Required of all candidates for the Master of Science in Professional Management program who have selected option two curriculum. Credit is not awarded until the project has been accepted. Total enrollment may not exceed six credits. May be regarded as full-time residence as determined by the Dean of the Graduate School.

ESP 735. **Research Project**  
1-6 credits  
*Offered By Announcement only*  
Required of all candidates for the Add-On Master of Business Administration degree. Credit is not awarded until the project has been accepted. Total enrollment may not exceed six credits (option 1). Available to those students who have selected option 1 curriculum. Prerequisite: Must have completed the Master of Science in Professional Management Program.
ESP 736. Research Project
1-6 credits
Required of all candidates for the Add-On Master of Business Administration degree. Credit is not awarded until the project has been accepted. Total enrollment may not exceed six credits. May be regarded as full-time residence as determined by the Dean of the Graduate School. Available to those students who have selected option 2 curriculum. Prerequisite: Must have completed the Master of Science in Professional Management Program.

Finance
FIN 590. Internship
1 credit
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Note that FIN 590 is an elective and not for credit towards the major. Prerequisite: FIN 303, 320, and permission of Department Chairman. Requires departmental approval. Note: does not count as credit towards major.

FIN 599. Directed Study
3 credits
Individually supervised research projects in selected finance topics. Approval of the Chairperson and advisor is required prior to registration. Prerequisite: FIN 302, 320. Requires departmental approval.

FIN 602. Fundamentals of Finance
3 credits
Offered Fall and Spring Semesters and First Summer Session
Fundamental tools of finance and the theoretical and practical foundation for the study of finance is analyzed. Topics include capital market theory, the time value of money, financial risk measures, and capital budgeting are also included. Prerequisite: Principles of economics, statistics, and financial accounting

FIN 603. Advanced Corporation Finance
3 credits
Offered Fall and Spring Semesters and First Summer Session
Theoretical foundations of optimal financial policy. Application of theory to financial decisions involving deterministic and non-deterministic capital budgeting, financial structure, and dividend policy are discussed. NOTE: Required for Finance concentration. Prerequisite: FIN 602.

FIN 604. Cases in Corporate Finance
3 credits
Offered Fall and Spring Semesters
A case course in the financial management of cash, accounts receivable, inventory, fixed assets, working capital, and capital structure. Prerequisite: FIN 603.

FIN 605. Corporate Financial Planning and Strategy
3 credits
Offered By Announcement only
Strategic planning during periods of volatile business and monetary conditions. Includes understanding why these conditions exist and how to deal with the effect of inflation, demographic trends, and business cycle on practical business decisions. Prerequisite: FIN 603.

FIN 611. Commercial Banking Theory
3 credits
Offered Fall Semester
The theory of operation of a successful commercial bank. The interrelation of various departments, loan and investment mix, marketing and public relations, statement preparation, reserves management, audit and examination, and deposit analysis of a commercial bank. The effect of business cycles, location, and the regulatory agencies upon a commercial bank are also analyzed. Prerequisite: FIN 602.
FIN 612. **Money and Capital Markets**
3 credits  
Offered Spring Semester

Course topics include money and capital markets, their composition, regulation, the influence of the money and capital markets in modern business, source of funds and their use, certificates of deposit, treasury securities, commercial paper, banker’s acceptances, bank loans, the bond market, and central banks and their operation. Emphasis is placed on the Federal Reserve and its monetary policies. Prerequisite: FIN 602.

FIN 615. **Financial Planning I**
3 credits  
Offered Fall Semester

Fundamentals of personal financial planning for accountants. Overview of the financial planning process including regulation and ethical considerations. Introduction to tax planning, insurance planning, investment planning, retirement planning, and estate planning is also included.

FIN 616. **Financial Planning II**
3 credits  
Offered Spring Semester

This course extends the knowledge gained in Financial Planning I to enable the accountant-financial planner to analyze a client’s insurance needs with respect to an overall financial plan. Includes a study of risk management, employee health, and welfare plans. Prerequisite: Financial Planning I.

FIN 620. **Investment Analysis**
3 credits  
Offered Fall and Spring Semesters and First Summer Session

Theoretical and practical analysis of the investment process. Topics include an analytical investigation of the financial markets, security analysis, security valuation, and an introduction to portfolio theory. Prerequisite: FIN 602.

FIN 621. **Portfolio Construction and Management**
3 credits  
Offered Fall and Spring Semesters

The evolution of portfolio theory and practice and its role in modern investment management. Individual constraint models within the general capital market theory are included as well as empirical evidence, theoretical discussion, and practical exercises. Prerequisite: FIN 602, 620.

FIN 622. **Financial Options and Futures**
3 credits  
Offered Fall and Spring Semesters

Study of the theoretical development of models for pricing contingent claims in the field of finance. Application of theoretical results to the hedging of current and future assets and liabilities and to speculative strategies for the risk-averse, profit-maximizing entity are included. Prerequisite: FIN 602, 620.

FIN 630. **International Finance**
3 credits  
Offered Fall and Spring Semesters and First Summer Session

The financing of international trade and capital placements. Restrictions on capital retrieval and problems of international liquidity related to the U.S. and non-U.S. firms is discussed as well as current developments in international banking, theory, and policy. Cases involving foreign capital commitments and transactions, especially Latin America are also included. Prerequisite: FIN 602.

FIN 631. **International Financial Management**
3 credits  
Offered By Announcement only

Sources and uses of long and short term capital for international business applications and foreign currency markets. Financial decisions associated with international cash and capital budgeting, capital repatriation and taxation strategies, capital exposure and coverage, and multinational firm financial strategies are discussed. Lectures and cases are included. Prerequisite: FIN 630.
FIN 641. Valuation and Financial Decision Making
2 credits
Offered Fall and Spring Semesters
Introduction to finance. Topics include the principles of finance, time value of money, capital market efficiency, basic security valuation, basic capital valuation, basic capital budgeting, risk, return, and asset pricing model, and the cost of capital. Prerequisite: ACC 670, 671, ECO 680, and MAS 631.

FIN 642. The Financial Environment
2 credits
Offered Fall and Spring Semesters
A continuation of FIN 641. Topics include an introduction to the global securities markets and foreign exchange, basic derivatives, real options, agency theory, fixed income securities, the term structure, investment banking, short-term financial management and planning, and corporate financial policies. Prerequisite: FIN 641.

FIN 650. Financial Investment
2 credits
Offered Fall and Spring Semesters
Finance 650 builds on Finance 641 and 642. Topics include investment companies, risk aversion, asset allocation, asset pricing theory, the single index model, market efficiency, fixed income portfolio management, advanced issues of the term structure, financial options, and financial futures. Prerequisite: Second year MBA status. FIN 641 and 642.

FIN 651. Advanced Topics in Investments
2 credits
Offered Fall and Spring Semesters
Finance 651 builds directly on Finance 650 and on the MBA core classes Finance classes, Finance 641 and 642, using a variety of techniques, including case analysis and class discussion. A number of special topics are covered, including portfolio management, investment banking, market micro-structure, and financial analysis. Prerequisite: FIN 650. Second year MBA status.

FIN 660. International Finance
2 credits
Offered Fall and Spring Semesters
Finance 660 builds on Finance 641 and 642, and is intended to provide an overview of the concepts and importance of international finance. Specifically, the course covers foreign exchange markets and instruments, international debt and equity markets, management of foreign exchange risk and political risk, and international investments and taxation. Prerequisite: FIN 641 and 642. Second year MBA status.

FIN 661. Advanced Topics in International Finance
2 credits
Offered Fall and Spring Semesters
Finance 661 builds directly on Finance 660 and on the MBA core classes, Finance 641 and 642, using a variety of techniques, including case analysis and class discussion. A number of special topics are covered including measuring and managing the many additional risk exposures faced by a multi-national enterprise, investment and capital budgeting decisions in a global framework, and financing the multi-national firm. Prerequisite: Second year MBA status. FIN 660.

FIN 670. Corporate Finance
2 credits
Offered Fall and Spring Semesters
Finance 670 builds on Finance 641 and 642 and focuses on financial decision making from a corporation’s perspective. Issues addressed include capital structure, management of corporate liabilities, leasing and other asset-based financing techniques, advanced treatment of capital budgeting and some of the complex issues involved, and corporate mergers and acquisitions. Prerequisite: FIN 641 and 642. Second year MBA status.
FIN 671. **Advanced Topics in Corporate Finance**  
**2 credits**  
*Offered Fall and Spring Semesters*  
Finance 671 builds directly on Finance 670 and on the MBA core classes, Finance 641 and Finance 642, using a variety of techniques, including case analysis and class discussion. A number of special topics are covered, such as recapitalizations and bankruptcy, short- and long-term financing, capital budgeting sensitivity analysis, risk management, as well as divided policy and share repurchases. Prerequisite: FIN 670. Second year MBA status.

FIN 681. **Financial Institutions**  
**2 credits**  
*Offered Fall and Spring Semesters*  
Finance 681 builds on Finance 641 and 642 and focuses on the management of financial institutions, such as banks. Topics include risk management, deposits and deposit insurance, liquidity, reserve requirements, capital adequacy, liability management, investment interest rate risk, and current issues connected with financial institutions. Prerequisite: FIN 641 and 642. Second year MBA status.

FIN 685. **Mathematics of Financial Derivatives**  
**2 credits**  
*Offered Fall and Spring Semesters*  
Finance 685 builds on Finance 650, 660, and 670. This course provides an in-depth mathematical treatment of derivatives and is divided into three parts: (1) options; (2) futures and forwards; and (3) other derivative instruments, which include options on futures, foreign currency derivatives, swaps, exotic options, and financial engineering. The emphasis is placed on equity instruments, although there is also some coverage of short- and long-term interest bearing instruments. Prerequisite: FIN 650, 660, and 670. Second Year MBA status.

FIN 698. **Selected Topics in Finance**  
**3 credits**  
*Offered By Announcement only*  
Topics in selected areas of specialization. Prerequisite: FIN 602.

FIN 699. **Directed Readings and Study**  
**1-3 credits**  
*Offered By Announcement only*  
Individually supervised research or reading projects in selected fields. Evaluation of project and subject by the supervising professor is required at the time of registration. Prerequisite: FIN 602.

FIN 700. **Doctoral Seminar in Finance Theory**  
**3 credits**  
*Offered By Announcement only*  
The purpose of this seminar is to provide doctoral students in economics and business with a rigorous introduction to the theory of finance. Prerequisite: MBA, MS or approval of department.

FIN 705. **Doctoral Seminar in Corporate Finance**  
**3 credits**  
*Offered By Announcement only*  
The purpose of this seminar is to provide doctoral students with a comprehensive review of theory, empirical methods, and results in the area of corporate finance. Prerequisite: MBA, MS or approval of department.

FIN 720. **Doctoral Seminar in Investments**  
**3 credits**  
*Offered By Announcement only*  
The purpose of this seminar is to provide doctoral students with a comprehensive review of theory, empirical methods, and results in the area of investments. Prerequisite: MBA, MS or the approval of the department.
Management

**MGT 538. Labor-Management Relations**
3 credits    Offered Spring Semester
Legal and institutional framework of labor relations both in the United States and globally. Topics include labor law, collective bargaining, contract administration, arbitration, and NLRB regulation. Additional emphasis is placed on dispute resolution, grievance machinery, and other methods of alternative dispute resolution. Prerequisite: Undergraduate: MGT 302 + junior standing. Graduate: MGT 602.

**MGT 540. Behavioral Aspects of Productivity**
3 credits    Offered By Announcement only
Productivity management impacts organizational strategy, efficiency, quality, and survival. Course examines these varied impacts and discusses the managerial issues related to productivity measurement, organizational values, incentives, gainsharing, motivation, organizational change, gainsharing, motivation, organizational change, and organizational politics. Course is taught from behavioral and systems theory viewpoints, focusing on how behavioral change impacts system productivity. Course is multidisciplinary and supplemented with examples of corporate applications.

**MGT 545. Self-Assessment and Career Development**
3 credits    Offered By Announcement only
Course provides a framework for individuals facing the complex process of making career decisions. Emphasis is placed on self-assessment to help students better understand their career motivations. Additional topics include job searches, interviewing, analyzing, choosing job offers, managing the first year on the job, developmental relationships such as mentoring, the early career experience, and managing a career over time. Prerequisite: MGT 304 + senior standing.

**MGT 550. MGT Internship**
1 credit    Offered Fall and Spring Semesters and First and Second Summer Sessions
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Cannot be used toward major requirements. Prerequisite: Major/specialization in MGT Department, minimum 3.0 GPA, and Department Chair approval prior to registration.

**MGT 553. Management Consulting**
3 credits    Offered Spring Semester
Students review techniques, methods, and organizational forms of management consultants. Emphasis on small business problems, particularly start-ups, is provided through preparation of consulting reports on written cases, guest speakers, and actual business firms or start-ups. Prerequisite: MGT 353, 554, and ENT major.

**MGT 554. Starting New Ventures**
3 credits    Offered Fall and Spring Semesters
The basics of starting a business for aspiring entrepreneurs. Topics include sources of capital, market choices, division of the equity pie, choice of distribution channels, choosing an accountant and a legal advisor, preparation of a business plan, and product design. Teams of students develop business plans to start new enterprises. Prerequisite: MGT 353 and ENT major.

**MGT 598. Selected Topics**
3 credits    Offered Fall and Spring Semesters and First and Second Summer Sessions
Topics in selected areas of specialization.
MGT 599. Directed Study
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individually supervised research projects in selected fields. Approval of supervising professor as to topic and evaluation of project required at time of registration. Only open to undergraduate students. Prerequisite: Senior standing and major in the MGT Department.

MGT 600. Managing Responsible Behavior in Organizations
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
For Executive MBA students only. Course covers organizational behavior and utilizes cases and lectures to explore topics such as personality, motivation, leadership, group processes, organizational structure/design, and social responsibility. Prerequisite: Executive MBA status.

MGT 602. Human Resource Management
3 credits
Offered Fall and Spring Semesters
Modern personnel administration: job analysis and design, evaluation and appraisal, recruitment and interviewing, training and development, wages and benefits, and health and safety. Unionization, regulation of wages, hours and working conditions, financial security for workers, job anti-discrimination legislation, and manpower planning is also discussed.

MGT 603. Leading Teams
3 credits
Offered Fall and Spring Semesters
The objectives of this course are to develop interpersonal communication and conflict management skills necessary to work in teams and/or exercise leadership in teams. Topics include team development, decision making, and diagnosing team process issues. Prerequisite: MGT 651.

MGT 620. Managing Through People
2 credits
Offered Fall and Spring Semesters
This core course in the MBA program introduces students to some of the key behavioral topics necessary to manage oneself and others in organizations. Specifically, the topics covered include individual attributes (personality, perception, motivation, relationship building), group processes (norms, roles, and team basics), leadership views, and organizational culture/change. An understanding of the relationship between each of these areas and organizational outcomes is enhanced through lecture, cases, and interactive exercises. Prerequisite: Full-time MBA status.

MGT 621. High Performance Leadership
2 credits
Offered Fall and Spring Semesters
Leadership skills are critical for high performing organizations. Course utilizes lecture, cases, exercises, self-assessments, and contemporary reading materials to present leadership approaches that both motivate and enable employees to perform beyond normal or ordinary expectations. Topics include followership and organizational culture, power, influence, rewards and punishments, path-goal and exchange theories, participation and empowerment, charismatic and transformational leadership, and contingency and cognitive resources theory. Prerequisite: Full-time MBA status; specialization in Leading the High Performance Organization.
MGT 622. High Performance Teams
2 credits
Offered Fall and Spring Semesters
This elective course highlights how to manage and construct effective teams to achieve strategic goals. Team-based organizations have been created to enhance organizational performance. The benefits of effective team leadership are performance beyond expectations and enhancement of learning for employees. Topics covered include team decision-making, team leadership, diversity in teams, conflict resolution, and team creativity. Prerequisite: Full-time MBA status; specialization in Leading the High Performance Organization.

MGT 623. Human Resource Systems
2 credits
Offered Fall and Spring Semesters
Leaders must manage their human resource assets effectively to achieve high performance organizations. Course topics include recruitment and selection of high performance employees, designing performance appraisal systems, implementing policies to satisfy legal issues impacting human resources, and instituting training/development systems. Prerequisite: Full-time MBA status; specialization in Leading the High Performance Organization.

MGT 625. Entrepreneurship: Creating New Ventures
2 credits
Offered Fall and Spring Semesters
This is a two-credit course for MBA students (only). The course is designed to help students understand the basic essentials for creating a new venture. Among some of the topics covered will be: preparation of a business plan, securing sources of capital, choosing and creating appropriate distribution channels, and understanding the complexities of selecting a management team. Students will be required to critique and develop business plans as a key evaluation component for this course. Prerequisite: MBA standing.

MGT 643. Principles of Operations Management
2 credits
Offered Fall and Spring Semesters
Introduction to operations management, forecasting, process analysis, aggregate planning, capacity management, waiting line management, system design, quality management, and inventory management. Prerequisite: Full-time MBA status.

MGT 645. Principles of Supply Chain Management
2 credits
Offered Fall and Spring Semesters
Course introduces students to the business discipline of Supply Chain Management (SCM) which centers on concepts and techniques that enables firms to better coordinate material and information flows, and non-material activities associated with logistical and marketing processes that occur within and across organizations. Course also discusses concepts and recent influential innovations in SCM (e.g., Cross-Docking, Vendor Managed Inventory (VMI), Third-Party Logistics (3PL), Efficient Consumer Response (ECR), and Quick Response (QR)). Prerequisite: MGT 643, MAS 632. Second year MBA status.

MGT 651. Behavioral and Organizational Systems
3 credits
Offered Fall and Spring Semesters
Exploration of relevant concepts, research findings, and pragmatic implications of the behavioral sciences for the management of complex socio-technical systems.

MGT 652. Organizational Theory
3 credits
Offered By Announcement only
Concepts of contingency and systems management applied to contemporary organizations. The integrative function of management in terms of situational and environmental factors and analysis of selected organizational types is also included. Prerequisite: MGT 651.
MGT 653. Operations Management
3 credits
Offered Fall and Spring Semesters
Introduction to major managerial problems and decision processes of operations management. Topics include the design of operations, planning, scheduling, quality control, systems analysis and evaluation, resource allocation, materials requirement planning, and integration of operations management with the other functional areas. Prerequisite: MAS 641 or equivalent.

MGT 655. Research Methods
3 credits
Offered By Announcement only
Course addresses the fundamentals of research in business including exploratory designs, correlational and multivariate designs, experimental and non-experimental studies, measurement theory, internal and external validity considerations, and ethical requirements in conducting organizational research. Prerequisite: MGT 656 and doctoral student standing.

MGT 656. Seminar: Organizational Behavior
3 credits
Offered By Announcement only
Seminar addresses the current research and theoretical foundations in organizational behavior. Topics include individual attributes, job attitudes, leadership, motivation, and group processes. Prerequisite: Doctoral student or permission of instructor.

MGT 657. International Supply Chain Management
3 credits
Offered Fall and Spring Semesters
This MBA course is designed to provide a broad overview of supply chain management from an international perspective. This overview will include topics such as international air transportation and issues such as channel intermediaries and documentation from an international outlook. Prerequisite: MBA standing.

MGT 658. Strategic Management
3 credits
Offered Fall and Spring Semesters and First Summer Sessions
The formulation and implementation of strategy, from a domestic and international perspective, is explored through cases, readings, and decision simulation. An integration of all the core areas of business is emphasized. This core course is required of all MBA students. Prerequisite: Graduating semester MBA students only.

MGT 659. Management of Multinational Enterprise
3 credits
Offered Fall and Spring Semesters
Analysis of the management tasks confronting managers operating in the international arena presented from both an environmental and an operational perspective. Alternatives for overall corporate policy and strategy that accommodate global operations is also included.

MGT 660. Leadership and Motivation in Organizations
3 credits
Offered Fall and Spring Semesters and First Summer Session
Selected topics pertaining to leadership, motivation, and individual processes are surveyed through selected readings, class discussions, and a guided research project. Students’ ability to conceptualize, integrate, and apply diverse approaches to the leadership and motivation of people in organizations is emphasized. Prerequisite: MGT 651 or equivalent.
MGT 661. Influence, Power and Politics in Organizations
3 credits
Offered Fall and Spring Semesters
One of the basic realities of organizational life is that people continually attempt to control the actions of others and to successfully influence their behavior. This reality leads to a wide array of organizational politics aimed at enhancing one’s own or one’s group’s personal agendas. This course focuses on preparing graduate business students for the challenges and “realities” they will ultimately face as managers. Given that most business students will eventually be leading the efforts of others, it is essential that they understand how to acquire power and exercise power within ethical bounds. Prerequisite: MGT 651 or equivalent.

MGT 662. Managerial Judgment and Decision Making
3 credits
Offered By Announcement only
Decision-making methods are explored with an emphasis on the natural way managers make predictive judgments and exercise choice. The goal is to help students learn to make better decisions.

MGT 665. Managing Cultural Differences
3 credits
Offered By Announcement only
Course is designed to help students develop the skills and attitudes necessary to work successfully in a multinational corporation or foreign environment. Students are exposed to conceptual frameworks for understanding various cultural patterns, and apply such frameworks through team and individual learning exercises. Prerequisite: Course is required for the MIBS Program.

MGT 670. Selection of Human Resources
3 credits
Offered By Announcement only
Approaches to the identification of high-performing individuals with focus on conceptual issues and the current legal, economic, and societal context within which human resource selection occurs. Emphasis is placed on practical techniques as well as the application of key concepts to real problems of human resource selection. Prerequisite: MGT 602.

MGT 671. The Management of Innovation
3 credits
Offered By Announcement only
Course is designed for those students who see themselves in settings where they have to develop new products or processes, or who must implement change in existing products or processes. The management of innovation requires the creative synthesis of several functional areas and this course integrates literature and perspectives from strategy/policy, organization behavior, marketing, the management of research, development, and engineering. The course emphasizes research and practice. Each topical area is covered by both content material and case studies. Students are expected to have actively read the case and content material and are urged to participate in class discussion.

MGT 675. Business Policy and Strategy
2 credits
Offered Fall and Spring Semesters
The objectives of the course are to improve the student’s ability to think strategically and to provide an intellectual framework that enhances understanding of the MBA program. The course focuses on relationships among the firm, its strategy, and its environment; why firms choose certain businesses; which business strategies are successful; and how firms can change in response to a dynamic environment. Models for strategic formulation, implementation, and control are developed that facilitate an integrated understanding of the courses that comprise the MBA curriculum. Readings and lectures illustrate strategic management theories and frameworks while case discussions, experiential exercises, and team projects provide opportunities for application. Prerequisite: Full-time MBA status.
MGT 677. Corporate Strategy and Organization  
2 credits  
Offered Fall and Spring Semesters  
This capstone course focuses on the perspective and skills of the general manager. Its purpose is to provide practice in diagnosing and identifying realistic solutions to complex strategic and organizational problems. Course builds on previous coursework by providing an opportunity to integrate various functional areas by providing a total business perspective. Since the course focus is on pragmatic, action-oriented general management skills, the course is taught primarily through the case method and requires both written analyses and case presentations. Prerequisite: Full-time MBA status.

MGT 678. Advanced Business Policy and Strategy  
3 credits  
Offered By Announcement only  
Current topics in strategic planning, implementation, and control are discussed. The goal is to provide students with the most up to date applications in strategic management. For advanced master’s and doctoral candidates. Prerequisite: MGT 658.

MGT 681. Essentials of Health Care Administration  
3 credits  
Offered By Announcement only  
Introduction to the concepts, terminology, historical development, organization, and management techniques involved in health care administration.

MGT 682. Issues in Health Care Administration  
3 credits  
Offered By Announcement only  
A seminar on current problems and issues in health care administration.

MGT 683. Applied Health Planning  
3 credits  
Offered By Announcement only  
Theories and methods of health planning related to governmental legislation and institutional organizational needs. Prerequisite: Permission of instructor.

MGT 687. Health Care Organization, Economics, and Ethics  
3 credits  
Offered By Announcement only  
Course provides the student insight into organizational and behavioral aspects of the various sectors and agents within the health care industry and understanding of how such aspects in turn affect performance measured in terms of both economic and ethical criteria. Prerequisite: For MBA Health Administration students.

MGT 691. International Management  
2 credits  
Offered Fall and Spring Semesters  
Course is designed to provide an overview of management problems and issues for organizations and executives operating internationally. Students learn how multinational enterprises are different, why they behave as they do, and how to apply management principles to problem-solving in such contexts.

MGT 695. Residency Program in Health Administration  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Field experience. Full or part-time appointment working in administrative activities in a health related institution. Prerequisite: Completion of health administration preparation.

MGT 698. Selected Topics  
1- 6 credits  
Offered By Announcement only  
Topics in selected areas of specialization.
MGT 699. Directed Study
1-6 credits
Individually supervised research project in selected field of management. Approval of supervising professor of the topic/scope of work/evaluation is required prior to registration. Prerequisite: Specialization in the MGT Department.

MGT 730. Doctoral Dissertation
1-12 credits
Course is required of all candidates for the Ph.D. The student enrolls for credit as determined by his/her advisor.

MGT 740. Qualifying Examination Preparation
3-9 credits
Doctoral students who are preparing for their Qualifying Examinations may use this course designation. Enrolled students must develop, with the approval of their advisor, a "Plan of Study" for these credits. Students may enroll in MGT 740 for one semester only. Prerequisite: All required doctoral coursework must be completed prior to enrollment.

MGT 750. Research in Residence
0-12 credits
Used to establish research in residence for the Ph.D. after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Management Science

MAS 540. Quantitative Foundations for Management Science
3 credits
A review of basic quantitative concepts for management. Topics include: linear and nonlinear functions, systems of equations, linear programs, financial applications, set theory, probability, differentiation, and integration.

MAS 547. Computer Simulation Systems
3 credits
Computer simulation and development of simulation models; applications of discrete and continuous system simulation languages to systems studies. Lecture, 3 hours. Prerequisite: IEN 124 and MAS 311 or equivalents.

MAS 548. System Dynamics Modeling and Analysis
3 credits
The course involves building and analyzing simulation models of social, managerial, economic, physical, and biological systems. It focuses on modeling dynamically complex systems, strategic issues and human decision-making; and investigates case studies of successful applications in growth strategy, management of technology, operations, project management, and others. Prerequisite: MTH 110-112 (or 131-132) and MAS 311 or equivalents.

MAS 550. Management Science Internship
1-3 credits
Student is individually assigned to operating business firm or other organization to gain insight into management practice in area of career interest. Periodic reports and conferences are required. Prerequisite: Permission of department chairman.
MAS 595. **Topics in Management Science**  
1-3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Topics in selected areas of specialization.

MAS 596. **Topics in Management Science**  
1-3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Topics in selected areas of specialization.

MAS 601. **Applied Regression Analysis**  
3 credits  
Offered Fall Semester  
Theory and practical application of regression modeling and analysis. Computer control language, text editing, data base manipulation, and use of various data scales are covered. Understanding the role and responsibility of a statistician is also included. Prerequisite: Calculus, linear algebra and MAS 311 or equivalent.

MAS 602. **Applied Multivariate Statistics**  
3 credits  
Offered Spring Semester  
Statistical analysis of simultaneous measurements on many variables. Topics include principle components, factor analysis, canonical correlation analysis, multivariate general linear model, discriminant analysis, clustering, multidimensional scaling, and statistical inference about mean vectors. Extensive use of computer packages is required. Prerequisite: Permission of instructor.

MAS 603. **Design of Experiments**  
3 credits  
Offered Spring Semester  
Statistical design, analysis of experimental data, randomized blocks, Latin Squares, factorial designs, response surfaces, and analysis of covariance are covered. Extensive use of computer packages is required. Prerequisite: MAS 311 or equivalent.

MAS 606. **Nonparametric Statistics**  
3 credits  
Offered By Announcement only  
Nonparametric techniques for testing hypotheses concerning proportions, attributes (enumeration statistics), two-sample and K-sample tests of location. Nonparametric correlation methods, two-sample variance tests, tests for runs and randomization, multiple comparisons, and linear and non-linear trend are also included. Emphasis is placed on utilization of techniques in research, and not formal theory. Prerequisite: MAS 311 or equivalent.

MAS 607. **Survey Sampling**  
3 credits  
Offered By Announcement only  
Course topics include random, stratified, systematic, and cluster sampling, applications in survey sampling design, and ratio estimation. Questionnaire design and administration including nonresponse problems, data analysis and presentation are also included. Prerequisite: MAS 610 or equivalent.

MAS 610. **Statistical Analysis for Managerial Decision Making**  
3 credits  
Offered Fall and Spring Semesters and First Summer Session  
Data analysis, probability concepts, distributions, sampling, estimation, hypothesis testing, simple and multiple regression and correlation analysis. Required of all MBA students unless satisfied by a waiver examination or equivalent undergraduate course or courses.

MAS 611. **Principles of Quality Management**  
3 credits  
Offered Fall Semester  
The definition of quality management, its history, and comparison of various schools of thought. An introduction to the theories of systems, variation, knowledge, and psychology as they relate to quality management. Deming’s fourteen points for management are studied through examples and cases. Prerequisite: MAS 610.
MAS 612. Advanced Quantitative Analysis
3 credits Offered Fall and Spring Semesters and First Summer Session
The application of probability theory to the formulation and analysis of mathematical models for decision making. Applications are taken from inventory control, forecasting, waiting lines, quality control, production, and operations management. Prerequisite: MAS 201 and 302 or their equivalents.

MAS 615. Statistical Methodology in Business Research I
3 credits Offered By Announcement only
Foundations of statistical methods used in business research. Topics include distribution theory, estimation theory, point estimates, methods and properties, interval estimates, hypothesis testing, relationship between interval estimation and hypothesis testing, fundamental normal tests, decision theory, Bayesian inference. The use of the SAS computer package is required. The first of two required core courses in Statistical Methodology for Ph.D. students in Business. Prerequisite: MAS 311 and MTH 112 or equivalents.

MAS 616. Statistical Methodology in Business Research II
3 credits Offered By Announcement only
Advanced Statistical techniques as applied to Business Research. Topics include analysis of variance and covariance, multiple regression, correlation, discriminant analysis, factor analysis, canonical correlation, and nonparametric statistical methods. The second of two required core courses in Statistical Methodology for Ph.D. students in Business. Prerequisite: MTH 210 and MAS 615 or equivalents.

MAS 620. Understanding the Theory of Variation
3 credits Offered By Announcement only
Introduction to graduate level statistics from a Quality Management perspective. Topical coverage includes definition of statistics, philosophy of statistics, types of statistical studies, types of data, visual and numeric presentation of data, probability concepts, probability distributions, interval estimation, hypothesis testing, and control charts. This course differs from MAS 610 in the following ways: (1) stress on the philosophical aspects of statistics (called statistical thinking), as opposed to statistical theory and calculation, (2) emphasis on process oriented statistical methods, as opposed to population oriented statistical methods, and (3) focus on the development of control charts in conjunction with a reduction in the coverage on confidence intervals and classical hypothesis testing.

MAS 630. Quality Management in Practice
3 credits Offered Fall Semester
This course presents administrative systems necessary for an organization or an individual to pursue quality management. The course presents a functional model for quality management. Prerequisite: MAS 611.

MAS 631. Statistics for Managerial Decision Making
2 credits Offered Fall Semester
This course aims to familiarize the student with statistical theory, tools, and methods required for business systems analysis and improvement. Topics include descriptive methods, elementary probability, random variables and the distributions, hypothesis testing, confidence intervals, statistical modeling, and regression.

MAS 632. Management Science Models for Decision Making
2 credits Offered Spring Semester
This course aims to familiarize the student with Management Science tools for business systems analysis and improvement. The coverage includes linear and integer programming models, project management, simulation, queuing, and decision analysis. Some widely used software are illustrated through examples and case studies derived from business applications. Prerequisite: MAS 631.
MAS 633. Introduction to Quality Management  
2 credits  
**Offered Fall Semester** 
Introduction to the major elements of Dr. Deming’s theory of management, including Dr. Deming’s System of Profound Knowledge and Fourteen Points for Management. Additionally, participants are introduced to “Six Sigma” tools and methods. These tools and methods have been adopted with great success by many of the largest organizations in the world, for example, General Electric, Allied Signal, Dupont, American Express, and J.P. Morgan. Additionally, the course is a prerequisite for the “Six Sigma” Green Belt certification examination. Prerequisite: Second Year MBA Status.

MAS 634. Administrative Systems for Quality Management  
2 credits  
**Offered Fall Semester** 
This course presents a model to pursue quality management (QM). It features administrative systems and structures necessary for Quality Management. The administrative systems and structures presented in this course are required to sit for the Six Sigma Management “Green Belt” certification examination. Prerequisite: Second Year MBA status and MAS 633.

MAS 635. Design of Experiments  
2 credits  
**Offered Fall Semester** 
This course presents tools and methodology useful in conducting experiments that provide valid answers to questions of interest to the experimenter. The course discusses an overall approach to obtaining and analyzing experimental data, the advantages of using structured multi factor experiments to screen for important factors, ways of minimizing the amount of data points needed to obtain desired information, and how to identify values of experimental factors that optimize the value of measured responses. Factorial designs, fractional factorial designs, screening designs, and response surface designs are presented. Emphasis is placed on the knowledge required for proper application of these methods through many examples in business and quality management. Prerequisite: MAS 631. Second year MBA status.

MAS 636. Statistical Process Control and Reliability  
2 credits  
**Offered Fall Semester** 
This course aims to introduce some fundamental concepts of statistical process control and reliability with an emphasis on business applications. The first part of the course focuses on control charts and other tools that are used to monitor and improve business processes. The second part of the course introduces some basic ideas of reliability models and presents methods used in identifying failure modes in products and in business systems. Prerequisite: MAS 631. Second Year MBA status.

MAS 637. Applied Regression Analysis and Forecasting  
2 credits  
**Offered Fall Semester** 
This course aims to familiarize the student with statistical prediction. It covers simple and multiple regression methods as well as time series and forecasting models in business. Instead of theoretical development, the course emphasizes the application of these methods in business systems analysis and improvement. Prerequisite: MAS 631. Second year MBA status.

MAS 638. Management Science Consulting  
2 credits  
**Offered By Announcement only** 
The purpose of this course is to enhance students’ consulting skills in management science. In addition to skills of modeling and choosing appropriate tools for analysis, these include the communication skills of presenting quantitative and analytical material in business settings. The course is structured around a set of case studies that are based on real applications of management science models and methods discussed in MAS 631 and MAS 632. Prerequisite: MAS 631 and 632.
3 credits
Offered Fall and Spring Semesters and First Summer Session
The application of Operations Research techniques in Management. Topics include linear programming, PERT/CPM, queuing theory, forecasting, inventory models, statistical quality control, decision theory, and Simulation. Prerequisite: MAS 610.

MAS 642. Linear Programming and Extensions
3 credits
Offered Fall Semester
Formulation, solution, and postoptimality analysis of linear programming problems. Topics include revised simplex, parametric programming, and decomposition large-scale systems. The use of computer packages is required. Introduction to integer programming, network flows, and nonlinear programming applications is also included. Prerequisite: Linear Algebra or equivalent.

MAS 643. Integer Programming and Network Flows
3 credits
Offered Spring Semester
Solutions and applications of network flow problems, shortest path, maximum spanning tree, single, and multi-commodity flows are discussed. Computationally effective approaches to integer optimization, cutting planes, and implicit enumeration are also covered. Prerequisite: Permission of the instructor.

MAS 644. Nonlinear and Dynamic Programming
3 credits
Offered By Announcement only
Solution of nonlinear optimization problems by classical procedures and search algorithms. Recursive optimization using computationally effective techniques is also addressed. Prerequisite: MTH 112 or equivalent.

MAS 645. Stochastic Processes
3 credits
Offered Fall Semester
Introduction to discrete state Markov processes and renewal processes with applications to queueing, replacement, and reliability problems. Prerequisite: MAS 311 or MTH 524 or equivalent.

MAS 657. Supply Chain Management
3 credits
Offered Spring Semester
This course covers models and techniques for design and implementation of distribution and supply chain networks, and how they relate to manufacturing. Topics include inventory management, resource and capacity planning, material planning, forecasting, routing and scheduling, and plant location. An overview of how these are incorporated in an integrated ERP system is provided. Prerequisite: MGT 653 or equivalent.

MAS 661. Forecasting Methods
3 credits
Offered By Announcement only
Business and economic forecasting, time series analysis, regression, classical decomposition, smoothing, Box-Jenkins methodology, use of index numbers, other indicator variables, and forecasting in functional business areas are discussed. The use of case studies and interactive computer packages is also included. Prerequisite: MAS 610 or equivalent.

MAS 693. Directed Study in Operations Research
1- 3 credits
Offered By Announcement only
Investigation and research in special areas of interest. Offered by special arrangement. Prerequisite: Permission of department chairman.

MAS 694. Directed Study in Operations Research
1- 3 credits
Offered By Announcement only
Investigation and research in special areas of interest. Offered by special arrangement. Prerequisite: Permission of department chairman.
MAS 695. Directed Study in Operations Research  
1-3 credits  
Offered By Announcement only  
Investigation and research in special areas of interest. Offered by special arrangement. Prerequisite: Permission of department chairman.

MAS 696. Directed Study in Statistics  
1-3 credits  
Offered By Announcement only  
Investigation and research in special areas of interest. Offered by special arrangement. Prerequisite: Permission of department chairman.

MAS 699. Directed Study  
1-3 credits  
Offered By Announcement only  
Offered by special arrangement. Prerequisite: Permission of department chairman.

MAS 710. Master’s Thesis  
1-6 credits  
Offered By Announcement only  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MAS 720. Research in Residence  
0 credits  
Offered By Announcement only  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MAS 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MAS 725. Continuous Registration—Master’s Study  
0 credits  
Offered By Announcement only  
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

MAS 730. Doctoral Dissertation  
1-12 credits  
Offered By Announcement only  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MAS 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MAS 750. Research in Residence  
0 credits  
Offered By Announcement only  
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Marketing  

MKT 550. Marketing Internship  
1 credit  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student is individually assigned to an operating business firm or other organization to gain insight into management practice in the area of their career interest. The internship cannot be used to satisfy course requirements for marketing majors and periodic reports and conferences are required. Prerequisite: Declared Marketing or IFM major, a minimum of 3.0 GPA and permission of department chairman. May be taken only for credit/no credit.
MKT 551. Marketing Internship
1 credit
The student is individually assigned to an operating business firm or other organization to gain insight into management practice in the area of their career interest. The internship cannot be used to satisfy course requirements for marketing majors and periodic reports and conferences are required. Prerequisite: Declared Marketing or IFM major, a minimum of 3.0 GPA and permission of department chairman.

MKT 595. Topics in Marketing
1-3 credits
Topics in selected areas of Marketing. Offered By Announcement only

MKT 596. Topics in Marketing
1-3 credits
Topics in selected areas of Marketing. Offered By Announcement only

MKT 597. Topics in Marketing
1-3 credits
Topics in selected areas of Marketing. Offered By Announcement only

MKT 598. Topics in Marketing
1-3 credits
Topics in selected areas of Marketing. Offered By Announcement only

MKT 599. Directed Study
1-3 credits
Individually supervised readings or research projects. Restricted to students with superior academic records. Approval should be obtained prior to day of registration. Prerequisite: Senior standing and approval of supervising professor and department chairman. Offered Fall and Spring Semesters and First and Second Summer Sessions

MKT 601. Marketing Internship
1 credit
The internship is designed to provide marketing concentration students with a work experience that enhances material learned in the classroom. The Marketing Department will not give academic credit for any prior work experience. In addition, most sales jobs and financial service jobs including brokerage house jobs will not qualify. Although not always mandatory, we expect the intern to be partially responsible for specific projects during the term of the internship. The Marketing Internship cannot be used to satisfy an elective for the Marketing concentration. All internships need to be approved by the Marketing Department prior to their commencement. Prerequisite: MKT 640.

MKT 640. Foundations of Marketing Management
2 credits
Course introduces students to the analytical concepts and tools of marketing management. Special emphasis is placed on the relationships between marketing and overall company strategy, the development of a customer orientation, the integration of marketing throughout the organization, and the implementation of systems for planning and controlling the marketing effort. Students consider problems of consumer analysis, product planning, integrated communication, distribution, and pricing. The discovery and application of marketing management skills are developed through the use of readings, case exercises, and class discussions. Offered Fall and Spring Semesters
MKT 641. Marketing Research
2 credits
Offered Fall and Spring Semesters
The objective of the course is to allow students to understand functional analysis of consumer and market behaviors utilizing statistical tools. The course will cover topics of secondary sources of data, sampling, questionnaire design, and analysis and interpretation of data. Project and case analysis methods will be used for instruction. Prerequisite: Second year MBA status.

MKT 644. Services Marketing
2 credits
Offered Fall and Spring Semesters
Course develops skills necessary to manage companies in an increasingly service-oriented and technology-driven economy and to gain sustainable competitive advantage through delivering superior quality services. Course covers the special marketing challenges posed by the unique characteristics of services and discusses their managerial implications. The need and strategies for synergistic management of Operations, Systems, and People to satisfy customers in order to achieve marketing excellence and superior financial performance is also included. Prerequisite: Second year MBA status.

MKT 645. International Marketing
2 credits
Offered Fall and Spring Semesters
Course analyzes the theories and practice of international marketing management. Course allows students to understand markets and aid in the development of marketing plans based on the nature of national as well as international markets. Issues of globalization, standardization, intermarket segments, trading blocks, global marketing strategies, local branding, global branding in the context of customer movements, product development, pricing, distribution, communication, and segmentation in global markets are also discussed. Prerequisite: Second year MBA status.

MKT 646. Consumer Behavior
2 credits
Offered Fall and Spring Semesters
Overview of psychological and normative principles of consumer decision-making and judgment through focusing on underlying behavioral research and theory. How people process information, make decisions involving risk and uncertainty, conflicting objectives, and imperfect information is discussed. The implications of consumer behavior on marketing strategy are highlighted. Prerequisite: Second year MBA status.

MKT 647. Advertising and Communication Management
2 credits
Offered Fall and Spring Semesters
Billions of dollars are wasted every year on ineffective advertising and communication campaigns. This problem is due to an absence of a compelling strategy to serve as a foundation for developing creative executions and media plans. Course provides a balanced analysis of strategy and execution of integrated marketing communication campaigns. The effectiveness of existing and emerging communication vehicles to attain strategic marketing goals are assessed. Special emphasis is placed on advertising, sales promotions, and online communications. Current and historical campaigns are also reviewed. Course requirements include case reports, projects, and class participation. Prerequisite: Second year MBA status.

MKT 650. Strategic Marketing
2 credits
Offered Fall and Spring Semesters
Course develops the skills necessary to strategically manage business-unit level marketing activities in a multi-brand firm. This necessitates examining all marketing mix elements, R&D, financial and production considerations simultaneously in the context of the many markets, products, and services that may concern a typical firm. The emphasis is placed on understanding internal capabilities, market competitors, and customers. Market simulation exercise, cases, and readings are utilized. Prerequisite: MKT 640.
MKT 660. Foundations of Marketing Management
3 credits  Offered Fall and Spring Semesters
Marketing problems experienced by top executives are examined and fundamental problem-solving concepts are developed. Students consider problems of consumer needs, product planning, promotion, distribution and pricing. The discovery and application of marketing management skills are developed through the use of cases and a major planning project.

MKT 661. Marketing Research
3 credits  Offered Fall and Spring Semesters
Functional research in marketing management. Secondary sources of data, sampling, and questionnaire construction are covered. Project and case analysis are included. Prerequisite: MKT 660, MAS 610 or an equivalent.

MKT 662. Advanced Marketing Management
3 credits  Offered Fall Semester
Case analysis of management decisions on product policy, distribution channels, promotion, selection, control, compensation of sales force, and pricing strategy are discussed. Interrelationships of marketing and other business functions and rational decision-making is also covered. Prerequisite: MKT 660 or equivalent.

MKT 664. Advertising Management
3 credits  Offered Fall and Spring Semesters
This project-oriented course is aimed at providing students experience in researching, planning, creating, executing, and evaluating advertising plans. Prerequisite: MKT 660.

MKT 665. International Marketing
3 credits  Offered Fall and Spring Semesters
Analysis of major U.S. foreign markets, marketing policies, and techniques are discussed. Prerequisite: MKT 660.

MKT 671. Buyer Behavior
3 credits  Offered Fall and Spring Semesters
The decision-making process of buyers is examined and evaluated with reference to socio-psychological and economic factors. Market segmentation and target market selection are focal topics. Prerequisite: MKT 660 or equivalent.

MKT 672. Services Marketing
3 credits  Offered Fall and Spring Semesters
Course develops the skills necessary to manage services marketing and compete through delivering quality service. The unique characteristics of services and their managerial implications are examined. Importance of the synergistic management of operations, environment, systems and people to satisfy the customer is highlighted. Prerequisite: MKT 660.

MKT 680. Logistics and Supply Chain Management
3 credits  Offered By Announcement only
Course covers the principles of Logistics and Supply Chain Management. This includes not only the management of a single firm's distribution function, but also the management of the entire channel of distribution. Firms now manage distribution by building closer relationships with customers and suppliers. Instead of negotiating individual transactions, firms commit to long term relationships pre-specifying purchase quantities, prices, delivery times, and other services to be performed. These relationships are based on state-of-the-art technology. Students learn how these relationships are set up and managed, The standard for the course is to be at the leading edge of knowledge and practice of Logistics and Supply Chain Management. Prerequisite: MKT 660.
MKT 681. Global Logistics  
3 credits  
Offered By Announcement only  
The objective of the course is to understand the importance of logistics and supply chain management in a global economy. By establishing global supply chains, firms gain access to world markets and sources of supply. Global supply chains are unique because firms must deal with the special problems that arise when products cross borders. This includes different tax and legal environments, as well as transportation and communication infrastructures. There are also issues related to developing domestic supply chains in foreign countries and the growing opportunities generated by the growth of free trade in regional trade blocks. Prerequisite: MKT 660.

MKT 694. Electronic Commerce and Marketing  
3 credits  
Offered By Announcement only  
Course explores what is likely to happen to markets and marketing when powerful computing, information, and access to the Internet are available to consumers, intermediaries, and producers worldwide. Course utilizes industry insights, theoretical approaches, and hands-on experience to develop a framework for understanding the threats and opportunities created by the electronic revolution. Successful strategies employed by new businesses as well as responses by traditional firms are discussed. Course focuses on marketing strategy and implementation, not technology and web design. Prerequisite: MKT 660.

MKT 695. Topics in Marketing  
1-3 credits  
Offered By Announcement only  
Topics in selected areas of Marketing.

MKT 696. Topics in Marketing  
1-3 credits  
Offered By Announcement only  
Topics in selected areas of Marketing.

MKT 697. Topics in Marketing  
1-3 credits  
Offered By Announcement only  
Topics in selected areas of Marketing.

MKT 698. Topics in Marketing  
1-3 credits  
Offered By Announcement only  
Topics in selected areas of Marketing.

MKT 699. Directed Study  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

MKT 730. Doctoral Dissertation  
1-12 credits  
Offered By Announcement only  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MKT 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MKT 750. Research in Residence  
0 credits  
Offered By Announcement only  
Used to establish research in residence for the Ph.D. after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
Political Science

POL 501. Budget and Financial Management and Administration
3 credits
Role of the budget in shaping public policy; managing public revenues; budgetary theory, politics, and fiscal management. Examples from state, municipal and federal governments. Prerequisite: Advanced undergraduate or graduate standing and permission of instructor.

POL 510. Political Analysis
3 credits
Introduction to the tools used to investigate empirical questions relevant to politics, policy and public administration. Students apply statistical concepts to contemporary social phenomena. Examines the impact of minority-majority redistricting, the fairness of the butterfly ballot, and the sources of political realignment. Prerequisite: POL 211 and 212 or graduate standing.

POL 512. Advanced Political Analysis
3 credits
This course teaches students how to do social science research using the applied techniques of statistics and case study analysis while exposing them to research in the leading sub-fields of political science. Students will produce an original paper that evaluates an academic question using empirical social science evidence. Prerequisite: POL 210, 510, 380, or permission of instructor.

POL 513. Models of Politics
3 credits
Hands-on examination of the process by which quantitative and qualitative models are constructed in political science. The course focuses on the creative aspect of model building and diverse forms of theory construction. Prerequisite: POL 211, 212.

POL 520. Internship
3 credits
Offered By Announcement only
Provides advanced political science majors with an opportunity to participate in a structured, supervised internship. 25-35 page research paper required. Prerequisite: Junior or senior standing; open to political science majors only, with minimum GPA of 3.5 in the major, 3.3 overall; permission of supervising instructor and department chair.

POL 521. Public Affairs Internship
3 credits
Offered Spring Semester
Opportunity for the advanced student specializing in public administration to participate in an administrative capacity in an agency of state or local government. Periodic conferences with adviser and paper required. Prerequisite: Permission of Department Chairman.

POL 522. Introduction to Graduate Public Administration
3 credits
Offered Fall and Spring Semesters
Introduction to concepts, issues, problems, theories and process in the field of public administration and/or public management. Prerequisite: Advanced undergraduate or graduate standing and permission of instructor.

POL 523. Problems in Public and Non-Profit Management
3 credits
Offered By Announcement only
Nature of the power vested in administrative bodies and problems involved in management procedures. Special emphasis on local or non-profit administration. Prerequisite: Advanced undergraduate or graduate standing. Permission of instructor.
POL 525. Comparative Public Policy and Administration
3 credits
Offered By Announcement only
Comparison and analysis of the organizational and managerial policy problems of
developed and developing nations. The administrative process will be considered
within the institutional and cultural framework of each nation. Case studies will be
used to focus on transition from traditional to modern techniques of public
management. Prerequisite: Permission of instructor.

POL 528. Advanced Seminar on Electoral Behavior
3 credits
This seminar examines the opinions that Americans have and how those opinions
are expressed through participation in elections. At the end of the semester we
will also examine other forms of political participation (e.g., interest groups).
Prerequisite: POL 211.

POL 531. Global Environmental Politics
3 credits
Offered By Announcement only
Examination of the environment within the context of economic globalization.
Contrasts the international trading regime and those regimes designed to protect
the environment, with specific attention to the issues of global warming and
bio-diversity. Prerequisite: POL 211 and 212.

POL 533. Courts and Controversy
3 credits
Offered By Announcement only
Course places the students in the role of advocate, justice, or court observer for
the purposes of arguing and deciding current or recent Supreme Court cases.
Prerequisite: POL 211 and 212. POL 373 and 374 strongly suggested.

POL 534. War Crimes Tribunals
3 credits
Offered By Announcement only
Focus on various legal regimes utilized to prosecute grave human rights
violations. The trials are considered in a comparative framework. Trials and
tribunals systems studied will include the historical antecedents to Nuremburg,
the post WWII trials, single state tribunals including those in South Africa and
Argentina, and international structures such as the ICTR, ICTY, and ICC. Will also
consider the role of war crimes tribunals in modern wars such as in Iraq and
Afghanistan and in response to terrorism, and the political role of these legal
regimes as well as the implications of their institutional designs. Readings,
lectures, class discussions, and examinations will familiarize the students with the
parameters and limitations as well as the policies and practice of war crimes
tribunals and human rights law. Prerequisite: POL 211 and 212 or graduate
standing.

POL 535. Comparative Legal Systems
3 credits
Offered Fall and Spring Semesters
Considers the institutional and political roles of Courts from a comparative
perspective. With a focus on judicial independence and judicial review, will
consider the juridical systems of a variety of countries and regions including the
US, the EU, Germany, France, Great Britain, Chile, Argentina, Russia, The
Asian-Pacific Rim, South Africa, Israel, Central America and the Middle East.
Prerequisite: POL 211 and 212 or graduate standing.

3 credits
This seminar will explore the politics and policies of healthcare in the United
States. Our examination of the current crisis in cost and coverage will draw on
experience from the debates on comprehensive and incremental reform over the
past decade. In addition, we will explore the politics and policies of other health
and science issues. Students will be expected to attend every class and be actively
involved in class discussions. There will be two examinations, one at mid-term and
a final based on readings and course discussions.
POL 537. The Law and Politics of Sports
3 credits
Offered By Announcement only
Focuses on the political and policy issues that are endemic in the world of sport. Considers the role of sports in law and politics, and the implications of the politics and policies present in the sports industry from the perspective of the individual, local government, national policymakers, the international community, and non-governmental actors. Readings, lectures, class discussions, and examinations will familiarize the students with the politics, policy and practice of the law of sports. Prerequisite: POL 211 and 212.

POL 540. Problems in American Foreign Policy
3 credits
Offered By Announcement only
Development and analysis of American foreign policies since World War II. Focus on origins of the cold war; U.S. relations with aligned and non-aligned states; the U.S. and the United Nations. Analysis of integrative and doctrinal American policies of strategic security, economic, and information/propaganda. Prerequisite: POL 211 and 212 or graduate standing.

POL 541. Philosophy of Law
3 credits
Offered By Announcement only
Case-based study of jurisprudence designed to illuminate and explain philosophies of law. Examination of theories of free expression; bioethical matters; theories of punishment and legal responsibility; and the placement of religious discourses in liberal systems of law. Special attention to cases involving fundamental rights and liberties; the role of the individual and the state in civil society; and the capacities of individual to be legally competent in contemporary systems of law. Prerequisite: POL 211 and 212 or graduate standing.

POL 542. American Constitutional Development II
3 credits
Offered By Announcement only
This seminar examines the judicial role in protecting civil rights and liberties under the Constitution, with principal attention to the Supreme Court’s interpretation of due process of law, the right of privacy, First Amendment freedoms, and equal protection. Prerequisite: POL 211 and 212.

POL 543. Urban Politics
3 credits
Offered Fall Semester
Examination of sources of political power in urban areas and how they influence the policies pursued in those areas. Analysis of the role of economic power, protest actions, neighborhood groups, and voting to evaluate whether there is a bias in urban politics that systematically favors some groups over other and, if so, how likely it is that the bias can be overcome. Prerequisite: POL 211 and 212 or graduate standing.

POL 544. Chinese Foreign Policy
3 credits
Offered Fall Semester
International relations of the People’s Republic of China, in theory and in practice. Structure and context of foreign policy decision-making; domestic influences on the foreign policy making process. China as a global and regional actor. Prerequisite: POL 211, 212 or HIS 121 or 122 or permission of instructor.

POL 545. Environmental Policymaking
3 credits
Offered Spring Semester
Examination of different ethical approaches to the environment; the federal government’s management of natural resources; selected environmental policies; international environmental policy issues. Topics include federal management of national grazing lands, national forests, and minerals in the public domain. Analyzes environmental policies such as air, water, toxic wastes, energy, and environmentally-related issues in international trade and national security. Prerequisite: POL 211 and 212.
POL 546. Public Policy
3 credits
Analysis of American federal policy formulation and implementation processes; roles of congress, the executive branch, and the supreme court, interest groups, public opinion, voting, and political parties in the formulation of policy. Addresses economic, social and environmental policies. Considers the causes and consequences of public policy and the extent in which the policy formulation process is democratic. Prerequisite: POL 211 and 212.

POL 547. Congressional Representation
3 credits
This course examines how and when citizens influence legislators’ behavior. More specifically, we examine how legislators’ floor behavior reflects citizens’ preferences and how these preferences influence the manner in which legislators build electoral coalitions. Prerequisite: POL 211, 212.

POL 548. Civic Participation and Democracy
3 credits
Citizens participate in the governing process by communicating their preferences and pressuring the government to respond. In this course we examine these various mechanisms of “civic participation”, and discuss the meaning and consequences of participatory democracy. The course focuses on the contemporary United States, but we will devote some time to discuss civic participation in other countries as well. Prerequisite: POL 211, 212.

POL 551. Productivity in the Public and Non-Profit Sectors
3 credits
Definitions and measures of productivity. Evaluation of government programs, and methods of productivity improvement. Prerequisite: POL 211 and 212 or graduate standing.

POL 552. Politics and Group Perspectives
3 credits
Theory, methods and case studies emphasizing scientific analysis of the relations among group perspectives, communications systems and public policies. Prerequisite: Permission of instructor.

POL 553. The Environmental Movement: Groups, Beliefs and Values
3 credits
Exploration of the origins and political impact of environmentalism in the United States and, to a lesser extent, in the global context. Impact of democratic participation on environmental politics. Prerequisite: POL 211 and 212 or graduate standing.

POL 554. Social Welfare Policy
3 credits
Examination of major domestic policy issues in the United States, including poverty, housing, homelessness, education, and crime. Analysis of the different definitions of the underlying problem or different causes of each issue. Particular stress is on how those definitions determine the type of policy solution needed and the conflict in policy recommendations that occur because of the different problem definitions. Prerequisite: POL 211 and 212 or graduate standing.

POL 555. Total Quality Public Service Management: Achieving High Performance Government
3 credits
Examination of the theory and practice of Total Quality Management (TQM) in the government and non-profit sector. Focuses on budgetary, customer service, employee and process improvements that facilitate increased public and non-profit performance. Special emphasis to TQM’s contribution to improved service delivery. Prerequisite: POL 211 and 212 or graduate standing.
POL 563. **Senior Honors Course (I)**  
3 credits  
*Offered Fall and Spring Semesters*  
General reading, preparation of research design and collection of information. Open to senior political science majors in the General Honors Program and to those seniors with a 3.5 average in political science and a 3.3 overall average. Prerequisite: POL 211 and 212.

POL 564. **Senior Honors Course (II)**  
3 credits  
*Offered Fall and Spring Semesters*  
Continuation of POL 563: writing and defense of the thesis. Open to senior political science majors in the General Honors Program and to those seniors who have 3.5 average in political science and a 3.3 overall average. Prerequisite: POL 211, 212, and 563.

POL 569. **Politics, Law and Sexual Identity**  
3 credits  
Course will consider sexual politics by looking in depth at several issues including restrictions on marriage, adoption, employment, military service, housing, and intimacy based on sexuality and/or gender identity. For each issue, it will be considered how the debate is constructed by politicians, academics, the media, GLBT activist organizations and law/legal theory. Consider the state and national politics at work within these issues. Also consider the topics from a comparative view as well as address the international implications arising out of that comparative consideration. In general, the goal is to learn about the current state of the politics of sexual identity in the United States and abroad. Moreover, engage frameworks through which politics might be assessed and determine the generalizability of the logics of politics. Prerequisite: POL 211 and 212. POL 373 and 374 recommended.

POL 580. **The Politics of Post-Communist Transitions**  
3 credits  
*Offered By Announcement only*  
Examination of the creation, breakdown, and aftermath of communist governments in Eastern Europe and the Soviet Union. Using empirical evidence from four case studies, develops a theoretical framework for understanding cross-national patterns of post-communist development in the context of country-specific experiences. Prerequisite: POL 211 and 212 or graduate standing.

POL 581. **Comparative Political Economy of Post-Industrial Democracies**  
3 credits  
*Offered Fall Semester*  
This seminar examines four key turning points in the development of capitalism: the industrial revolution, the aftermath of the depression and world wars, the oil crisis of the 1970’s, and today’s “globalization”. We will compare the relationships between government and the economy in Western Europe, Canada, the U.S., Australia, New Zealand, and Japan in each period, and attempt to evaluate why these countries react similarly or differently to identical changes in world economy. Prerequisite: POL 211, 212.

POL 582. **Political Economy of Latin American Development**  
3 credits  
*Offered By Announcement only*  
Overview of the principal theoretical paradigms of the development process in the Latin American context. Comparative analysis of issues such as the role of the state, strategies of industrialization, changes in social structure, basic needs and the trade-offs between growth and equity. Prerequisite: POL 211 and 212 or graduate standing.
POL 584. Contemporary Latin American Politics
3 credits
Critical examination of selected topics of current interest such as the transition from authoritarianism to democracy, revolutionary movements, religion and politics, and politics of the debt crisis, from a comparative perspective. Prerequisite: POL 211 and 212 or graduate standing.

POL 585. Political Movements in Latin America
3 credits
Exploration of the various forms of political movements in Latin America, including parties, populists and radical groups. Examines diverse means of organizing and mobilizing support, the range of goals sought, and the conditions that give rise to the various movements. Special attention to the contemporary revival of populism in the region and its implications for democracy. Prerequisite: POL 211 and 212 or graduate standing.

POL 586. Conflict in the Middle East and Africa
3 credits
Introduction to major paradigms for the explanation of war and conflict in two of the most unstable regions of the world. Reading and class discussions on select cases of current and past conflicts in each region in order to discern patterns of conflict within and across regions, gain a clearer understanding of what drives violent conflict, and assess strategies of resolution. Prerequisite: POL 211, 212.

POL 588. Politics in China
3 credits
Development and nature of Chinese domestic politics in theory and practice; problems of political stability and conflict; the role of historical and cultural traditions, institutions, social, economic and personality factors in Chinese politics; process of change and problems of leadership succession; the significance of changes in the character and style of Chinese leadership. Prerequisite: POL 211 and 212 or HIS 121 or 122 or graduate standing.

POL 591. Problems in International Politics and Organization
3 credits
Analysis and evaluation of approaches to international conflict, resolution, reduction and stabilization such as international organization, law, collective security, balance of power, functionalism, world government, morality, and conscience. Special emphasis on recent problems and efforts at institutionalizing social control. Prerequisite: POL 211 and 212 or graduate standing.

POL 592. International Political Economy
3 credits
This course provides an analysis of the changing trade and financial structures of the international economy and the differing approaches that developed and developing states have taken in adapting to them. Special emphasis will be placed on the political implications of economic strategies, the challenges and opportunities posed by the increasingly free mobility of capital and goods across borders, and the ability of states to shape domestic economic outcomes. Prerequisite: POL 211, 212.

POL 593. International Relations of the Middle East
3 credits
Regional and interregional analysis of the foreign relations of Middle Eastern nations, domestic and geopolitical factors. Prerequisite: POL 211, 212, 387 or 391 or graduate standing.
POL 595. North-South Relations
3 credits
Offered By Announcement only
Explores conflict and cooperation between the world’s wealthier and poorer countries. Topics include competing approaches to North-South issues; colonialism; foreign aid and economic development; multinational corporations; international debt; trade in manufactures and raw materials; the rise of industrialized countries in Southeast Asia; U.S. relations with, and influence in, the Third World. Prerequisite: POL 211 and 212 or graduate standing.

POL 599. Special Topics
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

POL 601. Seminar in Political Theory
3 credits
Offered By Announcement only

POL 602. Seminar in Public Law
3 credits
Offered By Announcement only

POL 603. Seminar in the Political Process
3 credits
Offered By Announcement only

POL 604. Seminar in International Law and Relations
3 credits
Offered By Announcement only

POL 605. Seminar in Comparative Government
3 credits
Offered By Announcement only

POL 606. Seminar in Administration
3 credits
Offered Spring Semester
Examination of theory and behavior in public and nonprofit organizations. Focus on the importance of understanding the behavior, motivations, and actions of individuals in public service and on the distinctiveness of management and leadership in public organizations.

POL 607. Seminar in U.S. Government
3 credits
Offered By Announcement only

POL 621. Group Structure, Group Process and Organizational Change in Criminal Justice Institutions
3 credits
Offered By Announcement only
Measurement of the institutional climate of criminal justice institutions, strategies for change; relationships between the organizational structure and outcomes.

POL 643. Seminar on Urban Development Policy
3 credits
Offered By Announcement only
The course will employ a problem approach to selected policy issues, ranging from interdisciplinary theories of urbanization in conjunction with politico-educational to scientific-technological developments. Consideration will be given to appropriate research techniques, field work and case studies of public action for guiding urban development, including intergovernmental relations and national urban policy. Prerequisite: Permission of instructor.

POL 644. Seminar on Urban Development Policy
3 credits
Offered By Announcement only
Continuation of POL 643. Prerequisite: POL 643 or permission of instructor.
POL 646. Public Policy Analysis and Administration
3 credits  
Examination of public policy issue areas including education, health, welfare, urban mass transit. Limits to effectiveness of federal, state and local governments in providing services. Techniques for analyzing the effectiveness of public policies; research techniques for the assessment of future policy alternatives. Prerequisite: Permission of instructor.

POL 647. Personnel Administration
3 credits  
Modern personnel administration: job analysis and design, evaluation and appraisal, recruitment and interviewing, training and development, wages and benefits, and health and safety. Unionization, regulation of wages, hours and working conditions, financial security for workers, and job anti-discrimination legislation. Manpower planning. Prerequisite: Permission of instructor.

POL 648. Community Participation and Organization
3 credits  
Examination of citizen participation in administrative affairs of governmental organizations and its impact on the efficiency of public agencies. Prerequisite: Permission of instructor.

POL 652. Public Sector Collective Bargaining and Labor-Management Relations
3 credits  

POL 653. Seminar in Public Sector Personnel Problems
3 credits  
Human resource planning, performance, evaluation, recruitment and staffing, training and development, motivation, and personnel management. A workshop utilizing simulation, games, role playing and other skill building devices. Prerequisite: MGT 602 and permission of instructor.

POL 655. Public Policy and Health
3 credits  
Development of public policy at the federal, state and local level. Policy process, models of policy analysis, policy development in several government service areas, and plans for policy change. Special emphasis on health policy formulation, implementation and the use of epidemiological tools in health policy analysis. Prerequisite: Permission of instructor.

POL 656. Public Service Internship
3 credits  
Individual on-the-job work experience; arranged and monitored by a faculty member. Prerequisite: Permission of instructor.

POL 671. Political Environment of Business
3 credits  
Examines government-business-society relations with emphasis on the social, economic, political, technological, ethical, and ecological environment.
POL 672. Program Planning, Research and Evaluation in Criminal Justice and Corrections, I
3 credits  Offered By Announcement only
Identification of long-term goals and intermediate objectives in the criminal justice process. Formulation of operations, evaluation techniques and the relationships among research, evaluation and management decisions. Prerequisite: Graduate standing.

POL 673. Program Planning, Research and Evaluation in Criminal Justice and Corrections, II
3 credits  Offered By Announcement only
Continuation of POL 672. Topics include types of evaluation and the design of evaluative studies. POL 672 and POL 673 are designed to facilitate the formulation and execution of a thesis. Prerequisite: POL 672 or permission of instructor.

POL 681. Seminar: Political Dynamics in Communist China
3 credits  Offered By Announcement only

POL 683. Seminar: Topics in the Comparative Study of the Foreign Policy of China
3 credits  Offered By Announcement only

POL 685. Seminar in the Dynamics of Soviet Society
3 credits  Offered By Announcement only
Forces and factors that shape and continue to influence the development of social, political and economic institutions in the Former Soviet Union and their evolving role in decision making.

POL 690. Topics in Urban Studies
3 credits  Offered By Announcement only

POL 691. International Relations
3 credits  Offered By Announcement only
Principles of international relations. Theories of relations among states; founding of the state system; implications of sovereignty. International conflict and cooperation; international law. International political economy; trade flows; the role of multinational corporations. North-South relations and global environmental considerations. Prerequisite: MBA status.

POL 698. Selected Topics
3 credits  Offered By Announcement only
Topics in selected areas of specialization.

POL 699. Directed Readings
1-3 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions

POL 710. Master’s Thesis
3 credits  Offered By Announcement only
Designed for student working on masters’ theses. Not to exceed six credit hours, as determined by student’s advisor. Credit is not awarded until the thesis has been accepted.

POL 720. Research in Residence
0 credits  Offered By Announcement only
Research in residence for thesis or master’s degree after the student has enrolled for the permissible cumulative total in POL 710 (usually six credits). Credit not granted; regarded as full time residence.
POL 725. Continuous Registration—Master’s Study
0 credits
Offered By Announcement only
Establishes residence for non-thesis master’s students who are preparing for major examinations. Credit not granted; regarded as full time residence.
Course Listing

**Communication**

**COM 598. Special Topics in Communication**
3 credits  
Offered By Announcement only  
Prerequisite: 12 credits in Communication at 300 level or above or equivalent.

**COM 601. Theories of Communication**
3 credits  
Offered Fall Semester  
Comparison of theories dealing with the processes and effects of communication is discussed.

**COM 602. Methods of Communication Research**
3 credits  
Offered Fall Semester  
Prerequisite: COM 601 or permission of instructor.

**COM 603. Qualitative Research Methodologies**
3 credits  
Offered Spring Semester  
Research methods and theories for participant-observation, phenomenology, symbolic interactionism, ethnmethodology, content analysis, and historical-critical interpretation.

**COM 604. Advanced Communication Research Methods and Statistics**
3 credits  
Offered By Announcement only  
Provides an advanced examination of the problems and methods found in quantitative communication research. Prerequisite: COM 601 and 602.

**COM 609. Special Topics in Communication**
3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor.

**COM 610. Doctoral Colloquium**
0 credits  
Offered Fall Semester  
This course will introduce students to the nature and scope of doctoral study.

**COM 613. History of Communication**
3 credits  
Offered Fall and Spring Semesters  
Course will cover the historical analysis of the entire field of communication (interpersonal, intercultural, mass, etc.) from the pre-Aristotle period to the present.

**COM 615. Social Effects of Mass Communication**
3 credits  
Offered Fall Semester  
Roles, functions, and consequences of mass communication in American society. Prerequisite: COM 601.

**COM 672. Seminar in Persuasive Communication**
3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor.

**COM 695. Directed Readings**
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Prerequisite: Permission of instructor.

**COM 698. Seminar in Communication**
3 credits  
Offered Fall and Spring Semesters  
An in-depth, hands-on course in which students conduct a research project using the specified research method. May include experimental design, advanced qualitative methods, content analysis, or survey methods. Repeatable up to 6 credits. Prerequisite: COM 602, 603.
COM 710. Master’s Thesis
1-6 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

COM 720. Research in Residence
0 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in COM 710 (usually six credits). Credit not granted. May be regarded as full time residence.

COM 725. Continuous Registration—Master’s Study
0 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

COM 730. Doctoral Dissertation
1-12 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor, but for not less than a total of 12 hours.

COM 750. Research in Residence
0 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Communication: Advertising and Public Relations

CAP 512. Public Opinion and Mass Communication
3 credits  Offered By Announcement only
An exploration of the formation and role of public opinion in mass communication. Emphasis is placed on its role in advertising and public relations. Theories of public opinion in American culture, their application in attitude formation, and research methodologies are examined. Prerequisite: Junior standing; permission of instructor.

CAP 582. International Advertising and Public Relations
3 credits  Offered Fall Semester
History, theory, and practice of advertising and public relations in a global, multi-cultural environment. Prerequisite: Admission to major; senior standing; permission of instructor and program director.

CAP 583. Integrated Communications: Perspectives in Advertising and Public Relations
3 credits  Offered Fall Semester
Analysis and application of an integrated communications approach in the fields of advertising and public relations. Prerequisite: Admission to major; senior standing; permission of instructor and Program Director.

CAP 584. Advertising/Public Relations Management
3 credits  Offered Spring Semester
Principles and practice of advertising and public relations management in a variety of contexts, including agency, consultancy, corporate, and nonprofit. Prerequisite: Admission to major; senior standing; permission of instructor.
CAP 590. Special Topics: in Advertising and Public Relations  
3 credits  
Prerequisite: Senior standing; admission to the major, permission of instructor and program director. 

CAP 599. Advanced Projects and Directed Research  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual study. Course may be repeated to a maximum of six credits. Prerequisite: Admission to major; Senior standing; permission of supervising instructor and Program Director. 

CAP 620. Public Relations Fundamentals  
3 credits  
Offered Fall Semester  
A seminar to explore the theories and methodologies of public relations encompassing writing, principles, and campaigns. Prerequisite: Graduate students: permission of instructor. 

CAP 625. Seminar in Public Relations Administration  
3 credits  
Offered Spring Semester  
Course analyzes organizational principles, internal budgeting, and evaluation of public relations departments and counseling firms. Prerequisite: Permission of instructor. 

CAP 629. Public Relations Seminar: Fundraising in the Not-for-Profit Sector  
3 credits  
Offered By Announcement only  
A seminar to identify and discuss the role of fundraising in the non-for-profit sector. Prerequisite: COM 601 and 602 or 603. 

CAP 632. Seminar in Public Relations and Political Campaigns  
3 credits  
Offered By Announcement only  
A seminar to examine the role of Public Relations in American political campaigns. Prerequisite: COM 601 and 602 or 603. 

CAP 633. Seminar in Public Relations: Lobbying and Pressure Groups  
3 credits  
Offered By Announcement only  
A seminar to focus on public relations by lobby groups, pressure groups, and corporate institutions. Prerequisite: COM 601 and 602 or 603. 

CAP 634. Seminar in Public Relations: Non-profit Groups and Governmental Institutions  
3 credits  
Offered By Announcement only  
A Public Relations seminar that focuses on non-profit organizations and governmental institutions. Prerequisite: COM 601 and 602 or 603. 

CAP 644. Seminar in Public Relations Ethics  
3 credits  
Offered By Announcement only  
To explore through readings, discussion, and research contemporary ethical issues in public relations. Prerequisite: COM 601 and 602 or 603. 

CAP 690. Public Relations Practicum I  
3 credits  
Offered Fall and Spring Semesters  
Professional functions related to public relations requirements in a professional environment acting as an account executive. Prerequisite: COM 601, 602 or 603; 12 hours in Public Relations sequence; Permission of instructor and director.
Communication: Broadcasting and Broadcast Journalism

CBR 531. Audio Production Techniques
3 credits  Offered By Announcement only
Writing, preparation, and production of material for auditory presentation, live or recorded, broadcast on open or closed circuit radio systems. Familiarization with magnetic and optical recording procedures, both double and single system sound, in television and motion picture production is discussed. Lecture and laboratory are included. Prerequisite: Permission.

CBR 534. Practicum in Communication
3 credits  Offered By Announcement only
Media utilization in specific communications projects. Emphasis is placed on incorporating film, video tape, sound recording, and live presentations in cohesive communication programs. Each student will be expected to design and execute such a program in his/her major field of interest. Discussion and laboratory are included. Prerequisite: Permission of instructor.

CBR 535. Telecommunication Systems
3 credits  Offered By Announcement only
The convergence and interrelationship of broadcast, cable, satellite, telephone, computer, and other telecommunication technologies and industries, with emphasis on policy, effects, regulation, economics, management, and information content. Prerequisite: Graduate or Undergraduate senior standing and permission of instructor.

CBR 592. Special Topics in Broadcasting
3 credits  Offered By Announcement only
Prerequisite: Permission of instructor and program director.

CBR 599. Advanced Projects and Directed Research
1-6 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual study. Course may be repeated to a maximum of six credits. Prerequisite: Permission of supervising instructor.

CBR 606. Broadcast Journalism
3 credits  Offered Fall Semester
An introduction to professional operating practices in electronic journalism with emphasis on news writing and news production skills. Prerequisite: Permission of instructor.

CBR 607. Broadcast Journalism II
3 credits  Offered Spring Semester
Advanced instruction in techniques of news writing and field reporting, including conducting research for stories, preparing complete field packages for newscasts, filing live remotes, and conducting interviews. Prerequisite: Permission of instructor.

CBR 608. Long-Form Public Affairs Programming
3 credits  Offered By Announcement only
Development and production of longer form news, information magazine, and documentary style programming. Prerequisite: Permission of instructor.

CBR 630. Topics in Electronic Communication
3 credits  Offered By Announcement only
Prerequisite: Permission of instructor.

CBR 635. The Broadcasting and Cable Industry
3 credits  Offered Spring Semester
Examination of broadcasting, cable, and related electronic media from a business perspective. Prerequisite: Permission of instructor.
CBR 641. **Information Processing for Video-Audio Systems**

3 credits  
Offered By Announcement only  
Use of non-print media, by corporate, social, political, and educational institutions to convey information to internal and external audiences. Prerequisite: Permission of instructor.

CBR 643. **Managing Video-Audio Information Systems**

3 credits  
Offered By Announcement only  
The management of non-print media systems within corporate, social, political, and educational institutions. Prerequisite: Permission of instructor.

CBR 653. **Producing Television News**

1-3 credits  
Offered Fall and Spring Semesters and First Summer Session  
This course deals with the mechanics of planning and executing professional style newscast and/or long-form television news program. Prerequisite: Concurrent enrollment in CBR 606, 607 or 608.

**Communication: Journalism**

CNJ 510. **International Mass Communication**

3 credits  
Offered By Announcement only  
This course deals with issues in international news gathering and distribution, giving special attention to Latin America and the Caribbean. The class takes a comparative approach, looking at media systems in the United States and other nations. Prerequisite: Senior or graduate standing. Six credits in Communication or Latin American studies.

CNJ 513. **Computer-Assisted Reporting**

3 credits  
Offered By Announcement only  
Use of computer applications for newsgathering with emphasis on the World Wide Web, commercial online services, and database tools. Prerequisite: CNJ 111 and 216 or instructor’s permission.

CNJ 515. **Reporting and the Internet**

3 credits  
Offered By Announcement only  
Overview of uses of online computer services for newsgathering and distribution with emphasis on the Internet. Prerequisite: CNJ 111 and 216 or instructor’s permission.

CNJ 523. **Sports Reporting**

3 credits  
Offered By Announcement only  
An analysis of sports journalism that will develop students’ skills in sports reporting and sports writing. Discussions range across the entire field of sports reporting, including broadcasting, but the greatest emphasis is concentrated on sports reporting and writing for newspapers and magazines. Prerequisite: CNJ 111, 216 or instructor’s permission.

CNJ 544. **Feature Writing**

3 credits  
Offered By Announcement only  
Analyzing and writing feature articles for magazines, newspapers, and other news media. Prerequisite: CNJ 216.

CNJ 595. **Special Topics in Journalism**

3 credits  
Offered By Announcement only  
Prerequisite: Permission of instructor and program director.

CNJ 599. **Advanced Projects and Directed Research**

1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual study. Course may be repeated to a maximum of six credits. Prerequisite: Permission of supervising instructor.
CNJ 611. Newswriting and Reporting Seminar  
3 credits  
Offered Fall Semester  
Development of newswriting and reporting skills for news media.

CNJ 612. History of Journalism Seminar  
3 credits  
Offered By Announcement only  
The development and impact of journalism in America traced through industry leaders and events.

CNJ 614. Media Law and Regulation  
3 credits  
Offered By Announcement only  
Selected problems and legal research concerning First Amendment theories involving libel, privacy, privilege, freedom of information, free press versus fair trial, access to the media, pornography, copyright, and broadcasting.

CNJ 617. International Journalism  
3 credits  
Offered By Announcement only  
News gathering, transmission, and distribution outside the United States, with emphasis on Latin America is discussed. Prerequisite: COM 601.

CNJ 619. Advanced Newsgathering and Writing Seminar  
3 credits  
Offered Spring Semester  
Refining news writing and reporting skills for the media. Prerequisite: CNJ 611.

CNJ 622. Seminar in News Ethics and Problems  
3 credits  
Offered By Announcement only  
Critical analysis of ethical issues and problems facing practicing journalists. Discussion of differences in philosophical ethics and practical ethics in journalism. Prerequisite: CNJ 611.

CNJ 624. Editing and Layout Seminar  
3 credits  
Offered By Announcement only  
Theory and practice in news media copy editing, layout, and design. Prerequisite: CNJ 611.

CNJ 626. Specialized Writing and Reporting Seminar  
3 credits  
Offered By Announcement only  
Techniques in writing and reporting about specialized and complex subjects for news media. Prerequisite: CNJ 611.

CNJ 654. Writing for Publication  
1-3 credits  
Offered Fall and Spring Semesters and First Summer Session  
This course focuses on writing principles and practices of the news media. It is designed to give the student exposure and practical experience in writing for the print media. Prerequisite: Concurrent enrollment in CNJ 611, 619.

Communication: Motion Pictures

CMP 503. Film Directors  
3 credits  
Offered Fall Semester  
This course will address the conditions of authorship in film through an intensive study of the films of two or more directors, whose careers will serve as case studies. These directors will be historically important and their work will represent significant achievements in the art of film. Prerequisite: CMP 204 and 205. Non-majors and graduate students by permission of instructor.

CMP 504. Aspects of Contemporary Cinema  
3 credits  
Offered Spring Semester  
The study of the ways in which film communicates. Intensive analysis and criticism of cinematic techniques exemplified through particular films. Prerequisite: Junior standing; CMP 204 or 205; non-majors by permission of program director.
CMP 506. American Movie Genres  
**3 credits**  
*Offered Fall Semester*  
A study of selected movie genres from a variety of critical perspectives. Issues pertaining to selfhood, sexual difference, and other concerns of present-day film criticism will be examined. Prerequisite: CMP 204 and 205. Non-majors by permission of instructor.

CMP 507. Film, Society, and Culture  
**3 credits**  
*Offered Spring Semester*  
Selected films from Europe, Asia, Africa and Latin America will be studied in relation to their diverse social/political and cultural contexts. Prerequisite: CMP 204 and 205. Non-majors by permission of instructor.

CMP 509. Legal Aspects of Motion Pictures  
**3 credits**  
*Offered Spring Semester*  
The law, contracts, and negotiating techniques of the business affairs aspects of the production of motion pictures. Prerequisite: Motion Picture graduate or senior undergraduate standing. Non-Motion Picture graduates or undergraduates by written permission of the Director of the Motion Picture Program.

CMP 529. Nonfiction Film  
**3 credits**  
*Offered Fall and Spring Semesters*  
An examination of American and world nonfiction films. Prerequisite: CMP 204 and 205. Non-majors by permission of instructor.

CMP 551. Animation and Motion Graphics  
**3 credits**  
*Offered Spring Semester*  
Historical and contemporary techniques. Prerequisite: Advanced standing and permission of instructor for non-majors.

CMP 552. Motion Picture Marketing and Distribution  
**3 credits**  
*Offered Fall and Spring Semesters*  
Economic and marketing considerations in the production and distribution of motion pictures. Prerequisite: Junior standing and 12 Communication-Motion Pictures credits.

CMP 553. Advanced Motion Picture Marketing  
**3 credits**  
*Offered Fall and Spring Semesters*  
Advanced marketing considerations in the distribution of motion pictures. Prerequisite: Junior standing and CMP 552.

CMP 555. Producing the Motion Picture  
**3 credits**  
*Offered Fall Semester*  
A practical examination of the development, production, and marketing responsibilities involved in producing theatrical feature films. Focus is placed on the processes involved including the ethical considerations that confront the producer. Prerequisite: Junior standing and 12 CMP credits.

CMP 558. Documentary Production  
**3 credits**  
*Offered By Announcement only*  
An introduction to the documentary genre including the production of a documentary from start to finish. Prerequisite: CMP 103, 222, 204 or 205 for undergraduates; permission of instructor for graduate students.

CMP 565. The Structure of Dramatic Art  
**3 credits**  
*Offered By Announcement only*  
An investigation into structural forms widely employed by screenwriters with emphasis on Syd Field’s three-act paradigm and Joseph Campbell’s hero monomyth. Prerequisite: MFA Screenwriting status or CMP 126 and 326.
CMP 566. Character and Dialogue
3 credits
An examination of the craft and techniques of creating original characters and dialogue. Prerequisite: MFA Screenwriting status or CMP 126 and 326.

CMP 594. Special Topics in Motion Picture
3 credits
Offered By Announcement only
Prerequisite: Permission of instructor.

CMP 599. Advanced Projects and Directed Research
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual study. May be repeated to a maximum of six credits. Prerequisite: Permission of supervising instructor.

CMP 605. Production Management
3 credits
Offered Spring Semester
A comprehensive examination of the skills and techniques employed by line producers and production managers in the preproduction, production, and post-production of motion pictures.

CMP 627. Scriptwriting
3 credits
Offered Fall Semester
Study of and practice in writing feature-length, narrative motion picture scripts. Focus is placed on cinematic structure and presentation of character. Prerequisite: CMP 227 or approved equivalent. (Students who have not taken an approved equivalent course must attend the first half of CMP 227.)

CMP 628. Rewriting the Screenplay
3 credits
Offered By Announcement only
The preparation for and completion of the rewrite of a feature-length screenplay. Prerequisite: CMP 627.

CMP 637. Motion Picture Workshop I
3 credits
Offered By Announcement only
A course designed to provide an understanding and appreciation of the technical, aesthetic, and theoretical aspects of filmmaking. The use of lectures, laboratory, and demonstration to develop an awareness of the nature of film production is included. Prerequisite: Limited to MFA screenwriting candidates.

CMP 638. Writing the Short Film
3 credits
Offered Fall Semester
A course in the fundamentals of screenwriting focused on the creation of a 15-30 page screenplay suitable for an MFA project film. Prerequisite: Limited to MFA production candidates.

CMP 639. Writing for Series Television
3 credits
Offered By Announcement only
Advanced examination of the techniques and elements of television writing. Focus is placed upon both the situation comedy and the dramatic series. Prerequisite: CMP 627.

CMP 640. Exhibition and Programming
3 credits
Offered By Announcement only
An historical examination of the theatrical exhibition of motion pictures. Focus is placed on contemporary business practices within the exhibition industry, with particular attention to a definition of good programming practices.
CMP 645. Analysis of the Screenplay  
3 credits  
Offered Fall Semester  
An examination of the narrative structure and character development of selected screenplays. Focus is placed on the screenplay’s contribution to both the finished film and the process employed to arrive at the finished film.

CMP 650. Analysis of Cinematic Styles  
3 credits  
Offered By Announcement only  
A concentration on four distinctive film directors and their work. Utilization of techniques from film theory, film criticism, and film history to arrive at a definition of their unique cinematic styles.

CMP 651. Cinematography  
3 credits  
Offered Fall Semester  
Aesthetic and technical aspects of motion picture photography including color, black and white, silent, and synchronous sound techniques. Prerequisite: Permission of instructor.

CMP 652. Advanced Cinematography  
3 credits  
Offered Spring Semester  
Advanced technical and photographic principles begun in CMP 651. Preparation for the filming of the MFA project film. Prerequisite: CMP 651.

CMP 656. Motion Picture Post-Production Procedures  
3 credits  
Offered Fall Semester  
An examination of the esthetics of editing, recording, re-recording, and laboratory procedures following completion of principal photography. Prerequisite: Limited to MFA production candidates.

CMP 661. Directing the Film  
3 credits  
Offered Fall and Spring Semesters  
Directorial techniques and methods in the narrative film: conceptualizing scripted material, staging, and directing the performer. Prerequisite: CMP 451.

CMP 666. Film Culture I  
3 credits  
Offered Fall Semester  
An introductory immersion in the culture, history, and theory of cinema. Prerequisite: Permission of instructor.

CMP 667. Film Culture II  
3 credits  
Offered Spring Semester  
Readings in classical and contemporary film theory, with critical analysis of current as well as historically significant movies representing a diversity of cinematic traditions. Prerequisite: CMP 666.

CMP 734. MFA Project - Production  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Film production in which the student functions as a minimum, in the capacity of a producer, director, or a screenwriter. Course may be repeated to a maximum of six credits.

CMP 736. MFA Project - Screenwriting  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The writing and re-writing of a full-length narrative film screenplay. Course may be repeated to a maximum of six credits.
Communication Studies

COS 545. Intercultural Communication: International Perspectives  
3 credits  
Effects of cultural attitudes, beliefs, and attributions on meaning assignment. Effects of language on the structure of thought.Ethics and process of the diffusion of cultural innovations are analyzed. Prerequisite: Junior standing or permission of instructor.

COS 546. Intercultural Communication: Domestic Perspectives  
3 credits  
Effects of cultural attitudes, beliefs, and attributions on meaning assignment. Diffusion of cultural innovations, prejudice, discrimination, and equality are discussed. Emphasis is placed on intercultural interactions within the United States. Prerequisite: Junior standing or permission of instructor.

COS 560. The Executive Communicator  
3 credits  
Audience analysis, speech writing, delivery in professional presentations and theory and history of great speeches are covered. Detailed critiques of student speaking styles and performances are also included. Prerequisite: Junior standing or permission of instructor.

COS 591. Special Topics in Communication Studies  
3 credits  
Prerequisite: 12 credits in Communication Studies and junior standing.

COS 599. Advanced Projects and Directed Research  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual study. Course may be repeated to a maximum of six credits. Prerequisite: Permission of instructor.

COS 674. Seminar in Interpersonal Communication  
3 credits  
Offered By Announcement only  
Focus is placed on theoretical approaches to interpersonal communication. Emphasis is placed on current research including fundamentals of relationships, developmental issues, interaction management, and interpersonal competence. Prerequisite: Permission of instructor.

COS 682. Seminar in Organizational Communication  
3 credits  
Offered By Announcement only  
This course explores theoretical perspectives and the impact of communication in organizations. Critical analysis includes management styles, decision-making, group interaction, conflict resolution, and diffusion of innovations. Prerequisite: Permission of instructor.

COS 684. Organizational Communication Audit Procedures  
3 credits  
Offered By Announcement only  
Measurement of communication variables in the modern business organization: message diffusion analysis, cross-section survey analysis, communication network analysis, and communication audit procedures. Prerequisite: Permission of instructor.

Visual Communication

CVC 596. Special Topics in Visual Communication  
1- 6 credits  
Offered Fall and Spring Semesters  
CVC 596 is a special topics class in visual communication. Topics will vary and students may take up to two different special topics courses. Prerequisite: 12 credits of CVC courses.
CVC 628. Seminar in Visual Communication
3 credits
Analysis of the unique relationship between art and text in contemporary news media.

Offered By Announcement only
EDUCATION

Educational and Psychological Studies

EPS 505. Lifespan Human Development
3 credits
Offered Fall Semester
Theories and research relating to the biophysical, cognitive, and psychosocial domains of human lifespan development. Prerequisite: Advanced undergraduate or graduate standing.

EPS 506. Foundations of Mental Health Counseling
3 credits
Offered By Announcement only
Students will learn basic concepts and skills for mental health counselors in a multicultural world. Prerequisite: Advanced undergraduate or graduate standing.

EPS 509. Field Studies in Education
1-6 credits
Offered Fall and Spring Semesters
Individual study of a school or school system, identifying its strengths and weaknesses, and making positive recommendations. Prerequisite: Approval of advisor.

EPS 510. Professional, Legal and Ethical Issues in Counseling
3 credits
Offered Fall Semester
Professional, legal, ethical, and licensing issues in the counseling profession. Prerequisite: Advanced undergraduate or graduate standing.

EPS 511. Lifestyle and Career Counseling
3 credits
Offered Spring Semester
An introductory course in career development and career counseling, focusing on theories of career development, counseling tools, strategies, and sociological, economic, and psychological influences on the American worker. Prerequisite: EPS 510 or permission of instructor.

EPS 512. Assessment Strategies for Counselors I
3 credits
Offered Spring Semester
Emphasis on statistical procedures and psychometric principles necessary for responsible test use. Exposure to a variety of test and non-test assessment techniques in school, career, marriage and family, and mental health counseling. Prerequisite: EPS 510 or equivalent and graduate standing in counseling program.

EPS 513. Counseling Process and Practice
3 credits
Offered By Announcement only
Emphasis on communication skills and establishing the counseling relationship with a focus on ethical concerns relating to counseling practice. Prerequisite: EPS 510 and 505. Corequisite: EPS 612.

EPS 514. Psychosocial Bases of Social and Cultural Diversity
3 credits
Offered Spring Semester
Interrelationship between psychology and sociology in understanding development of diversity in human social systems. Implications for counseling and therapy. Prerequisite: EPS 505 or equivalent or permission of instructor.

EPS 515. Dynamics of Marriage and Family Systems
3 credits
Offered Fall Semester
Based on General Systems Theory, this course focuses on systematic approach to the interactive dynamics of couple and family systems. The history and development of marriage and family therapy as a profession. Prerequisite: Advanced undergraduate or graduate standing.
EPS 526. Counseling in Community Settings
3 credits  Offered Fall Semester
Exploration of and participation in community services appropriate to human services professionals, master’s counselors, and therapists. Prerequisite: Advanced undergraduate or graduate standing.

EPS 531. Organization Development
3 credits  Offered By Announcement only
Techniques, strategies, and models of Organizational Development as they relate to various kinds of institutions. Simulations and actual interventions are stressed.

EPS 533. Organization and Administration of Higher Education I
3 credits  Offered Fall Semester
Theoretical approaches from organizational analysis. Applications to problems, processes, and patterns of higher education institutions. Consideration given to legal status, governance patterns, and external relations. Administrator, faculty, trustee, and student roles are also explored.

EPS 534. Theories of Supervision
3 credits  Offered By Announcement only
Examination of the elements of human behavior involved in successful supervision of instruction. Survey of current supervisory practices in the schools. Consideration of leadership theory.

EPS 539. Effective Teaching and Learning in the Community College
3 credits  Offered By Announcement only
Preparation for community college teachers in classroom issues using a theoretical base. Items covered will include teaching performance, teaching and learning styles, motivating learners, educational factors relating to cultural and ethnic variables, and discovery of instructional resources.

EPS 543. The Community College
3 credits  Offered By Announcement only
An overview of American community colleges including historical evolution, purposes and functions, characteristics of students and faculty, organization and administration, curricula, current issues, and trends.

EPS 544. Assessing Learning in the Community College
3 credits  Offered By Announcement only
Assessment and analysis of learning processes and outcomes in higher education. Formative and summative assessment, data analysis and interpretation are included. Class activities include: lectures, group projects, collaborative learning experiences, reports, participation in assessment strategies, role playing, and demonstration of assessment techniques.

EPS 545. Administration of Student Affairs
3 credits  Offered First Summer Session
History and philosophy of student affairs will be addressed as well as principles and organization of student affairs administration, current problems, procedures, and recent developments. Prerequisite: Required of students in student affairs administration.

EPS 550. Educational Measurement and Evaluation
3 credits  Offered By Announcement only
Basic principles of measurement as they apply to the construction of teacher-made tests and the selection and use of standardized tests. Attention is also given to the use of measurement instruments in connection with both formative and summative evaluation. Behavioral objectives are considered in the context of criterion-referenced and mastery tests. Prerequisite: TAL 260 or permission of instructor.
EPS 553. Introductory Statistics  
3 credits  
*Offered Fall Semester and Second Summer Session*  
Basic Statistical procedures will be discussed including measures of central tendency, variability and relationship, sampling, and basic tests of statistical significance.

EPS 554. Essentials of Research in Social and Behavioral Sciences  
3 credits  
*Offered Spring Semester*  
Study of the standards methods and techniques of research in the behavioral and social sciences. Brief orientation to quantitative and qualitative procedures used in the analysis and interpretation of research data are emphasized.

EPS 565. Family Therapy with Ethnic Minority Families  
3 credits  
*Offered Fall Semester and Second Summer Session*  
A course in special issues and strategies in family therapy with minority populations focusing on African American and Hispanic clients. Prerequisite: EPS 280 or 515 or 612 or permission of instructor.

EPS 568. Computer Applications in Educational and Behavioral Science Research  
3 credits  
*Offered By Announcement only*  
An introduction to the use of microcomputer statistical packages in social science research, with emphasis given to SPSS for Windows. Course content will cover a broad range of activities encountered in the data analytic process including planning and creating a database, data coding, file manipulation tasks, data screening, and statistical analysis. Prerequisite: EPS 553 or equivalent with permission of instructor.

EPS 570. Professional Interviewing: Social Science, Work Settings, Forensics/Investigation, Negotiation, Journalistic  
3 credits  
*Offered Fall and Spring Semesters*  
An introduction to the interviewing process and skills with an emphasis on basic communication principles for professionals and academic use in a variety of situations, including: social science research, forensics/investigation, performance appraisals, negotiation, journalistic, and human resources. Course is taught in a combined didactic lecture/discussion and experiential modality. Prerequisite: Junior, Senior, or Graduate standing.

EPS 590. Workshop in Education  
1-3 credits  
*Offered By Announcement only*  
Study in special interest areas in education.

EPS 591. Workshop in Education  
1-3 credits  
*Offered By Announcement only*  
Study in special interest areas in education.

EPS 592. Workshop in Education  
1-3 credits  
*Offered By Announcement only*  
Study in special interest areas in education.

EPS 593. Workshop in Education  
1-3 credits  
*Offered By Announcement only*  
Study in special interest areas in education.

EPS 594. Workshop in Education  
1-3 credits  
*Offered By Announcement only*  
Study in special interest areas in education.

EPS 595. Workshop in Education  
1-3 credits  
*Offered By Announcement only*  
Study in special interest areas in education.
EPS 596. **Workshop in Education**  
1- 3 credits  
Study in special interest areas in education.  
Offered By Announcement only

EPS 597. **Workshop in Education**  
1- 3 credits  
Study in special interest areas in education.  
Offered By Announcement only

EPS 598. **Workshop in Education**  
1- 3 credits  
Study in special interest areas in education.  
Offered By Announcement only

EPS 599. **Workshop in Education**  
1- 3 credits  
Study in special interest areas in education.  
Offered By Announcement only

EPS 601. **Philosophy of Education**  
3 credits  
Analysis of the works of major educational theorists—both historical and contemporary. The role of education in shaping and defining people and culture will be emphasized.  
Offered By Announcement only

EPS 603. **Higher Education in the United States**  
3 credits  
Broad view of issues and problems in higher education. Fundamental ideas and significant literature are analyzed from historical, philosophical, and societal perspectives.  
Offered Fall Semester

EPS 604. **Group Dynamics and Communication Skills**  
3 credits  
Emphasis on group dynamics, group procedures and communication skills. Prerequisite: Permission of instructor.  
Offered Fall Semester

EPS 605. **Psychological Bases of Education**  
3 credits  
Review and extension of basic principles of psychology underlying educational practice. Basic concepts of educational psychology which contribute to effective education will be discussed. Prerequisite: TAL 260 or equivalent.  
Offered Fall Semester

EPS 607. **Advanced Individual Study**  
1- 3 credits  
Individual work on a special project under faculty guidance. Prerequisite: Application for Advanced Individual Study form required.  
Offered Fall and Spring Semesters

EPS 608. **Advanced Individual Study**  
1- 3 credits  
Individual work on a special project under faculty guidance. Prerequisite: Application for Advanced Individual Study form required.  
Offered Fall and Spring Semesters

EPS 610. **Therapeutic Group Procedures**  
3 credits  
Growth-facilitating group procedures, including group dynamics, and various therapeutic group processes are discussed. In addition, optional participation in an on-going small group. Discussions, readings, and demonstrations of various group modalities are included. Prerequisite: EPS 612 or equivalent.  
Offered First Summer Session
EPS 611. Assessment Strategies for Counselors II  
3 credits  
Offered First Summer Session  
Advanced training in assessment techniques used by counselors to evaluate client problems and to document the process of client change. Refinement of test interpretation and psychological report writing skills needed in school, career, marriage and family, and mental health counseling are emphasized. Prerequisite: EPS 512 and 613 or equivalent.

EPS 612. Counseling Theories and Practice  
3 credits  
Offered Spring Semester  
Study of theories and concomitant practices in counseling and therapy. Prerequisite: EPS 510 or equivalent.

EPS 613. Psychopathology for Counselors  
3 credits  
Offered Fall Semester  
A wide ranging view of psychopathology is presented by examining various clinical conditions within the context of major theoretical approaches. Currently most viable theory and research relating to etiology, assessment, and treatment of both maladaptive personality styles and clinical symptom syndromes will be emphasized. Prerequisite or corequisite: EPS 505.

EPS 614. Counseling and Sexuality  
3 credits  
Offered Spring Semester  
Emphasis is placed on self-awareness and acceptance of all dimensions of human sexuality. Readings and classroom activities focus on biological aspects of sexuality, an understanding of sexual dysfunctions, and their treatment. Prerequisite: EPS 505.

EPS 615. Family Therapy  
3 credits  
Offered Spring Semester  
Concentrated study of several approaches to family therapy including systemic and psychosocial perspectives. Theory and techniques of family therapy are taught in lecture, videotape, and simulation. Prerequisite: EPS 515 or permission of instructor.

EPS 616. Therapy for Couples  
3 credits  
Offered First Summer Session  
Therapeutic approaches to working with couples, both in marriage and in other forms of relationships. Prerequisite: EPS 515 and 612.

EPS 617. Seminar in Counseling Psychology  
2- 9 credits  
Offered By Announcement only  
A rotating-topic seminar in which various special topics will be presented. The particular topic being covered in a particular semester will be announced in the published class schedule. Prerequisite: Permission of instructor.

EPS 618. Practicum in Counseling I  
3- 9 credits  
Offered Fall and Spring Semesters  
Supervised experience at the Institute for Family Living and other appropriate clinical settings relating theoretical formulations to intervention strategies appropriate to specialization. Prerequisite: EPS 611 and 612. Corequisite: EPS 619.

EPS 619. Practicum Laboratory I  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual, dyad, and small group supervision relating to specific cases from EPS 618. Prerequisite or corequisite: EPS 612.
EPS 620. Counseling Psychology: Theory, Research and Practice  
3- 6 credits  
Offered Fall and Spring Semesters  
Orientation to counseling psychology as a discipline including theories, research methodology, contemporary research, lifestyle and career development theory, and professional issues. Required of all first year counseling psychology students. May be taken for 3 or 6 credits to a maximum of 12 credits. Prerequisite: Admission to Counseling Psychology doctoral program.

EPS 621. Psychological Appraisal I  
3 credits  
Offered Fall Semester  
Orientation to psychological appraisal with emphasis on development of skill in assessment of intellectual functioning. Prerequisite: Doctoral Student in Counseling or consent of instructor.

EPS 622. Psychological Appraisal II  
3 credits  
Offered Spring Semester  
Orientation to psychological appraisal with emphasis on use of procedures which facilitate preparation for, and evaluation of, intervention efforts in the personality and social-behavioral areas. Prerequisite: EPS 621.

EPS 623. Substance Abuse: Theories and Counseling  
3 credits  
Offered Fall Semester  
Theories and research on individual, systemic causes, and outcomes of substance abuse, and concomitant practices in counseling and therapy. Prerequisite: EPS 612 or equivalent or permission of instructor.

EPS 624. Assessment and Therapy with Children and Adolescents  
3 credits  
Offered Spring Semester  
Course prepares students to provide preventive and therapeutic interventions with children and adolescents including theory, research, and practice. Prerequisite: EPS 505, 510, and 612 or equivalents.

EPS 625. Research and Program Evaluation in Counseling  
3 credits  
Offered Spring Semester  
Research design and program evaluation as they apply in a therapeutic setting. Use of research-based literature in identifying appropriate, empirically validated interventions. Skills for conducting evaluations of new and on-going programs are also emphasized. Prerequisite: EPS 510 and 512 and 612 and 613 or equivalents or permission of instructor.

EPS 628. Doctoral Practicum I  
3 credits  
Offered Fall and Spring Semesters  
Supervised experiences at the Institute for Family Living and other appropriate clinical settings with an emphasis on varied client populations. Prerequisite: EPS 618, 619, and completion of specialty counseling track.

EPS 629. Doctoral Practicum II  
3- 9 credits  
Offered Fall and Spring Semesters  
Individual, dyad, and small group supervision relating to specific cases from EPS 628. Prerequisite: EPS 618 and 619 and 628.

EPS 630. Advanced Practicum in Counseling Psychology  
1- 9 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Supervised experience appropriate to the work of the counseling psychologist. Prerequisite: Admission to specialist or doctoral program in counseling or counseling psychology, and permission of instructor.
**EPS 631. Student Diversity in American Higher Education**

3 credits  
Offered Spring Semester  
Emphasis on the diversity of today’s undergraduate students. An examination of the sociological context and philosophical orientation of contemporary college students is included. Prerequisite: Permission of instructor.

**EPS 633. Organization and Administration of Higher Education II**

3 credits  
Offered Fall Semester  
Continuation of EPS 533. Complexities and problems associated with the management of colleges and universities. Management processes approached from rational-comprehensive and political-incremental perspectives. Personnel administration, planning, academic administration, and budgeting are also addressed. Prerequisite: EPS 533 or permission of instructor.

**EPS 634. Clinical Supervision and Consultation**

3 credits  
Offered First Summer Session  
The course includes a didactic presentation of theories of supervision and consultation. Application of supervision theories with master’s level supervisee. Prerequisite: EPS 618 and 619 or equivalent or permission of instructor.

**EPS 635. College Student Development Theory**

3 credits  
Offered Fall Semester  
Emphasis on student growth and development during college and an analysis of the factors which affect development along cognitive and affective dimensions. An in-depth examination of college student development theories is included. Prerequisite: Permission of instructor.

**EPS 636. The College Environment and Effects on Students**

3 credits  
Offered Spring Semester  
Emphasis on the effects of the college environment on undergraduate students (academic and co-curricular). Analysis of the effects of academic and social involvement and integration on college students. Prerequisite: Permission of instructor.

**EPS 637. Seminar in Curriculum and Supervision**

3 credits  
Offered By Announcement only  
Laboratory course for developing curriculum materials and making curriculum changes. Students will develop materials and plans needed in their institutions.

**EPS 640. Enrollment Management: Theory and Practice**

3 credits  
Offered Fall Semester  
Comprehensive overview of principles and practices of a strategic process that begins with recruitment and continues through graduation.

**EPS 641. Advanced Seminar in Enrollment Management**

3 credits  
Offered Spring Semester  
In-depth exploration of topics in enrollment management, including market research, market testing, pricing strategies, strategic planning, and development of a future vision. Prerequisite: EPS 640.

**EPS 642. Curricula in Higher Education**

3 credits  
Offered By Announcement only  
Consideration of the philosophical, psychological, and social bases of general, liberal, and graduate education. Analytical review of research on collegiate curriculums, programmatic innovations, and their effect are also included.
EPS 643. **Nature of Collegiate Instruction**  
3 credits  
Offered By Announcement only  
Role of the college professor, academic freedom, and tenure. Organization and presentation of knowledge in one’s discipline will be emphasized. Use of micro-teaching and other advanced techniques as well as the development of course outlines and evaluation of self-instructional procedures will also be covered.

EPS 647. **Seminar in Higher Education/Enrollment Management: Contemporary Issues**  
3 credits  
Offered By Announcement only  
A review of recent developments, research findings, changing issues, and problems in contemporary American higher education, with emphasis on enrollment management issues. Prerequisite: Admission to Doctoral or Specialist program or permission of instructor.

EPS 651. **Survey Research Methods**  
3 credits  
Offered Fall Semester  
Focus on standards and practical strategies for designing different types of survey instruments and conducting survey research. Students are required to develop a proposal for survey research, develop a survey instrument, and conduct small pilot study by collecting, analyzing, and reporting survey data. Prerequisite: EPS 670 and 553 or equivalents.

EPS 652. **Nonparametric Methods for Quantitative Analysis**  
3 credits  
Offered By Announcement only  
A course in univariate nonparametric statistical techniques for applications in the behavioral and social sciences. These “sturdy” statistical methods will be developed by analogy with the corresponding parametric models. The SPSS-X statistical package will be used to analyze data sets provided by the instructor. Prerequisite: EPS 553.

EPS 653. **Advanced Statistical Methods**  
3 credits  
Offered By Announcement only  
A course in univariate parametric statistical inference, topics included are hypothesis testing, estimation, sampling, analysis of variance, correlation analysis, simple, and multiple regression. Prerequisite: A basic course in statistics and a basic course in measurement.

EPS 654. **Program Evaluation**  
3 credits  
Offered Spring Semester  
Terminology, models, standards, practices, and common problems associated with program evaluation in Educational and Social Service settings. Prerequisite: EPS 670 and 553 or equivalents.

EPS 659. **Field Experience in Educational Research**  
2- 6 credits  
Offered Fall and Spring Semesters  
A total of 125 hours of supervised practical experiences in educational research. Emphasis is placed on actual participation in a wide variety of on-going research projects through associations with an approved educational R & D center. Normally taken in two or three credit blocks. Prerequisite: Permission of advisor.

EPS 661. **Measurement and Psychometric Theory**  
3 credits  
Offered Spring Semester  
This course provides an introduction to the theory and application of measurement and psychometric models used in the behavioral sciences. Prerequisite: EPS 672 or equivalent course or regression analysis.
EPS 663. Professional Psychological Spanish  
3 credits  
Acquisition of language abilities necessary for functioning as a psychologist or mental health professional. Implications of language on therapy process. Professional roles of bilingual counselors and psychologists. Prerequisite: Spanish fluency.

EPS 664. Hispanic and Latino Psychology  
3 credits  
Offered Fall Semester  
Human psychological functioning from an Hispanic and Latino perspective with a focus on Hispanic and Latino scholars in psychology. Prerequisite: Multicultural counseling or equivalent.

EPS 665. Psychological Interventions with Hispanic/Latino Populations  
3 credits  
Explores the diversity of experiences among Hispanics and their implications for therapy. Topics include: racial diversity among Hispanics, sociopolitical factors in mental health, the impact of immigration on mental health, special psychological treatments: trauma treatment, family interventions and bilingual counseling. Prerequisite: Course in multiculturalism or diversity or permission of instructor.

EPS 667. Seminar in Educational Research  
3-6 credits  
Offered By Announcement only  
Seminar providing intensive study of contemporary advanced research methodologies in education for example, multivariate statistical models, qualitative analysis, latent trait theory, and causal models. Topics and faculty rotate. Students can enroll in this course for two semesters. Prerequisite: Admission to Doctoral program or permission of instructor.

EPS 670. Introduction to Research Methods  
3 credits  
Offered Fall Semester  
The nature of disciplined inquiry in behavioral and social sciences. Includes philosophy of science, quantitative and qualitative research, basic concepts in sampling and measurement, and systematic searches of the research literature. Students required to complete literature search on a topic of their interest and submit a report of their findings. Prerequisite or corequisite: EPS 553 or equivalent.

EPS 671. Group Comparative Research Designs and ANOVA Methods  
3 credits  
Offered Spring Semester and First Summer Session  
Group comparative designs, univariate parametric and nonparametric methods and statistical inference will be discussed. Topics include probability, sampling, estimation, ANOVA, ANCOVA. Students will be required to use computer packages (SAS/SPSS). Prerequisite: EPS 670 or equivalent or permission of instructor.

EPS 672. Regression Methods  
3 credits  
Offered Fall Semester  
This course will provide: (1) a conceptually-oriented introduction to regression methods and (2) opportunities to learn related data-analytic techniques. Prerequisite: EPS 670 or equivalent or permission of instructor.

EPS 673. An Introduction to Structural Equation Modeling for Multivariable Data  
3 credits  
Offered Spring Semester  
This course will provide (1) a conceptually-oriented introduction to Structural Equation Modeling for multivariate data and (2) opportunities to learn related data-analytic techniques. Prerequisite: EPS 670; 671 or 672,
EPS 674. Introduction to Multilevel Modeling  
3 credits  
Offered Fall Semester  
This course will provide: (1) a conceptually-oriented introduction to multilevel modeling and (2) opportunities to learn related data-analytic techniques. Prerequisite: EPS 673.

EPS 675. Qualitative Methods I  
3 credits  
Offered Fall Semester  
An overview of the history, nature, characteristics, strategies, and ethics of qualitative research methods. Critical analysis and evaluation of various types of qualitative studies, including design, sampling, processes of data collection and analysis, and reporting results. Prerequisite: EPS 670 and (671 or 672) or equivalents or permission of instructor.

EPS 676. Qualitative Methods II: Case Studies and Grounded Theory  
3 credits  
Offered Spring Semester  
Types and designs of case studies, development of protocol, field work, data analysis, and report writing. Practical procedures and techniques for conducting grounded theory studies, including data coding and analysis, and reporting of results. Prerequisite: EPS 675 or equivalent.

EPS 677. Qualitative Methods II: Interviews and Content Analysis  
3 credits  
Offered First Summer Session  
Sociological and oral history interview methods, including methodological issues, computer-based coding, decoding, and interpreting data. Visual and text based content analysis, scoring schemas, and inter-rated reliability are also covered. Prerequisite: EPS 675 or equivalent.

EPS 679. Research Practicum  
1-6 credits  
Offered Fall and Spring Semesters  
Hands on experience in various aspects and processes in research. Prerequisite: Doctoral standing or permission of instructor.

EPS 680. Cultural Diversity and Mental Health  
3 credits  
Offered Fall Semester  
Advanced training in conceptualizing the individual within cultural and sociopolitical contexts with purpose of creating more reflective and intentional clinicians. Includes learning skills for improving the lives of clients in these areas. Prerequisite: Doctoral student.

EPS 685. Dissertation Seminar  
3 credits  
Offered By Announcement only  
The development and analysis of dissertation proposals will be required. Detailed coverage of the research process, proposal elements, dissertation writing and all aspects of doctoral research will be emphasized. Extensive feedback on research ideas and writing is involved. Prerequisite: Completion of research competencies and/or major portion of all courses in doctoral program.

EPS 687. Internship in College Teaching  
3 credits  
Offered Fall and Spring Semesters  
A program in observation and supervised teaching in the community junior or liberal arts college. The student spends 15-20 hours per week. Included is a seminar held with the college supervisor which meets several times during the semester. Prerequisite: Approval of Committee on Internship.
**EPS 688. Practicum: Administration of Higher Education/Enrollment Management**  
3 credits  
Offered By Announcement only  
This course is designed to provide students with an opportunity to develop professional competencies while they apply theory to practice. Opportunities can be pursued in an enrollment management related office either on campus or at other higher education institutions. Students will contract for the type of experience desired and a formal research paper and presentation will culminate this activity. Prerequisite: Permission of instructor.

**EPS 698. Advanced Individual Study**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual work on a special project under faculty guidance. Prerequisite: Application for Admission to Advanced Individual Study form required.

**EPS 699. Advanced Individual Study**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Individual work on a special project under faculty guidance. Prerequisite: Application for Admission to Advanced Individual Study form required.

**EPS 703. Internship in Counseling Psychology**  
1-6 credits  
Offered Fall and Spring Semesters  
Supervised internship in Counseling Psychology in an approved facility. Prerequisite: Permission of program faculty.

**EPS 710. Master’s Thesis**  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

**EPS 720. Research in Residence**  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in EPS 710 (usually six credits). Credit not granted. May be regarded as full time residence.

**EPS 725. Continuous Registration—Master’s Study**  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

**EPS 730. Doctor of Philosophy Dissertation**  
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of EPS 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above. Prerequisite: Admission to Doctoral Program.
EPS 735. Doctor of Education Dissertation
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the Ed.D. The student enrolls for credit as determined by his/her advisor. Credit is not awarded until the doctoral project has been accepted. Total enrollment may not exceed 12 credits. Prerequisite: Admission to Doctoral Program.

EPS 750. Research in Residence
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D. and Ed.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Exercise and Sport Science

ESS 515. Nutrition Diet and Exercise
3 credits  
Offered First Summer Session
Students will learn the latest concepts in weight management, physical fitness, and healthy eating. They will be able to understand the complex interplay of carbohydrates, protein, fat, water, fiber, vitamins, and minerals in the nourishment of their body and overall well-being. They will also examine serious health issues such as the use/misuse of anabolic steroids, weight control, and eating disorders. Prerequisite: Permission of instructor.

ESS 520. Cellular Exercise Physiology
3 credits  
Offered Spring Semester
The course examines Bioenergetics and Muscular Physiology in training and detraining. Topics include the energy systems and their functional application during exercise, muscle structure and function, cellular and sub-cellular modifications of organelles and contractile mechanisms as a result of training and physiological bases of training techniques.

ESS 521. Systemic Exercise Physiology
3 credits  
Offered Fall Semester
The study of the physiological effects of acute vs. chronic training on homeostatic function, musculoskeletal systems, energy system function, cardiovascular and the pulmonary systems. Student will be able to understand and interpret terminology and research literature published in the field. Prerequisite: One year of undergraduate chemistry and one year of undergraduate human biology.

ESS 522. Basic Statistics in Exercise and Sport Sciences
3 credits  
Offered Fall Semester and First and Second Summer Sessions
Introduction to basic statistical techniques commonly used in the Exercise and Sport Sciences. Designed as a prerequisite for ESS 646.

ESS 523. Athletic Training Techniques - Assessment
3 credits  
Offered Fall Semester
This course will introduce the basic concepts related to injury evaluation. With this information, and with the development of basic skills, the student should be able to form an impression of the nature of most musculoskeletal injuries. Prerequisite: ESS 525 and 588.

ESS 524. Athletic Training Techniques - Rehabilitation
3 credits  
Offered Fall Semester
This course will introduce theoretical concepts that must be understood in order to be able to rehabilitate a musculoskeletal injury. Regarding actual rehabilitation techniques, the emphasis will be on therapeutic exercise with only a brief introduction to therapeutic modalities. Prerequisite: ESS 525 and 588.
ESS 525. **Advanced Kinesiology**
3 credits  
In-depth study of the human skeletal and muscular systems with a focus on the mechanics of movement as related to physical activity, sports, and athletics. Prerequisite: ESS 245 or permission of instructor.

ESS 530. **Laboratory Techniques in Functional Evaluation of Skeletal Muscle**
3 credits  
This course examines the theories of data collection and collection techniques used to evaluate musculo-skeletal and neuromuscular function. The application of both computerized and non-computerized collection systems for performance evaluation is covered. The course is also designed to establish a clear linkage between the acute and chronic musculo-skeletal and neuromuscular changes that occur during exercise and the laboratory methods used to assess those changes. Collection theory, musculoskeletal and neuromuscular function, methods of strength evaluation, anaerobic power testing, electromyography, and a number of other functional parameters will be discussed. Prerequisite: ESS 520.

ESS 531. **Laboratory Experiences in Systemic Exercise Physiology**
3 credits  
This course provides a laboratory assessment of physiological principles and theories learned in the classroom setting. Focus will be on systemic application to exercise as an acute or chronic stressor. Corequisite: ESS 521.

ESS 532. **Sports Injuries: Prevention and Treatment**
3 credits  
Prevention, diagnosis, treatment and rehabilitation of sports injuries. Anatomical and kinesiological applications to sports injuries. Prerequisite: BIL 109.

ESS 534. **Contemporary Issues in Sports Medicine**
3 credits  
The study of special problems and contemporary issues associated with sports medicine. Prerequisite: Background and experience or permission.

ESS 540. **Exercise Psychobiology**
3 credits  
This course is designed primarily for graduate level Exercise and Sport Science students who are interested in the biochemical basis of personality as affected by exercise and sport. The course involves interdisciplinary integration and comprehensive reviews of ancient and current literature dealing with exercise, stress, emotional, personality, immune system function and neuroendocrine function. Prerequisite: ESS 521.

ESS 541. **Neurophysiology in Exercise Science**
3 credits  
Examination of the functions of the central, peripheral, and autonomic nervous systems in regulating exercise homeostasis and the structural and functional modifications to the systems through training. NOTE: This course is a writing intensive course. This means that all examinations and papers include a critical evaluation of the student’s ability to convey information using the written word. Prerequisite: ESS 520.

ESS 545. **Special Sport Populations**
3 credits  
This course presents an in-depth examination of chronic conditions and medical problems commonly observed in athletes. Students will learn about the etiology of the medical condition, how exercise affects the condition, and the most recent therapeutic treatments prescribed for the condition. Prerequisite: ESS 521.
ESS 555. Exercise Biochemistry
3 credits
Offered Fall Semester
This course presents an in-depth examination of the biochemical basis of exercise. Topics include neural control of movement, neuro-endocrine control of metabolism, the kinetics of glucose, lactate, free fatty acids, and amino acids, and the influence of contractile activity on skeletal muscle gene expression. Both the instructor and the students will incorporate current peer-reviewed research in the field. Prerequisite: One year of Chemistry and biochemistry recommended.

ESS 561. Advanced Tests and Measurements in Exercise and Sport Sciences
3 credits
Offered Fall Semester
Advanced techniques of testing, measurement, and evaluation in exercise and sport sciences. Individual projects. Prerequisite: Permission.

ESS 562. Fiscal Management in Sports Administration
3 credits
Offered Fall Semester
Fiscal management as related to athletic sports administration, recreation and leisure sports administration, and physical education. Prerequisite: Background and experience in Exercise Science or permission.

ESS 563. Facilities and Event Management
3 credits
Offered Spring Semester
This course is designed to introduce students to principles and practices of planning, funding and managing facilities associated with sports participation including professional sport venues, college sports, parks, recreational sport and health/fitness clubs. Students will gain an understanding of promoting, marketing, and maintaining sport facilities. Prerequisite: ESS 566.

ESS 564. Principles of Sports Marketing
3 credits
Offered Fall and Spring Semesters
This course will focus on the vast world of sports marketing. The basic principles of marketing and marketing management will be introduced and integrated with application of these principles to sport and sports-related organizations. Prerequisite: ESS 301 or permission of instructor.

ESS 565. Legal Aspects of Sports and Exercise Science
3 credits
Offered Spring Semester
Legal liability, personal injury, negligence and other related legal aspects of sports and exercise science. Prerequisite: Background and experience or permission.

ESS 566. Organization and Administration of Sports Programs
3 credits
Offered Fall Semester
Administrative and organizational procedures and problems specific to athletic administration, recreation and leisure sports administration, and physical education. Prerequisite: Background and experience in Exercise Science or permission.

ESS 567. Elements of Sports Psychology
3 credits
Offered Fall and Spring Semesters
Introduction to the study of sport and exercise psychology including theory, current research and practical application. Prerequisite: Permission of instructor.

ESS 568. Developmental Sports Psychology
3 credits
Offered By Announcement only
Examination of the concept of sport psychology which includes but is not limited to performance, enhancement, student performance and academic application. Prerequisite: Permission of instructor.
ESS 571. Sport Industry in South Florida  
3 credits  
Offered Spring Semester  
This course will examine the various sport based organizations/events that are part of the sport industry in South Florida. Study of these organizations/events will include (a) products/services produced, (b) organizational structure, (c) economic impact on the local community, (d) key management personnel, (e) physical facilities, and (f) internship/employment opportunities.

ESS 572. Creative Approaches to Problem Solving and Conflict Management  
3 credits  
Offered Spring Semester  
This hands-on course will examine the concepts of problem solving and conflict management from both personal and organizational perspectives. Students will have the opportunity to study in-depth both of these concepts (and the relationship between them) through a combination of lecture, theory, individual and group activities, readings, practical exercises, and self-assessment tools.

ESS 573. Sport Governance  
3 credits  
Offered Spring Semester and Second Summer Sessions  
This course provides the student with an examination of the governing organizations of sport at the youth, secondary, intercollegiate, professional, international, sport specific and Olympic levels. In addition, policy development in sport management will be explored. Prerequisite: Graduate standing.

ESS 574. Ethical Decision Making in Sports and the Professions  
3 credits  
Offered Fall and Spring Semesters  
This course will examine ethical decision-making in a variety of environments with an emphasis on sport professions. Real and hypothetical situations will be utilized, and the course will combine theory with practical application. The case method in sport ethics will be incorporated. Prerequisite: Permission of instructor.

ESS 575. Essential Leadership in Sports and the Professions  
3 credits  
Offered Fall and Spring Semesters  
This course will examine the concept of leadership as it pertains to sports and other professions. Various leadership and management skills will be included with a focus on practical applications in a work environment. Theory and self-assessment strategies will be incorporated. Prerequisite: Permission of instructor.

ESS 576. Practical Approach to Motivation and Ethical Decision Making  
1-3 credits  
Offered Spring Semester  
A critical study of practical problems of professionals in Exercise and Sport Sciences. Prerequisite: Background and experience or permission.

ESS 577. Advanced Nutrition for Sports and Fitness  
3 credits  
Offered Spring Semester  
This course presents an in-depth study of the nutritional concerns of today’s recreational and competitive athlete. Topics include Dehydration, Classic Carbohydrate Loading, Protein needs, Ergogenic Aids, and more. State-of-the-art research in the field is provided. This is also a writing intensive course. Thus, writing skills will represent an integral part of one’s grade. Prerequisite: ESS 155 and 221 or 521.

ESS 578. Pharmacology for Allied Health Professionals  
3 credits  
Offered Spring Semester  
The study of drug families and drugs in common use across spectra of age, illness, disease, and disability. Students will understand body systems treated with current pharmaceuticals over-the-counter (OTC) medications, and neutraceuticals. Actions, key adverse effects, and influences on individuals undergoing physical activity will be emphasized. Prerequisite: ESS 521.
ESS 579. **Principles of Exercise Prescription/Assessment: Cardiovascular**
3 credits  
Offered Spring Semester  
This course presents a comprehensive overview of the physical, physiological and metabolic responses of the human body to exercise testing and training both in health and disease. The successful student will gain an understanding of the process involved in prescribing safe and effective therapeutic exercise in healthy individuals as well as patients with heart and lung disease, diabetes and obesity. An overview of environmental and legal considerations in the prescriptive process will also be discussed. Prerequisite: ESS 521.

ESS 580. **The Scientific Bases for Training Prescription: Neuromuscular**
3 credits  
An examination of the scientific bases of modern training techniques designed to optimize performance, their functional application and potential impact on performance in sport and everyday activity. Prerequisite: ESS 520 and 521 or permission of the instructor.

ESS 581. **Issues Specific to Women’s Health**
3 credits  
Offered Spring Semester  
This course focuses upon clinical health issues relevant to women. Students will acquire a body of knowledge concerning the specific biological and physiological changes women experience from birth to maturity, and from the pre- to postmenopausal state. Women will learn significant issues related to women’s health and be able to make more educated decisions regarding their health and treatment options. Prerequisite: ESS 521 or permission of the instructor.

ESS 582. **Psychosocial Issues in Women’s Health**
3 credits  
Offered Spring Semester  
This course covers a broad perspective of women and their self-esteem, their femininity, and their role in family household. Attention will be paid to the historical, cultural, and anthropological development of women and their role in society. The influence of gender will explore several areas which include a) pregnancy, b) menopause, c) menstrual cycle, d) stress and career vs. family, e) depression, and f) body image.

ESS 583. **Sports Medicine for the Female Athlete**
3 credits  
Offered Fall Semester  
This course focuses upon the physiological effects of exercise on the female athlete as it relates to her performance and health. Physiological differences between male and females will be examined as it impacts the woman’s performance capabilities and potential. Gender specific problems regarding the exercising female will be explored. Prerequisite: ESS 521.

ESS 584. **Obesity: Prevention and Treatment**
3 credits  
Offered Fall Semester  
This course is designed to evaluate dieting, rebound effect, set point theory, brown fat, and adaptive thermogenesis, as they relate to the etiology of obesity. The course will cover a step by step approach in the recognition, and management of the overweight patient. This includes determination of basal metabolic rate, thyroid function, percent body fat, quantification of adipocyte number and mass, and research on exercise as a therapeutic intervention. Students will learn to design exercise programs for hypothetical obese patients and the impact of both diet and exercise on long-term weight management. Prerequisite: ESS 521 and 577 or permission of the instructor.

ESS 585. **Advanced Topics in Exercise and Sport Sciences**
3 credits  
Offered Spring Semester and First and Second Summer Sessions  
This course will provide a synthesis of essential concepts in specialty subjects relevant to one’s field of interest. Prerequisite: Permission of instructor.
ESS 586. Exercise Prescription/Assessment Laboratory  
3 credits  
Offered Fall Semester  
Prerequisite: ESS 579.

ESS 587. Laboratory Experience in Sports Nutrition  
3 credits  
Offered Spring Semester  
This laboratory class provides case study analyses and computerized nutrient analysis systems designed to evaluate nutrition and hydration needs of the recreational and competitive athlete. From urinalysis and blood work to body composition and computerized nutrient data base systems, this laboratory provides a clinical approach to evaluating the nutrition status of the exercising individual. Corequisite: ESS 577.

ESS 588. Gross Anatomy in Exercise and Sport Sciences  
3 credits  
Offered Spring Semester  
Human dissection of the major muscles, arteries and nerves of the body. Course is held at the University of Miami, Medical Campus, cadaver laboratory. Special consideration is given to injury sites in sports such as the knee, shoulder, elbow, neck and spinal areas. Students are required to pay a laboratory fee for this class. Prerequisite: BIL 109.

ESS 589. Directed Readings in Exercise and Sport Sciences  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Directed Readings focusing on research and contemporary trends. Prerequisite: Permission of Chairperson.

ESS 590. Special Topics in Exercise and Sport Sciences  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
This course is designed for students wishing to focus on a specific area of study within the umbrella of the Exercise and Sport Sciences curriculum. Students will be given supervision and support in a direction relevant to their needs and interests in a structured setting. Prerequisite: Background and experience or permission.

ESS 602. Athletics in the United States  
3 credits  
Offered Fall Semester  
An assessment of athletics in the United States. Focus on historical perspectives, contemporary issues, interface with international athletics, and future trends. Prerequisite: Background and experience in athletics or permission of instructor.

ESS 603. Contemporary Issues in Exercise and Sport Sciences  
3 credits  
Offered Spring Semester  
Problem identification, investigation, analysis, and problem solving approaches in Exercise and Sport Sciences.

ESS 604. Recreation in the United States  
3 credits  
Offered By Announcement only  
An assessment of recreation and leisure in the United States. Focus on past, present, and future trends, problems, and issues. Prerequisite: Background and experience in Recreation or permission of instructor.

ESS 640. Seminar in Exercise Science  
3 credits  
Offered By Announcement only  
Contemporary topics and relevant issues in exercise science. Prerequisite: Background and experience in Exercise Science or permission.
ESS 641. Aging: Physiological Changes and Their Implications of Training  
3 credits  
Offered Spring Semester  
The physiological changes that occur due to aging and their impact on fall prevention, independence and the application of prophylactic exercise prescriptions. Prerequisite: ESS 520 or permission of the instructor.

ESS 642. Cardiac Rehabilitation: Phases I-IV  
3 credits  
Offered Spring Semester  
This course represents an in-depth review and evaluation of the cardiac patient according to sound physiological procedures. Students must understand the methods of stress testing and how to use stress test results to implement a cardiac rehabilitation program. Phase I through Phase IV review of Cardiac Rehabilitation is fully examined. Prerequisite: ESS 521.

ESS 643. Laboratory Experiences in Cardiac Rehabilitation  
3 credits  
Offered Spring Semester  
This class provides hands-on clinical experiences in preparation of patient for testing, assessment of pre-existing medical conditions and risk factors as well as appropriate procedures for stress testing. Student will, in addition, have the opportunity to view Thallium stress tests, echocardiography and cardiac surgical procedures such as angioplasty and bypass surgery. Prerequisite: ESS 521.

ESS 644. Interpretation of the ECG  
3 credits  
Offered First Summer Session  
This class will provide information of the electrophysiology of the heart, medicines used to improve heart function, and critical examination of waveform analyses in interpreting the electrocardiogram. Prerequisite: ESS 642 or permission of the instructor.

ESS 646. Research Methods in Exercise and Sport Sciences  
3 credits  
Offered Fall Semester

ESS 647. Analytic Methods in Exercise and Sport Sciences  
3 credits  
Offered Spring Semester  
Methods of analyzing research data in exercise and sport sciences. Prerequisite: ESS 646 or permission.

ESS 693. Advanced Individual Study  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The Application for Admission to Individual Study Form will be required. Prerequisite: Permission of Department Chairman and faculty member involved.

ESS 694. Advanced Individual Study  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The Application for Admission to Individual Study Form will be required. Prerequisite: Permission of Department Chairman and faculty member involved.

ESS 696. Graduate/Clinical Field Experience in Exercise and Sport Sciences  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Practical experience not ordinarily available through coursework sequences. Placement in a variety of settings, clinics, public and private voluntary agencies and schools. Supervised by a faculty member of the department. Prerequisite: Permission of Chairperson.
ESS 697. Graduate/Clinical Field Experience in Exercise and Sport Sciences  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Practical experience not ordinarily available through coursework sequences. Placement in a variety of settings, clinics, public and private voluntary agencies and schools. Supervised by a faculty member of the department. Prerequisite: Permission of Chairperson.

ESS 699. Special Project in Exercise and Sport Sciences  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
This course represents the capstone course in a student’s field and should represent a culmination of all information learned in class. Prerequisite: Permission required.

ESS 710. Master’s Thesis  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

ESS 720. Research in Residence  
0 credits  
Offered Fall and Spring Semesters  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in ESS 710 (usually six credits). Credit not granted. May be regarded as full-time residence.

ESS 725. Continuous Registration—Master’s Study  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full-time residence.

ESS 730. Doctor of Philosophy Dissertation  
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of ESS 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above. Prerequisite: Admission to the Doctoral Program.

ESS 750. Research in Residence  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the Ph.D. student, after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Teaching and Learning

TAL 501. Classroom Based Assessment  
3 credits  
Offered Fall and Spring Semesters  
Principles and classroom applications of educational measurement and assessment.
TAL 502. Classroom Based Research
3 credits
Offered By Announcement only
Application of research principles to evaluation and improvement of teacher effectiveness. Use of scientific methods in problem solving and decision making in the classroom. Student experiences in the planning, conduct, analysis and reporting of classroom research are included.

TAL 503. Micro-Computer Applications in Education
3 credits
Offered Spring Semester
Microcomputer applications in early childhood, elementary, and secondary English, Social Studies, Science, and Mathematics education.

TAL 506. Issues and Strategies for ESOL
3 credits
Offered By Announcement only
This course provides a comprehensive foundation in ESOL (English for Speakers of Other Languages) competencies based on Florida’s mandates and TESOL standards. Theory and practice will be emphasized in the areas of applied linguistics, cross cultural communication and understanding, methods of teaching, assessment, and curriculum and material development. Prerequisite: TAL 101 and 204 or permission of instructor.

TAL 508. Teaching English Grammar for TESOL
3 credits
Offered By Announcement only
This course is designed to provide participants with a knowledge of the rules of modern English grammar and an ability to teach and test application of those rules in a range of language skill contexts to students whose native language is not English. Analysis of grammar texts and tests are emphasized.

TAL 517. Curriculum, Assessment, Teaching and Learning for Physical Science
3 credits
Analysis of content knowledge, pedagogy, and materials appropriate for teaching physical science in the elementary school. The course content focuses on instructional practice with an emphasis on developing teacher content knowledge in physical science, pedagogy, and student literacy in physical science.

TAL 518. Curriculum, Assessment, Teaching and Learning for Number, Operations, and Algebra
3 credits
This course examines topics that address the mathematical ideas underlying number, operations and algebra. Related curriculum, instructional and assessment issues will be also discussed.

TAL 519. Equity in Math, Science, and Technology
3 credits
Issues of unequal student achievement, course taking, degree-seeking, and careers that rely on mathematics, science, and technology. Focus is on social-demographic groups defined along lines of race, ethnicity, social class, gender, language, and their interactions. Historical and social antecedents, current day policies and practices, extant research, consequences, and future trends. Prerequisite: Graduate student; advanced undergraduate with consent of professor.

TAL 521. Curriculum, Assessment, Teaching and Learning for the Life Sciences
3 credits
Analysis of content knowledge, pedagogy, and materials appropriate for teaching life science in the elementary school. The course content focuses on instructional practice with an emphasis on developing teacher content knowledge in life science, pedagogy, and student literacy in life science.
TAL 524. Fine Arts in Elementary School
3 credits
Content and methods for teaching art and music in the K-6 program. Emphasis is placed on the use of these disciplines to aid the classroom teacher in accomplishing academic objectives and in developing well-rounded individuals. Prerequisite: Admission to graduate studies.

TAL 527. Language and Assessment in ESOL
3 credits
Offered By Announcement only
Study of language systems with a focus on understanding and applying linguistic terms. Course prepares teachers to conduct informal and formal assessment procedures with English language learners. Field experience with English language learners is required. Prerequisite: TAL 531, 550 or 620, 603, 622.

TAL 528. ESOL Curriculum, Materials, and Methods
3 credits
Offered By Announcement only
This course focuses on applying TESOL theories, principles, and current research to the development and use of instructional materials, curriculum, and methods. The course will enhance participant’s knowledge of the regular English language arts curriculum in comparison with the ESOL curriculum. Field experience with English language learners is required. Prerequisite: TAL 531, 550 or 620, 603, 622.

TAL 531. Educating Exceptional Students
3 credits
Offered Fall and Spring Semesters
A survey course in special education emphasizing characteristics and problems associated with various categories of exceptional learners. Policy, issues, and trends in special education will be discussed.

TAL 540. General Methods of Teaching in the Secondary School
3 credits
Offered Fall and Spring Semesters
Research-based instructional processes in the secondary school. Prerequisite: Senior standing in Education, or permission of instructor.

TAL 541. Teaching English in the Secondary School
3 credits
Offered Fall Semester
Content and methods appropriate for teaching English language arts in the secondary school. Twenty hours of field experience required. Prerequisite: Application to teacher candidacy.

TAL 544. Teaching Science in the Secondary School
3 credits
Offered Fall Semester
Content and methods for teaching science in the secondary school. Prerequisite: TAL 540; Teacher candidacy.

TAL 550. Language and Early Reading Instruction
3 credits
Offered Fall Semester
Factors related to emergent literacy with an emphasis on diverse aspects of language that influence literacy and learning; development of emergent literacy and word perception; emergent literacy curriculum development; appropriate assessment and instructional techniques. Understanding of reading as a process of student engagement in fluent decoding and construction of meaning. Writing intensive.

TAL 551. Word Perception in Reading
3 credits
Offered By Announcement only
Administration and interpretation of a standard reading inventory. An examination of the word recognition and vocabulary curriculum as well as appropriate assessment devices and instructional techniques.
TAL 552. **Reading Comprehension**  
*3 credits*  
Offered Spring Semester  
Development of comprehension, rate, and study skills; reading in the content areas; evaluation of materials, organization of programs; issues, problems, and exceptional readers. Emphasis is placed on understanding reading as a process of student engagement in fluent decoding of words and construction of meaning.

TAL 554. **Literacy and Learning Strategies in the Content Area**  
*3 credits*  
Offered Fall and Spring Semesters  
Literacy instruction in content areas for grades 6 through 12; instructional methods and materials for development of language arts, reading, and study skills. Emphasis on appropriate materials, motivation, and support for students with exceptional needs and English language learners.

TAL 584. **Supervision of Associate Teachers**  
*3 credits*  
Offered By Announcement only  
For clinical teachers to prepare for induction, guidance, and supervision of field experience students and associate teachers. Prerequisite: Prior Teaching experience.

TAL 591. **Workshop in Education**  
*1-6 credits*  
Offered By Announcement only  
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 592. **Seminar in Teaching English as a Foreign Language**  
*3 credits*  
Offered By Announcement only  
This course is designed to provide prospective international teachers of English as a new language with essential strategies and multiple models of teaching techniques; and the theoretical framework to apply these strategies and techniques. Prerequisite: Admission to graduate program.

TAL 593. **Workshop in Education**  
*1-6 credits*  
Offered By Announcement only  
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 594. **Workshop in Education**  
*1-6 credits*  
Offered By Announcement only  
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 595. **Workshop in Education**  
*1-6 credits*  
Offered By Announcement only  
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 596. **Workshop in Education**  
*1-6 credits*  
Offered By Announcement only  
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 597. **Workshop in Education**  
*1-6 credits*  
Offered By Announcement only  
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.
TAL 598. Workshop in Education  
1-6 credits  
Offered By Announcement only  
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 599. Workshop in Education  
1-6 credits  
Offered By Announcement only  
A critical study of practical problems of teachers. Significant problems are defined, literature and research are reviewed, and individual or small group projects are required.

TAL 601. Instructional Leadership  
3 credits  
Offered By Announcement only  
An examination of the components of effective supervision of instruction. Leadership theories which apply to educational settings; legal rights and responsibilities of students, teachers and administrators will be covered. as well as the examination of various models of teaching.

TAL 602. Effective Teaching  
3 credits  
Offered By Announcement only  
A study of the theory and practice of effective teaching grades K-12. Attention is given to those teaching behaviors supported by research, and emphasis placed on the development of effective teaching behaviors. Prerequisite: Graduate standing.

TAL 603. Teacher in American Society  
3 credits  
Offered Spring Semester  
An historical, philosophical, and sociological analysis of the teaching profession in American society. The role and status of teachers in American culture will be discussed. Contemporary issues such as the union movement, status assignment, rewards and incentives, and the role of the teacher as an instrument in the definition of the culture will also be covered.

TAL 605. Seminar in Human Resource Development  
3-12 credits  
Offered By Announcement only  
Contemporary topics in human resource development and technology. Rotating topics and faculty. Open only to advanced graduate students in human resource development programs pursuing the masters, specialist, or doctoral degrees. Course may be repeated for a total of twelve credits. Subtitles describing the topics to be offered will be shown in parentheses in the printed schedule, following the title. Prerequisite: Admission to masters, specialists, or doctoral study or permission of instructor.

TAL 609. Practicum in Reading  
3 credits  
Offered Fall and Spring Semesters  
Practicum in an educational setting. Participants will apply effective practices in teaching Reading. Prerequisite: TAL 550, 552, 651, and 652.

TAL 610. Early Childhood Curriculum Development  
3 credits  
Offered First Summer Session  
Development of curriculum for children from birth to eight years of age. Emphasis on application of research findings. 20 hours of field experience required.

TAL 611. Issues and Trends in Early Childhood Education  
3 credits  
Offered Spring Semester  
TAL 614. Typical and Atypical Child Development
3 credits  
Offered Spring Semester
Theories and research in the development of children from conception through eight years of age. Factors which influence development and the relationship of typical development to patterns of delayed and atypical development. Writing intensive course.

TAL 615. Evaluation and Assessment in Infant and Early Childhood Special
3 credits  
Offered Fall Semester
Students will become familiar with a variety of formal and informal screening, evaluation, assessment instruments, and procedures currently in use with children birth to eight. They will learn criteria for selecting and using developmentally and culturally appropriate instruments and become familiar with the multi-, inter-, and trans-disciplinary team approaches. Students will write formal reports and develop an IEP and an IFSP. May require field experience. Prerequisite: TAL 614, or permission of instructor.

TAL 616. Intervention Strategies in Infant and Early Childhood Special Education
3 credits  
Offered Spring Semester
The focus of this course will be the implementation of IEPs and IFSPs through the use of developmentally appropriate curriculum, methods, and intervention strategies for infants, toddlers, and young children with special needs. This will include implementation and adaptation of existing curriculum and materials for young children to meet the special needs of this population. May require field experience. Writing Intensive course. Prerequisite: TAL 615, or permission of instructor.

TAL 620. Reading in the Elementary School
3 credits  
Offered First Summer Session
Extending competencies in teaching reading, including exceptional children in the regular classroom, with emphasis on applying findings from research in reading to classroom practices. 20 hours of field experience required for all students who are not currently teaching.

TAL 621. Language Arts and Culture in the Classroom
3 credits  
Offered Spring Semester
Extending competencies in the language arts including linguistic and cultural diversity and children with disabilities in elementary classrooms. Emphasis on research applications. 20 hours of field experience required for all students who are not currently teaching. Writing intensive course.

TAL 622. Mathematics in the Elementary School
3 credits  
Offered Spring Semester
Content, methods, and research appropriate for teaching mathematics in the elementary school, including exceptional children in the regular classroom. Content is defined as a pre-algebra mathematics. 20 hours of field experience required for all students who are not currently teaching. Writing intensive course.

TAL 623. Science in the Elementary School
3 credits  
Offered First Summer Session
Extending competencies of elementary school teachers in teaching science to children, including exceptional children in the regular classroom. Development of science programs based on research which has classroom applications. 20 hours of field experience required for all students who are not currently teaching.
TAL 624. Social Studies in the Elementary School
3 credits
Offered Fall Semester
Extending competencies in teaching social studies to children, including exceptional children in the regular classroom, with an emphasis on research applications. 20 hours of field experience required for all students who are not currently teaching.

TAL 625. Literature for Children and Adults
3 credits
Offered Fall Semester
Study of literature for children and adolescents emphasizing multicultural literature and use of literature across the curriculum. Twenty hours of field experience required. Prerequisite: Graduate standing.

TAL 626. Instructing Students Who Have Literacy Challenges
3 credits
Offered Fall and Spring Semesters
Administration and interpretation of instructional assessments with instructional strategies and materials based upon scientifically based reading research for the prevention and remediation of reading difficulties. Prerequisite: TAL 550 and 552 or 620 and 621.

TAL 628. Seminar in Elementary Education
3-12 credits
Offered By Announcement only
Study in special interest areas in elementary education. May be taken for up to 12 credits. Prerequisite: Permission of instructor.

TAL 630. Learning Disabilities
3 credits
Offered Fall Semester
A comprehensive study of theoretical issues, research, diagnosis, planning, and organization of instruction for children with learning problems. Curriculum adjustment, development of programs of differential instruction, specialized methods of evaluation, and team relationships will be emphasized. This is a writing intensive course. Prerequisite: TAL 531 or equivalent.

TAL 631. Theory and Instructional Practices for Exceptional Student Education
3 credits
Offered Spring Semester
Theoretical issues, research, diagnosis, planning, and organization of instruction for exceptional students. Programs of differential instruction, ongoing assessment, and team relationships will be covered. Prerequisite: TAL 531 or equivalent, or permission of instructor.

TAL 632. Classroom and Behavior Management
3 credits
Offered Spring Semester
An examination of the principles of various theoretical perspectives of classroom management and discipline. Applications to the management of behavior problems of children and adolescents. Contemporary research analyzed and discussed. Writing intensive course.

TAL 633. Theories and Models of Teaching Students with Behavior/Emotional Disorders
3 credits
Offered Spring Semester
Characteristics, issues, research, diagnosis, planning, and organization of instruction for children with behavior disorders. Curriculum design evaluation methods and instructional strategies are also included. Prerequisite: TAL 531 or equivalent.

TAL 634. Prescriptive Teaching of Exceptional Students
3 credits
Offered Fall Semester
Techniques for individualization of instruction for exceptional students, including educational prescription, and curriculum adaptation. Prerequisite: TAL 630 or 631, 633, or permission of instructor.
TAL 635. Seminar in Special Education  
3-12 credits  
Offered By Announcement only  
Study in special interest areas in special education. May be taken for up to 12 credits. Prerequisite: Permission of instructor.

TAL 637. Assessment in Exceptional Student Education  
3 credits  
Offered Fall Semester  
Administration and interpretation of assessment tools used to assess and evaluate reading and learning difficulties; includes a survey of instructional strategies and materials for the prevention and remediation of reading difficulties based on the results of the assessments.

TAL 638. Communication and Consultation Skills in Exceptional Student Education  
3 credits  
Offered Spring Semester  
A course for professionals who will be teaching, counseling, or interacting directly or indirectly with exceptional students. An overview of community agencies, organizations, and services, counseling and consulting models, skills associated with various educator roles; and techniques for interacting with parents.

TAL 641. Principles of Curriculum Development and Classroom Management for TESOL  
3 credits  
Offered Spring Semester  
Components of curriculum and instructional management in ESOL classrooms. Pupil/teacher interaction, curriculum organization, student assessment and evaluation, materials development and adoption, utilization of resources, and classroom organization will be covered.

TAL 643. Introduction to Theories and Practice of Teaching English to Speakers of Other Languages  
3 credits  
Offered First Summer Session  
Introduction to theories and practice of ESOL.

TAL 645. Language Assessment  
3 credits  
Offered Fall Semester  
Nature and methodologies of language assessment within a framework of psychometric and linguistic criteria. Prerequisite: TAL 643.

TAL 646. Principles of First and Second Language Acquisition  
3 credits  
Offered Spring Semester  
Theories and principles of language acquisition. Phenomena of language interference related to linguistic and cultural criteria. Prerequisite: TAL 643 and/or 640.

TAL 647. Understanding Culture in the Classroom  
3 credits  
Offered Spring Semester  
This course explores the conflicts and the strategies for resolution between the patterns of culture in the classroom and the patterns of culture that school children bring to the classroom - patterns which are learned in their families and communities.

TAL 648. Educational Issues in Immigration  
3 credits  
Offered Spring Semester  
An historical, philosophical, and sociological analysis of issues involving education and immigration, cultural identity, diversity, and congruity. A topical approach is emphasized.

TAL 650. Professional Seminar  
0 credits  
Offered Fall Semester  
Seminar providing study of contemporary topics and professional issues in teacher education. Prerequisite: Admission to doctoral program in TAL.
TAL 651. **Assessment of Reading and Related Learning Disabilities**
3 credits  
Offered Fall Semester
Theories and procedures for screening, diagnosis, and progress-monitoring of reading and related learning disabilities. Includes instruction and supervised clinical experiences in administration and interpretation of assessments with an emphasis on prevention, identification, and remediation of reading and related learning disabilities. Prerequisite: TAL 550, 552, 630, and 637 or equivalent courses.

TAL 652. **Intervention for Reading and Related Learning Disabilities**
3 credits  
Offered Spring Semester
Theories and procedures for screening, diagnosis, and progress-monitoring of reading and related learning disabilities. Includes instruction and supervised clinical experiences in administration and interpretation of assessments with an emphasis on prevention, identification, and intervention of reading and related learning disabilities. Prerequisite: TAL 651.

TAL 653. **Applied Linguistics in Education**
3 credits  
Offered Fall Semester
Survey of phonology, morphology, and syntax of language system, especially as they apply to learning disabilities, common language disorders, programs in preschool, reading, and bilingual education.

TAL 655. **Seminar in Reading/Learning Disabilities**
3-12 credits  
Offered By Announcement only
Contemporary topics in reading and learning disabilities. Rotating topics and faculty. Open only to advanced graduate students in reading and learning disabilities pursuing specialist or doctoral degrees. Specialist students enroll for a total of six hours, and doctoral students for a total of 12 hours. Course may be repeated for a total of 12 credits. Subtitles describing the topics to be offered will be shown in parentheses in the printed schedule, following the title. Prerequisite: Admission to Specialist or Doctoral study or permission of instructor.

TAL 656. **Seminar in Reading: History, Policy, and Administration of Reading Programs**
3 credits  
Offered Spring Semester
Seminar providing intensive study of contemporary topics in reading. Open to advanced graduate students in reading. Prerequisite: TAL 550 and 552.

TAL 657. **Research on Learning in Mathematics and Science**
3 credits
Provides an overview of the historical roots and current state of the learning sciences, as they apply to the study of learning in science and mathematics. Organized around reading, discussion and synthesis of research. Prerequisite: Acceptance to Ph.D. program or approval of instructor.

TAL 658. **Mathematics and Science Curriculum**
3 credits  
Offered Spring Semester
Study of mathematics and science curricula and the competing forces that shape them, including standards documents, state and national policy, conceptions of the disciplines, modern and postmodern analyses of curriculum theory. Prerequisite: Admission to graduate studies.

TAL 659. **Assessment in Mathematics and Science**
3 credits
Overview of the theoretical and research frameworks for student assessment in mathematics and science. Classroom-based assessment, testing for high stakes and other purposes, national and international comparisons in mathematics and science.
TAL 660. **Theories and Analyses of Instruction**  
*3 credits*  
*Offered By Announcement only*  
A survey of current instructional theories with; a consideration of the relationship to what is known about learning and a selection, examination, and discussion of the techniques derived from them. Prerequisite: EPS 605 (or equivalent) or permission of instructor.

TAL 661. **Theoretical and Psychological Bases of Teacher Education**  
*3 credits*  
*Offered By Announcement only*  
Doctoral seminar on the philosophical, theoretical, and psychological bases of teacher education pertaining to the student’s area of concentration (TESOL, Special Education or Reading). Subtitles describing the topics to be offered will be provided in the printed schedule. Prerequisite: Doctoral status.

TAL 662. **Issues and Trends in Multicultural Education**  
*3 credits*  
*Offered By Announcement only*  
The study and critical examination of the theory and practice of multicultural education. Development of a personal theory of effective education for pluralism is included. Prerequisite: Doctoral status.

TAL 663. **Issues and Trends in Teacher Education**  
*3 credits*  
*Offered By Announcement only*  
Seminar providing study of contemporary topics in teacher education. Consideration is given to the philosophical, psychological, and sociological bases of teacher education. Analytic review of research on teacher education curricula, program innovations, policy issues, and their effects will also be covered. Open only to doctoral students. Prerequisite: Doctoral status.

TAL 664. **Curriculum and Computing**  
*3 credits*  
*Offered By Announcement only*  
Curriculum history and theory in the context of educational technologies from the spoken work, to text and textbook, and finally computing. Prerequisite: Doctoral status.

TAL 665. **Seminar in Special Education Research**  
*3 credits*  
*Offered By Announcement only*  
Critical analysis of empirical research studies in selected areas of special education research, focusing on research designs, data analysis methods, and interpretation of findings.

TAL 667. **Seminar in Current Special Education Issues**  
*3 credits*  
*Offered By Announcement only*  
Critical examination of selected current issues in special education from historical, social, policy, practice and research perspectives.

TAL 671. **Internship: Elementary Learning Disabilities Classroom**  
*1-6 credits*  
*Offered By Announcement only*  
A comprehensive program of observations and supervised teaching in the elementary learning disabilities classroom. The student spends full time in an elementary learning disabilities classroom participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 672. **Internship in Prekindergarten-Grade 3**  
*3 credits*  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
A comprehensive program in observation and supervised teaching in a school/center for children (ages 3-8 yrs.). The student spends full time in the school/center participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Early Childhood Committee.
TAL 673. Internship: Secondary Learning Disabilities Classroom
1- 6 credits  
Offered Fall and Spring Semesters
A comprehensive program of observations and supervised teaching in the secondary learning disabilities classroom. The student spends full time in a secondary learning disabilities classroom participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 674. Internship in the Elementary School
3- 6 credits  
Offered By Announcement only
A comprehensive program of supervised teaching in a K-6 classroom in the elementary school. The student spends a full semester employed as a full-time teacher while under the guidance of school and university personnel. Prerequisite: Approval of the Office of Student Services.

TAL 675. Internship in the Secondary School
3- 6 credits  
Offered By Announcement only
A comprehensive program of supervised teaching in the secondary school. The student spends two full semesters employed as a full-time teacher while under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 676. Internship in Special Education Settings
3- 6 credits  
Offered By Announcement only
A comprehensive program of supervised teaching in special education settings. The student spends two full semesters employed as a full-time teacher while under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 677. Practicum/Internship with Infants and Toddlers with Disabilities (0-3 yrs.)
1- 6 credits  
Offered By Announcement only
A comprehensive program in observations and supervised teaching in a school/center for infants and toddlers with disabilities (0-3 yrs.). The student spends full time in the school/center participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Office of Student Services.

TAL 678. Practicum/Internship with Children with Disabilities (3-5 yrs.)
1- 6 credits  
Offered By Announcement only
A comprehensive program in observation and supervised teaching in a school/center for children with disabilities (3-5 yrs.). The student spends full time in the school/center participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Office of Student Services.

TAL 679. Specialized Placements in Exceptional Student Education
1- 6 credits  
Offered By Announcement only
An alternative internship placement with specialists in non-classroom based and/or non-education based exceptional student education settings. The student spends full time in the program participating in all activities of the specialist under the guidance of program and university personnel. Prerequisite: Approval of the Office of Student Services.
TAL 680. Working with Families of Young Children with Disabilities: Strategies and Medical Issues
3 credits
This course will address issues related to working with families of young children with special educational and health needs. This will include strategies for effective communication and collaboration with all members of the interdisciplinary team. This is a writing intensive course.

Offered Fall Semester

TAL 681. Methods for Communications and Language in Young Children with Disabilities
2 credits
This course will focus on language theories, models, and methods for birth-eight year olds. The course will present an overview of normal development in communication and discuss conditions that might impede progress as well as signs that would suggest a problem is present. This course may require field experience.

Offered Spring Semester

TAL 682. Adaptive Technology and Computers in Early Childhood
1 credit
Applications of adaptive technology and computers in the education of young children with special needs.

Offered First Summer Session

TAL 689. Internship in the Elementary School for K-12 Areas
3 credits
A comprehensive program of supervised teaching in the elementary school. The student spends one full semester employed as a full-time teacher while under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experience.

Offered By Announcement only

TAL 690. Internship in the Secondary School for K-12 Areas
3 credits
A comprehensive program of supervised teaching in the secondary school. The student spends one full semester employed as a full-time teacher while under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

Offered By Announcement only

TAL 693. Advanced Individual Study
1-3 credits
Individual work on a special project under faculty guidance. Application for Admission to Advanced Individual Study form will be required. Prerequisite: Permission of the directing faculty member and Department Chairman.

Offered Fall and Spring Semesters and First and Second Summer Sessions

TAL 694. Advanced Individual Study
1-3 credits
Individual work on a special project under faculty guidance. Application for Admission to Advanced Individual Study form will be required. Prerequisite: Permission of the directing faculty member and Department Chairman.

Offered Fall and Spring Semesters and First and Second Summer Sessions

TAL 695. Doctoral Project/Dissertation Seminar
2 credits
Required of all students admitted to advanced graduate standing until completion of doctoral program. Discussion and analysis of student projects and dissertations. New trends in the areas of research and educational development in Elementary Education considered. Prerequisite: Admission to Doctoral Program.

Offered By Announcement only
TAL 696. Practicum/Internship: Elementary Exceptional Student Education Classroom
1-6 credits
Offered Fall and Spring Semesters
A comprehensive program of observations and supervised teaching in an elementary exceptional student education classroom. The student spends full time in the classroom participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Office of Student Services.

TAL 697. Practicum/Internship: Secondary Exceptional Student Education Classroom
1-6 credits
Offered Fall and Spring Semesters
A comprehensive program of observations and supervised teaching in a secondary exceptional student education classroom. The student spends full time in the classroom participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Office of Student Services.

TAL 730. Doctor of Philosophy Dissertation
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the Ph.D. The student enrolled for credit as determined by his/her advisor. Credit is not awarded until the doctoral dissertation has been accepted. Prerequisite: Admission to doctoral program.

TAL 735. Doctor of Education Dissertation
1-12 credits
Offered By Announcement only
Required of all candidates for the Ed.D. The student enrolls for credit as determined by his/her advisor. Credit is not awarded until the doctoral project has been accepted. Total enrollment may not exceed 12 credits. Prerequisite: Admission to doctoral program.

TAL 750. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D. and Ed.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

TAL 770. Associate Teaching in the Elementary School (Semester-Long)
3-6 credits
Offered Fall and Spring Semesters
A comprehensive semester-long program in observation and supervised teaching in the elementary school. The student spends full time in an elementary school participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 771. Associate Teaching in the Elementary School for K-12 Areas
3-6 credits
Offered Fall and Spring Semesters
A comprehensive program in observation and supervised teaching in the elementary school. The student spends full time in an elementary school participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.

TAL 772. Associate Teaching in the Secondary School
6 credits
Offered Fall and Spring Semesters
A comprehensive program in observation and supervised teaching in the secondary school. The student spends full time in a secondary school participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the Committee on Field Experiences.
TAL 773. **Associate Teaching in the Secondary School for K-12 Areas**  
3-6 credits  
*Offered Fall and Spring Semesters*  
Prerequisite: Approval of the Committee on Field Experiences.

TAL 774. **Associate Teaching in the Secondary School (Semester-Long)**  
3-6 credits  
A comprehensive semester-long program in observation and supervised teaching in the secondary school. The student spends full time in a secondary school participating in all activities of the teacher under the guidance of school and university personnel. Prerequisite: Approval of the committee on field experiences.

TAL 778. **Associate Teaching in the Elementary School (Year-Long)**  
3-6 credits  
*Offered By Announcement only*  
A comprehensive year-long program in observation and supervised teaching in the elementary school. The student spends full time in an elementary school participating in all activities of the teacher under the guidance of school and university personnel following the calendar of the school system. Prerequisite: Approval of the Committee on Field Experiences.
Biomedical Engineering

BME 501. Unified Medical Sciences I
3 credits
Offered Fall Semester
Treatment of the basic biological and medical elements in physiological systems. The anatomy, physiology, biophysics, biochemistry, and certain aspects of clinical medicine are unified with an emphasis on cellular and subcellular systems. Not open to BME undergraduates. Prerequisite: Permission of course coordinator.

BME 502. Unified Medical Sciences II
3 credits
Offered Fall Semester
Treatment of the basic biological and medical elements in physiological systems. The anatomy, physiology, biophysics, biochemistry, and certain aspects of clinical medicine are unified with an emphasis on cardiovascular, renal, digestive, endocrine, and reproductive systems. Not open to BME undergraduates. Prerequisite: Permission of course coordinator.

BME 503. Unified Medical Science III
3 credits
Offered Spring Semester
Treatment of the basic biological and medical elements in physiological systems. The anatomy, physiology, biophysics, biochemistry, and certain aspects of clinical medicine are unified with an emphasis on neural, sensory, and muscular systems. Not open to BME undergraduates. Prerequisite: Permission of course coordinator.

BME 506. ProEngineer Applications for Biomedical Engineering
1 credit
Offered Spring Semester
Laboratory course for computer based two and three dimensional drawing and design based on ProEngineer. Parametric design, parts, features, assemblies for complex modeling. Applications in biomedical engineering design. Prerequisite: BME 111, 112, EEN 118.

BME 507. LabView Applications for Biomedical Engineering
1 credit
Offered Spring Semester
Laboratory course for computer based instrumentation and design based on Labview. Virtual instrumentation, data acquisition and display, GPIB instrument control, biomedical applications in biosignal recording, and monitoring are discussed. Prerequisite: BME 111, 112, EEN 118.

BME 511. Clinical Engineering
3 credits
Offered By Announcement only
Clinical engineering concepts, medical instrumentation and systems, patient safety, requirements and regulations for medical devices, hospital organization, accreditation requirements, and related topics are discussed. Prerequisite: Permission of instructor.

BME 512. Regulatory Control of Biomedical Devices
3 credits
Offered Spring Semester
Regulatory agencies and requirements, Food and Drug Administration, 510(k) and premarket approval (PMA), international regulatory requirements, ISO 9000 series, CE, UL, product and process validation, quality engineering, quality improvement programs, rapid prototyping, packaging and sterilization, and project management are discussed.
BME 520. **Medical Imaging Systems**  
3 credits  
Offered By Announcement only  
Engineering and scientific principles of medical imaging systems. The concepts of instrumentation and diagnostic applications of different techniques and systems are presented. Demonstrations or exhibitions of medical systems are given in the visits to clinic and research laboratories. Topics include digital image and image processing fundamentals, radiographic (X-ray, CT), magnetic resonance (MRI) and radio-isotopic (PET) systems, and associated image reconstruction techniques. Basic concepts and simulation of imaging systems are emphasized. Prerequisite: EEN 118, 201, 307, BME 570 (co-requisite) or equivalent.

BME 521. **Medical Imaging Applications**  
3 credits  
Offered Fall Semester  
Medical applications of imaging systems and image processing techniques. Topics include image fundamentals (resolution, format, and storage), image processing fundamentals (transformation, compression, enhancement, segmentation, registration, and reconstruction), and image analysis fundamentals (calibration, quantification, correlation, linearity and depiction). Course includes dedicated computer laboratory projects and demonstrations given in clinical and research laboratories at the medical campus. Prerequisite: EEN 118, 201, 307. Corequisite: BME 570 or equivalent.

BME 525. **Special Problems**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Research and/or design projects consisting of an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Senior or graduate standing; permission of instructor.

BME 526. **Special Problems**  
1-3 credits  
Offered Fall and Spring Semesters  
Research and/or design projects consisting of an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.

BME 527. **Special Problems**  
1-3 credits  
Offered Fall and Spring Semesters  
Research and/or design projects consisting of an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.

BME 528. **Engineering Hemodynamics**  
3 credits  
Offered By Announcement only  
Fluid mechanics of circulation with emphasis given to function of the heart and its valves, systemic circulation including arterial flow, capillary, venous flows, pulmonary circulation including alveolar sheet flow. Particular stress is placed on the modeling of physiological events related to blood flow in cardiovascular devices and prostheses. Prerequisite: MEN 309 or equivalent.

BME 529. **Special Problems**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Research and/or design projects. Individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.
BME 531. Technical Entrepreneurship I
1 credit. Offered Fall and Spring Semesters
The first half of a two-semester sequence that simulates the work of a product development team to gain experience in technical entrepreneurship. The students propose product ideas, assess those collectively, select a few, form teams, define the product, and perform market analysis. The course is concluded with a business and technical development plan for the team’s project. Lectures are presented on a variety of entrepreneurial topics. Prerequisite: Junior or higher standing.

BME 532. Technical Entrepreneurship II
2 credits. Offered Fall and Spring Semesters
The second half of a two-semester sequence that simulates the work of a product development team to gain experience in technical entrepreneurship. The students complete the development of a working prototype and refine their marketing and business plan based on experience gained during the development phase. Lectures are presented on relevant entrepreneurial topics. Prerequisite: Junior or higher standing.

BME 535. Advanced Biomaterials
3 credits. Offered By Announcement only
Applications of biomaterials in different tissue and organ systems. Relationship between physical and chemical structure of materials and biological system response are discussed as well as choosing, fabricating, and modifying materials for specific biomedical applications. Prerequisite: BME 335 or permission of instructor.

BME 540. Microcomputer-Based Medical Instrumentation
3 credits. Offered By Announcement only
Principles and design of microcomputer-based biomedical instruments, analog and digital signal conversion, microcomputer hardware and software design, algorithm development for medical applications, medical signal processing with microcomputers, software safety in life support systems, and current applications are discussed. Prerequisite: EEN 304 and 315, or permission of instructor.

BME 541. Medical Electronic Systems Laboratory
2 credits. Offered Spring Semester

BME 545. Biomedical Optical Instruments
3 credits. Offered Fall Semester
Introduction to geometrical optics, light sources, detectors, and fiber optics with an emphasis on engineering aspects and medical applications. Fiber-optic delivery systems for medical applications, optics of the eye and visual instruments, and optical instruments used in medicine (microscopes, endoscopes, ophthalmic instruments) are discussed. Hands-on sessions in the laboratory are included. Prerequisite: PHY 207, MTH 311 or permission of the instructor.

BME 546. Medical Applications of Lasers
3 credits. Offered Spring Semester
Review of geometrical optics, fiber optics, wave optics, laser physics, and technology. Medical laser systems, optical properties of tissue, light propagation in tissue, laser-tissue interactions, and surgical applications of lasers are also covered. Hands-on sessions in the laboratory are included. Prerequisite: PHY 207, MTH 311 or permission of the instructor.
BME 550. Rehabilitation Engineering
3 credits
Offered Fall Semester
Principles of rehabilitation engineering with emphasis on currently used assistive
devices for ambulation and hand motion. Human neural and muscle physiology,
electromyography, functional electrical stimulation, artificial and biological
sensors, control, and design aspects of active assistive devices for the active
assistive devices for the handicapped are discussed. Prerequisite: EEN 305 or
permission of instructor.

BME 560. Biomedical Transport Phenomena
3 credits
Offered Fall and Spring Semesters
General phenomenological laws, momentum transport, energy transport, mass
transport, viscoelasticity, diffusivity, thermal conductivity of biological materials,
first and second laws of thermodynamics, blood as a living fluid, cellular and
membrane transport, transport in microcirculation, large vessels, and transport
phenomena in the lung and other organs are discussed. Prerequisite: MTH 311 or
permission of instructor.

BME 565. Principles of Cellular and Tissue Engineering
3 credits
Offered Fall Semester
Introduction to cellular and tissue engineering. Current therapeutic approaches
for lost/damaged tissue or organ function, tissue engineering strategies to
replace/repair tissue or function: infusion of cells, production and delivery of
tissue-inducing substances, cells placed on or within biomaterial scaffolds,
examples of tissue engineering applications: skin, heart muscle, blood vessels,
and blood. Prerequisite: BIL 150, BME 335 or permission of instructor.

BME 570. Introduction to Biosignal Processing
3 credits
Offered Fall and Spring Semesters
Course topics include quantitative description, analysis, and processing of
biophysical and physiological (cardiovascular, neural, sensory, muscular,
respiratory and other) signals using computers. Survey of time-frequency
representations, correlation, convolution, coherence, filtering, averaging, and
classification is also included. Prerequisite: EEN 118, BME 440 or permission of
instructor.

BME 571. Introduction to Biosignal Processing Lab
1 credit
Offered Fall and Spring Semesters
Laboratory course in conjunction with BME 570 course. Corequisite: BME 570.

BME 575. Biomechanics II
3 credits
Offered By Announcement only
Applications of linear and nonlinear viscoelastic concepts to the biomedical
characteristics of biological tissues and structures at small and large deformations
of blood flow, experimental methods of analysis, artificial organs, and life-support
systems. Prerequisite: BME 375.

BME 581. Radiation Biology and Physics
3 credits
Offered Fall Semester
The principles, methods, and results of radiation biology with physics applications
in radiation therapy will be introduced in the course. The course will focus on
mechanisms of radiation and biological system interaction, biological aspects of
the foundation of radiation therapy, and mathematical models for radiobiological
analysis. Corequisite or prerequisite: BME 502 or permission of instructor.
BME 582. Radiation Dosimetry  
3 credits  
Offered Spring Semester  
The principles and instrumentation of radiation dosimetry with focus on the applications in radiation therapy will be introduced in this course. The course will emphasize radiation dose computation algorithms and applications in treatment dose planning. The course will also cover a categorized dosimetric analysis of radiation therapy to different clinical conditions. Prerequisite: BME 310, 581.

BME 585. Bioelectromagnetism  
3 credits  
Offered By Announcement only  
Historical review of the discovery of the role of electric, magnetic, and electromagnetic fields in living systems. The survey of electro, magneto, and therapeutic devices are included as well as the interactions between electromagnetic fields and living tissues in both harmful and beneficial ways. Prerequisite: Either BME 502 or 503, or permission of instructor.

BME 586. Dynamic Analysis of Biological Tissues  
3 credits  
Offered By Announcement only  
Dynamic analysis of biological tissues including characterization of viscoelastic properties of biological tissues using a Dynamic Mechanical Analyzer. Lab experiments are included. Prerequisite: BME 375, 335 or consent of instructor.

BME 590. Special Topics  
1–3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule following the title Special Topics. Prerequisite: Junior or higher standing.

BME 605. M.S. Design Project I  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Comprehensive M.S. design project in biomedical engineering. Open only to students in the BS/MS program. Prerequisite: Permission of instructor.

BME 606. M.S. Design Project II  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Continuation of BME 605 or additional M.S. design project in biomedical engineering. Open only to students in the BS/MS program. Prerequisite: Permission of instructor.

BME 613. Application of Computers in Medicine  
3 credits  
Offered By Announcement only  
Applications in the clinical and medical research laboratories for physiological data acquisition, analysis, and management of patient records. Differences among computer systems and languages for clinical and research activities are also covered. Prerequisite: Knowledge of programming and permission of instructor.

BME 615. Advanced Engineering Hemodynamics  
3 credits  
Offered By Announcement only  
Derivation and description of flow phenomena in the circulatory system from a fluid mechanical viewpoint. Topics include rheology of blood, arterial flow, aortic-valve phenomena, micro-circulation, venous flow, collapsible vessels, and blood flow in the lung. Prerequisite: MEN 512 or permission of instructor.

BME 617. Principles of Artificial Internal Organs  
3 credits  
Offered By Announcement only  
Engineering and scientific principles applied to design and function of artificial internal organs. Devices that replace partial function of the renal, pulmonary, cardiovascular, urinary, and endocrine systems are examined. Corequisite: BME 502. Permission of instructor.
BME 620. Engineering Hemorheology  
3 credits  
Offered By Announcement only  
Course topics include rheological concepts, general properties of flowing blood, blood viscosity and viscometers, flow properties of red and white blood cells, deformation of red blood cells and its effects on blood flow, viscoelastic property of blood cell membranes, blood cells in shear field, hemolysis, platelets and endothelial cells, platelet activation and aggregation, thrombosis formation and dissolution, cell/wall and cell/cell interactions, and sickle cell rheology. Prerequisite: BME 501 or permission of instructor.

BME 622. Biomedical Signal Processing  
3 credits  
Offered By Announcement only  
Applications of the digital signal processing techniques to biomedical signals originating from cardiovascular, respiratory, neural, sensory, and motor systems. Digital filtering, averaging, spectral analysis, signal estimation, detection, and classification are covered. Emphasis is placed Real-time and on-line applications. Prerequisite: Permission of instructor.

BME 623. Neural Engineering  
3 credits  
Offered Fall and Spring Semesters  
Biophysics of neural communication, quantitative electroencephalography and evoked potentials, sleep, seizure, anesthesia and intraoperative monitoring, neural stimulation, artificial and biological neural networks, cochlear and visual implants, brain and muscle stimulation. Prerequisite: BME 503, 570 or consent of instructor.

BME 625. Special Problems  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Research and/or design projects through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.

BME 626. Special Problems  
1- 3 credits  
Offered Fall and Spring Semesters  
Research and/or design projects through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.

BME 627. Special Problems  
1- 3 credits  
Offered Fall and Spring Semesters  
Research and/or design projects through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of the instructor.

BME 628. Advanced Topics  
1- 3 credits  
Offered Fall and Spring Semesters  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

BME 629. Advanced Medical Imaging  
3 credits  
Offered By Announcement only  
Analysis of contemporary medical imaging systems and the associated technologies. The course focuses on principles of advanced medical imaging systems. Topics include multimodality imaging, three-dimensional image reconstruction and visualization, clinical and research applications, and derivation and comparison of algorithms. Prerequisite: BME 520 or equivalent.
BME 630. Advanced Topics
1-3 credits
Offered Fall and Spring Semesters
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics.” Prerequisite: Permission of instructor.

BME 631. Advanced Topics
1-3 credits
Offered Fall and Spring Semesters
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics.” Prerequisite: Permission of instructor.

BME 632. Advanced Topics
1-3 credits
Offered Fall and Spring Semesters
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics.” Prerequisite: Permission of instructor.

BME 640. Implantable Biomedical Devices
3 credits
Offered By Announcement only
Development and advances in implantable materials and devices especially those used as electrically driven prostheses. Topics include pacemakers, defibrillators, catheters, neurological stimulators, heart assist, bone repair, and other diagnostic and therapeutic devices. The historical, medical significance, business, economic, and technical aspects of these devices and the associated instruments for monitoring are discussed. Fundamentals of electrochemical corrosion and stimulation as well the technology of implantable power sources are reviewed. Prerequisite or corequisite: BME 502 or 503.

BME 645. Biomedical Optical Imaging and Diagnostics
3 credits
Offered By Announcement only
Review of geometrical optics, fiber optics, and tissue optics. Introduction to physical optics: interference, diffraction, and polarization; optical imaging resolution limits, super-resolution imaging, advanced optical microscopy, and optical coherence tomography (OCT). Imaging through scattering tissue, imaging and diagnostics with polarized light, fluorescence, infrared, and Raman spectroscopy and applications are also discussed. Optical diagnostics using scattered light: laser Doppler flowmetry, and dynamic light scattering; and opto-chemical and evanescent wave sensors are also covered. Prerequisite: BME 545 or 546, and permission of instructor.

BME 660. Fundamentals of Cellular and Tissue Engineering
3 credits
Offered Spring Semester
Principles and advanced topics on cellular and tissue engineering. Topics include biodegradable and non-biodegradable biomaterials, cytokines, the traditional and stem cell-based tissue engineering approaches, bioreactors and special topics such as bone, cartilage and other tissues. Prerequisite: BME 501 or permission of instructors.

BME 680. Biomedical Engineering Seminar
0 credits
Offered Fall and Spring Semesters
Presentation of biweekly seminars by selected speakers and graduate students on current topics of interest in biomedical engineering. Attendance is required of all graduate students registered in biomedical engineering graduate programs. Prerequisite: Graduate standing.
BME 681. Radiation Therapy Physics
3 credits
Application of radiation physics in the field of radiation therapy. The course will cover the relevant subjects of modern physics, the basic modalities and basic instrumentations of radiation therapy, the principles of particle transport and radiation dose computation and quality assurance of radiation therapy instruments. The subject of radiation protection will also be discussed. Prerequisite: BME 582.

BME 683. Radiation Therapy Physics Clinical Rotation
1 credit
Students will observe clinical activities at a designated radiation therapy center. Rotation includes observation of daily treatment, simulation, dose planning, physics QA and routine physics support activities. Students will meet with the course instructor one hour/week to discuss the schedule and the progress of the rotation activities. Prerequisite: BME 681 or permission of instructor.

BME 710. Master’s Thesis
1-6 credits
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

BME 720. Research in Residence
0 credits
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in BME 710 (usually six credits). Credit not granted. May be regarded as full time residence.

BME 725. Continuous Registration—Master’s Study
0 credits
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

BME 730. Doctoral Dissertation
1-12 credits
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of BME 730 may be taken in a regular semester, nor more than six in a summer session.

BME 750. Research in Residence
0 credits
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Civil, Architectural, and Environmental Engineering
CAE 510. Structural Mechanics
3 credits
Analysis of stress and deformation of solids. Application to systems in the elastic and inelastic range. Topics include beams of special geometry and support, stress concentrations, stresses in elastic foundations, torsion, energy methods, failure theories, and brittle fracture. Prerequisite: CAE 310 and senior standing.
CAE 511. Advanced Structural Analysis  
3 credits  
Offered Fall Semester
General methods of indeterminate analysis. Elements of energy method in indeterminate analysis of axial, flexural torsional, and composite members. Basic flexural and stiffness methods and matrix development are also included. Prerequisite: CAE 310.

CAE 520. Advanced Design of Concrete Structures  
3 credits  
Offered Spring Semester
Design of reinforced concrete flat plates, flat slabs, two-way slabs, long columns, and slab-column connections are discussed. Deflections, crack widths, and background of current ACI Building Code are also included. Prerequisite: CAE 320.

CAE 521. Advanced Design of Steel Structures  
3 credits  
Offered Fall Semester
Steel framing systems, design of members and connections of braced and rigid frames, design for torsion, and design of steel-concrete composite members are discussed. Prerequisite: CAE 321.

CAE 522. Design of Prestressed Concrete Structures  
3 credits  
Offered By Announcement only
Materials and systems for prestressing, design of prestressed concrete members for flexure and shear, camber, deflection, and crack control are discussed. Design of continuous beams, compression members, two-way concrete floor systems, and the loss of prestress are also included. Prerequisite: CAE 320.

CAE 523. Design of Masonry Structures  
3 credits  
Offered By Announcement only
Masonry construction. Design of flexural and compression members, bearing walls, shear walls, diaphragms, and connections of masonry structures. Arches, vaults, and buttresses are also included. Prerequisite: CAE 320.

CAE 524. Design of Bridge Structures  
3 credits  
Offered By Announcement only
Engineering principles of analysis and design of highway bridges. Topics include load types, failure modes, and design philosophies. Computation of design force envelopes via influence lines. Design of slabs, rolled beam, plate girder, reinforced concrete, and prestressed concrete bridges. Prerequisite: CAE 310, 320, 321 or permission of instructor.

CAE 530. Water-Quality Control in Natural Systems  
3 credits  
Offered Spring Semester
Water quality regulations, fate and transport processes, water-quality control in rivers, lakes, wetlands, oceans, and ground water are discussed. Prerequisite: CAE 430. Prerequisite or corequisite: CAE 440.

CAE 531. Surface-Water Hydrology  
3 credits  
Offered By Announcement only
Rainwater characteristics, abstraction processes, surface-runoff, routing, and water-quality models. Design of stormwater-management systems, evapotranspiration, and regional water-management is also included as well as case studies. Prerequisite or corequisite: CAE 430.

CAE 532. Ground-Water Hydrology  
3 credits  
Offered By Announcement only
CAE 540. Environmental Chemistry  
3 credits  
Offered Spring Semester  
Kinetics, equilibrium, acid-base, oxidation-reduction, and reaction chemistry applied to water and wastewater engineering. Prerequisite: CHM 112 or permission of instructor.

CAE 541. Environmental Microbiology  
3 credits  
Offered Spring Semester  
Classification of microorganisms. Microbial agents of infectious diseases and modes of disease transmission. Control of pathogens through water and waste treatment, food protection, and insect control. Microbial ecology and bioremediation systems. Laboratory exercises in microbiology. Prerequisite: Permission of instructor.

CAE 542. Solid and Hazardous Waste Engineering  
3 credits  
Offered Fall Semester  
Solid-waste characteristics, recycling, incineration, hazardous waste characteristics, prevention, and physical and chemical treatment are covered. Design projects are also included. Prerequisite: CAE 340.

CAE 543. Air Pollution Control Engineering  
3 credits  
Offered Spring Semester  
Fundamentals of air pollution and air quality; properties and control of particulates, volatile organic compounds, carbon monoxide, sulfur oxides, and nitrogen oxides; motor vehicle emissions; health and aesthetic effects (acid rain, visibility), laws and regulations, meteorology and pollutant transport in the atmosphere; indoor air pollution. Prerequisite: MAE 303 and CAE 330/MAE 309 or permission of instructor.

CAE 550. Advanced Highway Design  
3 credits  
Offered Fall Semester  
Functional classification and design volumes; Reviews of traffic, vehicle and roadway characteristics; Design controls, criteria and standards; Vertical alignments; Horizontal alignments; Compound curves; Cross sections; Climbing lanes; Earthwork computation; At-grade intersection; Interchange; Design consistency; GeoPak software implementation; Use of traffic simulation software as a design aid. Prerequisite: CAE 450 or equivalent.

CAE 551. Urban Traffic Control  
3 credits  
Offered Spring Semester  
Traffic control devices; Detection systems; Installation and maintenance; Design of signal timing plans; Performance analysis of signalized intersections; Signal coordination; Actuated controllers; Computer simulation/optimization models; Adaptive traffic control and predictions; Ramp metering. Prerequisite: CAE 450.

CAE 553. Transportation Systems Planning and Demand Modeling  
3 credits  
Offered By Announcement only  
Transportation demand analysis and forecasting. Sampling techniques, collection and analysis of survey data. Disaggregate and aggregate models. Trip generation, distribution, modal split and assignment. Transportation network equilibrium. Transportation system management. Prerequisite: IEN 311, CAE 301 or consent of instructor.

CAE 570. Foundation Engineering  
3 credits  
Offered Spring Semester  
Rock and soil formation. Subsurface exploration. Design and analysis of shallow and deep foundations. Reinforced soils. Prerequisite: CAE 370, 371, 320 or permission of instructor.
CAE 580. Hospital and Health Care Facility Design
3 credits  Offered First Summer Session
Planning, design, and construction of modern hospital and health care facilities. Design criteria for functional services, and required structural and patient safety. Design standards. Discussion of construction related topics and problems. Prerequisite: Permission of instructor.

CAE 581. Energy-Efficient Building Design
3 credits  Offered By Announcement only
Concepts and methods of energy-efficient and environmentally-friendly building design. Topics include energy and sustainable design strategies, climate, passive and active solar design, passive cooling systems, day lighting, and computer simulation of energy flows in buildings. A quantitative understanding of energy fundamentals, examples from practice, and design exercises using computer simulation programs are emphasized. Prerequisite: MAE 303 or permission of instructor.

CAE 590. Special Topics
1-3 credits  Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.

CAE 591. Special Topics
1-3 credits  Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.

CAE 592. Special Topics
1-3 credits  Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.

CAE 593. Special Topics
1-3 credits  Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.

CAE 594. Special Topics
1-3 credits  Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Special Topics.” Prerequisite: Permission of instructor.

CAE 595. Special Problems
1-4 credits  Offered By Announcement only
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

CAE 599. Cooperative Education
1 credit  Offered By Announcement only
Practical application of classroom theory through alternating semester or summer employment with industries offering positions consistent with the student’s field of study. Course may be repeated. Periodic reports and conferences are required. Prerequisite: Permission of Department Chair.
CAE 601. **Engineering Scholarship**  
0 credits  
*Offered Fall Semester*

Principles of research in civil, architectural, and environmental engineering. Survey of current department research, basics of literature review, writing engineering documents, presenting seminars, and research methodologies. Prerequisite: Permission of instructor.

CAE 602. **Finite Element Methods**  
3 credits  
*Offered By Announcement only*

Variational principles and their application to finite element methods. Applications to: plane stress and plane strain, three-dimensional stress analysis, bending of plates, and axi-symmetric shells. Lecture, 3 hours. Prerequisite: 500 level structural mechanics course and permission of instructor.

CAE 603. **Master’s Design Project I**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Comprehensive design project in civil, architectural, or environmental engineering. Prerequisite: Permission of instructor.

CAE 604. **Master’s Design Project II**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Continuation of CAE 603. Prerequisite: CAE 603.

CAE 605. **Master’s Project**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Project in civil, architectural, and environmental engineering. Course is required for the non-thesis master’s student. Prerequisite: Permission of advisory committee.

CAE 611. **Theory of Elasticity**  
3 credits  
*Offered By Announcement only*


CAE 612. **Structural Reliability**  
3 credits  
*Offered By Announcement only*

Development of structural safety concepts, design code applications, load process analysis, and interaction of load and resistance variability. Consideration is given to structural system serviceability and safety. Prerequisite: IEN 311 and permission of instructor.

CAE 613. **Stability of Structures**  
3 credits  
*Offered By Announcement only*

Elastic and inelastic buckling of columns, frames and plates, lateral buckling of beams, beam-columns, and built-up columns energy methods (stability) background of various buckling provisions in the AISC and AISI specifications are discussed. Lecture, 3 hours. Prerequisite: CAE 321, MTH 311.

CAE 614. **Structural Dynamics**  
3 credits  
*Offered By Announcement only*

Dynamic responses of structural elements in both the elastic and inelastic ranges. Lagrange’s equations, energy models, numerical and analytical methods, vibrations of continuous systems (beams and plates) are discussed. Assigned readings. Prerequisite: 500 level structural mechanics course and permission of the instructor.
CAE 615. Plates and Shells  
3 credits  
Offered By Announcement only
Analysis and design of plate structures. General Theory of circular and rectangular flat plates under lateral loads, membrane stresses and displacements in shells of revolution, symmetrically and unsymmetrically loaded, bending stresses in shells (rigorous and approximate solutions) are discussed. Lecture, 3 hours. Prerequisite: 500-level structural mechanics course.

CAE 630.  Environmental Fluid Mechanics  
3 credits  
Offered By Announcement only
The physical processes of mixing in aquifers, reservoirs, rivers, estuaries, and in the ocean. An introduction to the mathematical models used to simulate these processes is included. Prerequisite: Graduate student status, and permission of instructor.

CAE 631. Wastewater Treatment and System Design  
3 credits  
Offered By Announcement only
Characterization of domestic wastewater and flows. Sources of wastewater and health considerations. Unit processes for treatment of wastewater including screening, sedimentation, filtration, flocculation flotation, activated sludge, disinfection, sludge digestion, and sludge disposal. Prerequisite: CAE 440, 540, and 541 or permission of instructor.

CAE 632. Water Treatment and System Design  
3 credits  
Offered By Announcement only
Drinking water treatment standards, philosophy of setting standards, public health aspects of organic and inorganic contaminants, basis for design of treatment facilities, design of unit processes for aeration, sedimentation, coagulation, filtration, softening, disinfection, and oxidation are covered. Theory of membrane processes, ion exchange, and water treatment plant residuals are also included. Prerequisite: CAE 440, 541 or permission of instructor.

CAE 640. Treatment Kinetics and Unit Operations  
4 credits  
Offered By Announcement only
A study of unit operations in which students test various water and waste treatment processes in the laboratory. Lecture material focuses on data interpretation and description of rate mechanisms. Prerequisite: CAE 540, 542.

CAE 643. Risk Analysis  
3 credits  
Offered By Announcement only
Probabilistic risk assessment, Poisson processes, Bayesian methods, fault trees, contaminant transport models, and dose-response relationships for assessment of natural and technological risks. Prerequisite: Permission of instructor.

CAE 680. Indoor Environmental Modeling  
3 credits  
Offered By Announcement only
Prediction of indoor environment using computational fluid dynamics techniques. Advanced topics in thermal comfort and indoor air quality. Basic concepts of turbulence modeling and numerical methods for natural, forced, and mixed convection and jet flows indoors. Simulation of air velocity, temperature, and contaminant concentrations in buildings. Comparison of the simulated results with measured data. Prerequisite: CAE 330 or permission of instructor.

CAE 690. Special Problems  
1-3 credits  
Offered By Announcement only
Research and/or design projects. Individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of instructor.
CAE 695. Advanced Topics
1- 3 credits
Offered By Announcement only
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

CAE 696. Advanced Topics
1- 3 credits
Offered By Announcement only
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

CAE 697. Advanced Topics
1- 3 credits
Offered By Announcement only
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

CAE 698. Advanced Topics
1- 3 credits
Offered By Announcement only
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

CAE 710. Master’s Thesis
1- 6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her Master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

CAE 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the Master’s degree after the student has enrolled for the permissible cumulative total in CAE 710 (usually six credits). Credit not granted. May be regarded as full-time residence.

CAE 725. Continuous Registration—Master’s Study
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full-time residence.

CAE 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of CAE 730 may be taken in a regular semester, nor more than six in a summer session.
CAE 750. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Electrical and Computer Engineering

EEN 500. Engineering Analytical Techniques
3 credits
Offered By Announcement only
Complex variables, analytic functions, power series, residue theorem, conformal mappings, series solution, Bessel functions, Legendre polynomials, singular value decomposition, vector, and matrix norms are discussed. Prerequisite: MTH 311.

EEN 502. Engineering Acoustics
3 credits
Offered Fall Semester
Introduction to basic principles of acoustics, methods of sound measurement, physiological, psychological acoustics, the acoustics of the major classes of musical instruments and speech, fundamentals of transducers, architectural acoustics, and the effects and control of noise are covered. Prerequisite: EEN 336 or permission of instructor.

EEN 503. Principles of Electro-optics
3 credits
Offered Fall Semester
Principles of optics, optical fibers, electro-optics, light wave propagation in anisotropic and periodic media, guided waves, and integrated optics are discussed. Electro-optic devices including sources and detectors, optical fiber communication, and optics for medical and biomedical applications are also covered. Prerequisite: PHY 206, 207 and EEN 301 or equivalent.

EEN 504. Optics and Fiber Communication
3 credits
Offered Spring Semester
Introduction to optics and fiber communication, light propagation in free space and waveguides, imaging, wave phenomena and diffraction, interferometer, spectrometer, fiber coupling, and fiber communication are covered. Lecture, 1 1/2 hours; laboratory, 3 hours. Prerequisite: EEN 301 or prerequisite or corequisite: BME 545.

EEN 506. Solid-State Devices
3 credits
Offered By Announcement only
Principles of operation, properties and applications of semiconductor devices, junction, metal-semiconductor, metal-oxide-semiconductor, optoelectronic, bulk-effect, and charge-coupled are covered. Prerequisite: EEN 405 or PHY 520.

EEN 507. Active Filter Design
3 credits
Offered Spring Semester
Active lowpass filter design, gain-tuning and passive-tuning, immittance calculations, high-frequency lowpass filters, frequency and time domain analysis of lowpass, highpass, bandpass, and bandstop filters are discussed. Classical filters and Active filter classification including gain-sensitivity limitations are also included. Prerequisite: EEN 307.

EEN 508. Digital Control Systems
3 credits
Offered By Announcement only
Basic concepts relevant to the analysis and design of digital computer controlled systems. Sampling, z-transform, discrete transfer functions, discrete-time state space modeling, stability, reachability, and observability are discussed. Analysis and design in time and frequency domains, state feedback and observers, optimal control, estimation, and linear quadratic Gaussian design are also included. Prerequisite: EEN 308.
EEN 510. Passive Filter Design
3 credits  Offered By Announcement only
Design of RLC passive filters, properties of positive-real functions, and Brune test are discussed. Design of driving-point and transfer immittances of RC, RL, LC, and RLC one-port and two-port networks are also covered as well as the design of Butterworth, Chebyshev, and elliptic ladder filters. Prerequisite: EEN 307.

EEN 511. Software Engineering
3 credits  Offered By Announcement only
Modern programming methodologies, structured programming and data abstractions, specification, design, implementation, testing, and maintenance of large scale software are covered. Prerequisite: EEN 318.

EEN 512. Software Architecture
3 credits  Offered Spring Semester
Examination of the building blocks of software systems. Design techniques to meet functional requirements. Component-based designs. Model representations. Analysis of designs for functionality, performance, reliability, reusability, and maintainability. Prerequisite: EEN 318.

EEN 513. Software Design and Testing
3 credits  Offered Fall Semester

EEN 514. Computer Architecture
3 credits  Offered Spring Semester and First Summer Session
Computer data and instruction types, survey of existing architectures, and the interaction between hardware and software sub-systems are discussed. Advanced topics in computer architecture. Prerequisite: EEN 414.

EEN 516. Analog Integrated Circuits
3 credits  Offered Fall Semester
Analysis and design of analog integrated circuits with emphasis on MOS technology. Design of operational amplifiers, comparators, sample, hold circuits, and voltage references are discussed. Fundamentals of data converters and CAD methods for analog integrated circuits are also covered. Prerequisite: EEN 306.

EEN 518. Modern Control Theory
3 credits  Offered By Announcement only
State-space modeling of continuous-time systems, stability, reachability, observability, performance, robustness measures in controller design, State feedback and observers are discussed. Optimal control, estimation, and Linear quadratic Gaussian design are also included. Prerequisite: EEN 308.

EEN 519. Design of Computing Languages
3 credits  Offered By Announcement only
Major features of modern programming languages with emphasis on design and software efficiency. Interaction between language design and the design of its compiler are included. Prerequisite: EEN 218.

EEN 521. Computer Operating Systems
3 credits  Offered Fall Semester
Multi-programming and resource allocation, process communication, scheduling resource allocation methods, memory management, data protection, file control, and considerations for parallel/distributed environments are discussed. Case analysis of two systems such as: OS/2, DOS/Windows, UNIX, and VM are included. Prerequisite: EEN 218, 414.
EEN 523. Principles of Database Systems
3 credits
Theory and design of database systems, Entity-relationship, relational, network, and hierarchical database models. Relational algebra and calculus, normalization, query languages/optimization, physical data organization, concurrency, security, recovery, and integrity are discussed. A relational database project is required. Prerequisite: EEN 218 or CSC 220.

EEN 525. Antennas and Propagation
3 credits
Principles of electromagnetic radiation and diffraction, fundamentals of antennas, wire, loop, and micro-strip antennas, array antennas, beam-forming. propagation characteristics in the mobile and indoor environments, path loss, link budget, fading, and diversity are covered. Prerequisite: EEN 301.

EEN 532. VLSI Systems
3 credits
Offered Fall Semester
Fundamentals of MOS Technology in VLSI. System data, control flow, structures, design, layout, maskmaking, fabrication, packaging, and testing of VLSI chips are discussed. Highly concurrent Very Large Scale Integration computational systems are also covered. Prerequisite: EEN 305 and 304.

EEN 533. Random Signals and Noise
3 credits
Offered Fall Semester
Probability models, Bayes’ theorem, Limit theorems of Laplace and Poisson, functions of random variables, Central limit theorem, conditional expectation and estimation, Stochastic processes, stationarity and ergodicity, cross-spectral analysis, filtering, and prediction are discussed. Prerequisite: IEN 311.

EEN 534. Communication Networks
3 credits
Offered Fall Semester
Principles of digital communications, Local Area Networks (LANs), Wide Area Networks (WANs), Open systems Intercommunication (OSI), Internet reference models, internet architecture and protocols, packet switching and routing, and network performance are discussed. Prerequisite: EEN 312 and IEN 311.

EEN 536. Digital Signal Processing
3 credits
Offered By Announcement only
Fast Fourier transform, design, implementation, realization of digital filters, finite wordlength effects, decimation, interpolation, multirate signal processing, and Discrete Hilbert transform are covered. Prerequisite: EEN 436.

EEN 537. Principles of Artificial Intelligence
3 credits
Offered Fall Semester
Search techniques, game trees, exhaustive vs. cutoff search, natural language processing, augmented transition networks, knowledge representation, cognitive aspects, semantic networks, problem-solving, expert systems, and AI machines are covered. Prerequisite: EEN 218.

EEN 538. Introduction to Digital Image Processing
3 credits
Offered Fall Semester

EEN 539. Digital Communications
3 credits
Offered By Announcement only
Quantization, on-off keying, frequency shift keying, phase shift keying, error performance, signal-to-noise ratio, coding, methods of synchronization, multiplexing, and spread spectrum are covered. Prerequisite: EEN 404 and IEN 311.
EEN 540. Digital Speech and Audio Processing
3 credits
Offered Spring Semester
Introduction to human speech production, hearing, and perception. Digital speech and audio signal analysis in time and frequency, speech and audio coding, speech synthesis and recognition, language modeling, design of systems for human-machine interaction are also covered. Prerequisite: EEN 436 or consent of instructor.

EEN 542. Digital Integrated Circuits
3 credits
Offered Spring Semester
Design and operation of state-of-the-art digital integrated circuits. Circuit simulation methods using CAD programs, various TTL, CMOS, ECL, and I2L families are discussed. Prerequisite: EEN 304, 306.

EEN 546. Reliable Digital System Design
3 credits
Offered By Announcement only
Topics include descriptive technique for digital systems, synchronizer failure and metastability estimation, design for testability, and estimating digital system reliability. Computer-Aided Engineering (CAE) tools are also covered. Not open to students with credit in EEN 454. Offered only for Graduate students. Prerequisite: EEN 315.

EEN 548. Machine Learning
3 credits
Offered By Announcement only
Fundamentals of intelligent system design and strategies of learning capability simulation. Selected case studies of learning systems for engineering applications are included. Prerequisite: EEN 218 and MTH 309 or permission of instructor.

EEN 553. Neural Networks
3 credits
Offered By Announcement only
Artificial neural network algorithms and structures, learning process, perceptron, least-mean-square algorithms, multilayer perceptron, error back-propagation, radial-basis function networks, the Hopfield network, and self-organizing systems are discussed. Prerequisite: IEN 311 or equivalent, senior standing.

EEN 555. Microwave Transistor Amplifier Design
3 credits
Offered Fall Semester
Analysis and design of transistor amplifiers and oscillators at microwave frequencies. Scattering parameter methods, stability considerations, matching networks, and narrowband and broadband techniques are discussed. Computer aided design methods for microwave transistor amplifiers are also included. Prerequisite: EEN 306.

EEN 552. Wireless and Cellular Communication
3 credits
Offered Fall Semester

EEN 563. Wireless Communication Lab
1 credit
Offered By Announcement only
Simulation and measurements involving RF/microwave devices, radio subsystems, propagation channels, splitters/combiners, directional couplers, filters, antennas, receiver front-ends, frequency synthesizers, modulators, power amplifiers, free-space, and indoor propagation channels are covered. Prerequisite: EEN 435. Prerequisite or corequisite: EEN 562.
EEN 564. Wireless Networks
3 credits
Offered Spring Semester
Network architecture: Base Transceiver Subsystem (BTS), Base Station Controller (BSC), and Mobile Switching Center (MSC). Call processing: initialization, origination, termination, handoff, and supervision. Mobility management: registration, roaming, Home Location Register (HLR), and Visitor Location Register (VLR). Traffic Engineering: Quality of Service (QoS) and Erlang. Network signaling standards: Interim Standard-634 (IS-634), IS-41 and Mobile Application Part (MAP). Wireless data: Wireless Application Protocol (WAP), Short Message Service (SMS), General Packet Radio Service (GPRS), and International Mobile Telecommunications (IMT-2000). Prerequisite: EEN 534 or 575.

EEN 565. Introduction to Information Theory and Coding
3 credits
Offered By Announcement only
Entropy, conditional entropy, mutual information, source coding, Huffman code arithmetic code, channels and channel capacity, error detection, error correction, and Hamming codes are discussed. An introduction to linear block codes and cyclic codes is included. Prerequisite: IEN 311.

EEN 566. Internet and Intranet
3 credits
Offered By Announcement only
Internet Protocol (IP) standards, address structures and functions. HTML, XML, CGI, Perl language, and object oriented modeling concepts are covered. An introduction to Java language constructs, exceptions, building, constructing JAVA applets, Java Tools, compiler, applet viewer, and debugger are also included. Offered only for Graduate students. Prerequisite: EEN 218, MTH 220, or EEN 490., or EEN 490.

EEN 567. Database Design and Management
3 credits
Offered Spring Semester
Database systems design, modeling, implementation, management methodologies, and techniques. Different database systems are addressed including relational, object-oriented, object-relational, and distributed database systems. Internet (WWW) technology, data warehousing, and online analytical processing applications of database management systems and hands-on experience with commercial database systems is also included. Prerequisite: EEN 218 or CSC 220.

EEN 568. Internet Computing II
3 credits
Offered Fall Semester
General object oriented techniques and modeling language. Java programming including client/server networking, multi-threading, Java Database Connectivity, swing, applets, and servlets. Principles and practices used in connecting web sites to back-end databases with Active Server Pages, JavaScript, Java Servlets, and Java Server Pages are also covered. Prerequisite: EEN 368.

EEN 570. Network Client-Server Programming
3 credits
Offered Spring Semester
Introduction to server-client systems and programming. Advanced server-client design and implementation based on distributed component object model in Windows and UNIX. Prerequisite: EEN 218 or equivalent

EEN 571. Interactive Multimedia Computing
3 credits
Offered Spring Semester
Interactive multimedia technologies including hardware, software, standards, concepts and issues, compression, decompression, user interface design, query by content, multimedia indexing, and distributed multimedia are discussed. Prerequisite: EEN 567 or equivalent.
EEN 572. Object-Oriented and Distributed Database Management Systems
3 credits
Offered By Announcement only
Object-Oriented modeling concepts in languages and database systems. Object-Oriented database systems. Semantic data models, nested-relational, object-relational databases. Distributed database system. Federated Databases. Application to engineering design problems. Prerequisite: EEN 567 or equivalent.

EEN 573. Network Computing
3 credits
Offered Spring Semester

EEN 574. Agent Technology
3 credits
Offered By Announcement only
Agent definition and applications, agent modeling, theories, agent representation using KIF (Knowledge Interchange Format), agent behavior, ethical and emotional agents, agent communication languages (KQML (Knowledge Query and Manipulation Language)), agent development environments and tools, agent systems (cooperative agents, interface agents, information agents, learning agents, believable agents, agents for workgroups, mobile agents), and agent case studies are covered. Prerequisite: EEN 537 or equivalent.

EEN 575. Data Network Design and Management
3 credits
Offered Spring Semester
Networking fundamentals and current technologies. Data network planning, analysis, design, and management techniques. Different network technologies are addressed and contrasted in terms of topology, performance, and scope of real applications. Network management systems are investigated including fault, configuration, security, and performance management. Network management information bases, protocols, and hands-on experience with network equipment and network management systems are also included. Prerequisite: EEN 218 and IEN 311.

EEN 576. Internet and Intranet Security
3 credits
Offered Fall Semester
Security issues and applications for securing internet and intranet-based information exchange. Secure information models, security tools, security services, security protocols, electronic commerce, virtual private networks, firewalls, and security versus cost tradeoffs are covered. Prerequisite: EEN 368.

EEN 577. Data Mining
3 credits
Offered By Announcement only
Introduction to the general principles of inferring useful knowledge from large data sets. Data mining algorithms, including inferring rules, linear regression, decision trees, association rules, and predictive models. Evaluation of data mining algorithms, including training, testing, prediction, comparison, cost, and cross-validation. Data mining applications. Prerequisite: EEN 567 or equivalent.

EEN 578. E-Commerce Technology
3 credits
Offered By Announcement only
Tools and techniques providing the foundation for the design, implementation, and deployment of e-commerce systems. Search engines, information retrieval for e-commerce, e-commerce interfacing design, and e-commerce systems case studies are also included. Prerequisite: EEN 368, 424 and 567.
EEN 579. Mobile Computing
3 credits  Offered By Announcement only
Mobile computing and proxy architectures, mobile web protocols, mobile user
interfaces, applications, systems-ware adaptations, mobile databases,
transactions, data synchronization, privacy, authentication, and security are
covered. Prerequisite: EEN 368.

EEN 580. Electrical and Computer Engineering Internship
1- 3 credits  Offered Fall and Spring Semesters
Analysis, design, and research experience obtained at an operating and
recognized industry. Approved project jointly supervised and assessed by
departmental faculty and industrial partner. Prerequisite: Permission of advisor.

EEN 581. Special Problems
1- 3 credits  Offered Fall Semester
Project course introducing methods of research through an individual
investigation of current problems. Offered by special arrangement only.
Prerequisite: Permission of Department Chairman.

EEN 582. Special Problems
1- 3 credits  Offered Spring Semester
Project course introducing methods of research through an individual
investigation of current problems. Offered by special arrangement only.
Prerequisite: Permission of Department Chairman.

EEN 583. Special Problems
1- 3 credits  Offered First Summer Session
Project course introducing methods of research through an individual
investigation of current problems. Offered by special arrangement only.
Prerequisite: Permission of Department Chairman.

EEN 584. Special Problems
1- 3 credits  Offered Second Summer Session
Project course introducing methods of research through an individual
investigation of current problems. Offered by special arrangement only.
Prerequisite: Permission of Department Chairman.

EEN 585. Special Problems
1- 3 credits  Offered By Announcement only
Project course introducing methods of research through an individual
investigation of current problems. Offered by special arrangement only.
Prerequisite: Permission of Department Chairman.

EEN 586. Multimedia Networking
3 credits  Offered Fall Semester
Fundamentals of Multimedia networking. Current techniques in multimedia
delivery over networks. Quality of service provisioning for multimedia networking
applications. Stored video streaming. Multicasting. Multimedia transport and
delivery services. Emerging protocols, applications and standards. Prerequisite:
EEN 571 and (EEN 534 or 575).

EEN 587. Multimedia Databases
1- 3 credits  Offered Fall Semester
Introduction to the fundamental concepts and techniques pertinent to multimedia
databases. Introduction to a variety of techniques and emerging innovative
solutions to represent, store, index, retrieve, integrate, and manipulate data in
various media type(s) to construct multimedia databases. Prerequisite: EEN 567
or permission of instructor. Prerequisite or corequisite: EEN 571.
EEN 590. **Special Topics in Information Technology**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Information Technology.
Prerequisite: Permission of instructor.

EEN 591. **Special Topics in Information Technology**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Information Technology.
Prerequisite: Permission of instructor.

EEN 592. **Special Topics in Audio Engineering**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Audio Engineering.
Prerequisite: Permission of instructor.

EEN 593. **Special Topics in Audio Engineering**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Audio Engineering.
Prerequisite: Permission of instructor.

EEN 594. **Special Topics in Computer Engineering**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Computer Engineering.
Prerequisite: Permission of instructor.

EEN 595. **Special Topics in Computer Engineering**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Computer Engineering.
Prerequisite: Permission of instructor.

EEN 596. **Special Topics in Computer Engineering**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Computer Engineering.
Prerequisite: Permission of instructor.

EEN 597. **Special Topics in Electrical Engineering**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Electrical Engineering.
Prerequisite: Permission of instructor.

EEN 598. **Special Topics in Electrical Engineering**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Electrical Engineering.
Prerequisite: Permission of instructor.

EEN 599. **Special Topics in Electrical Engineering**
1-3 credits
Offered By Announcement only
Lecture courses in selected areas of specialization within Electrical Engineering.
Prerequisite: Permission of instructor.

EEN 607. **Advanced Active Filter Design**
3 credits
Offered By Announcement only
Continuation of EEN 507. Design of active high-pass, band-stop, and all-pass filters, tunable filters, frequency discriminators, and oscillators. Optimum filters and frequency transformations are also included. Prerequisite: EEN 507.

EEN 608. **Adaptive Control Theory**
3 credits
Offered By Announcement only
Stochastic control, parameter estimation, system identification techniques, Kalman filtering, design and model-reference, self-tuning, and adaptive control systems for both continuous and discrete time systems based on Lyapunov and hyperstability techniques are discussed. Prerequisite: EEN 508 or 518.
EEN 614. **Advanced Computer Architecture**
3 credits  
Offered By Announcement only  
Concepts of processor architecture. Principles of reconfigurable and data flow computers, distributed processing as applied to data base, computer network, operating systems, and VLSI processor architecture are also discussed. Prerequisite: EEN 514.

EEN 615. **M. S. Design Project I**
3 credits  
Offered Fall and Spring Semesters  
Comprehensive M.S. design project in electrical or computer engineering. Open only to students in the BS/MS dual-degree program. Prerequisite: Permission of instructor.

EEN 616. **M. S. Design Project II**
3 credits  
Offered Fall and Spring Semesters  
Continuation of EEN 615. Open only to students in the BS/MS dual-degree program. Prerequisite: EEN 615.

EEN 634. **Modeling and Analysis of Computer Networks**
3 credits  
Offered By Announcement only  
Elements of queueing theory, performance analysis of protocols, flow and congestion control, random access schemes, routing algorithms, and integrated services digital networks (ISDN) are discussed. Prerequisite: EEN 534.

EEN 635. **Advanced Electronics**
3 credits  
Offered By Announcement only  
Current topics in electronic design including filter design using striplines and microstrip structures, switching, mixing, and modulation using microwaves transistors. Advanced computer aided design methods are also included. Prerequisite: EEN 555.

EEN 636. **Advanced Digital Filter Design**
3 credits  
Offered By Announcement only  
Continuation of EEN 536. Adaptive digital filter design, frequency and time domain analysis using discrete transforms including Walsh, Haar, and slant optimum filters and frequency transformations are covered. Prerequisite: EEN 536.

EEN 638. **Computer Vision**
3 credits  
Offered Spring Semester  
Principles of computer vision. Segmentation, shape and texture analysis, 3D scene analysis, polyhedral scenes, time-varying image analysis, parallel processing algorithms, matching, and recognition are covered. Prerequisite: EEN 538.

EEN 650. **Fault-Tolerant Computer Design**
3 credits  
Offered By Announcement only  
Modern trends in fault-tolerant computer design, detection and location of faults, multiple-valued logic, synthesis of asynchronous systems. Prerequisite: EEN 304, 414.

EEN 653. **Pattern Recognition and Neural Networks**
3 credits  
Offered By Announcement only  
Statistical pattern classification, feature extraction, cluster analysis, neural net models, Hopfield net, competitive learning, multi-layer perceptron, and the Boltzmann machine are discussed. Prerequisite: EEN 538 or permission of instructor.
EEN 656. Information Theory  
3 credits  Offered By Announcement only  
Measure of uncertainty and entropy, two dimensional sources, noisy channels, 
mutable and transinformation, equivocation, efficiency and channel capacity, 
minimum redundancy coding, error-detecting, error-correcting codes, continuous 
channel without memory. Gaussian additive noise, sampling theorem, and vector 
space are covered. Prerequisite: Permission of instructor.  

EEN 671. Advanced Interactive Multimedia Information Systems  
3 credits  Offered Fall Semester  
Multimedia data models, advanced content-based retrieval, indexing, architecture 
design, management of networked multimedia systems, simultaneous access, 
and display of audio, video, and graphics information in centralized and 
distributed environments are covered. Prerequisite: EEN 571.  

EEN 681. Advanced Problems  
1-3 credits  Offered Fall Semester  
Research and/or design projects through an individual investigation of current 
problems. Offered by special arrangement only. Prerequisite: Permission of 
instructor.  

EEN 682. Advanced Problems  
1-3 credits  Offered Spring Semester  
Research and/or design projects through an individual investigation of current 
problems. Offered by special arrangement only. Prerequisite: Permission of 
instructor.  

EEN 683. Advanced Problems  
1-3 credits  Offered First Summer Session  
Research and/or design projects through an individual investigation of current 
problems. Offered by special arrangement only. Prerequisite: Permission of 
instructor.  

EEN 684. Advanced Problems  
1-3 credits  Offered Second Summer Session  
Research and/or design projects through an individual investigation of current 
problems. Offered by special arrangement only. Prerequisite: Permission of 
instructor.  

EEN 690. Advanced Topics in Information Technology  
1-3 credits  Offered By Announcement only  
Subject matter offering in information technology based upon student demand 
and availability of faculty. Subtitles describing the topics to be offered will be 
shown in parentheses in the printed class schedule, following the title “Advanced 
Topics”. Prerequisite: Permission of instructor.  

EEN 691. Advanced Topics in Information Technology  
1-3 credits  Offered By Announcement only  
Subject matter offering in information technology based upon student demand 
and availability of faculty. Subtitles describing the topics to be offered will be 
shown in parentheses in the printed class schedule, following the title “Advanced 
Topics”. Prerequisite: Permission of instructor.  

EEN 692. Advanced Topics in Audio Engineering  
1-3 credits  Offered By Announcement only  
Subject matter offerings in audio engineering based upon student demand and 
availability. Subtitles describing the topics to be offered will be shown in 
parentheses in the printed class schedule, following the title “Advanced Topics”. 
Prerequisite: Permission of instructor.
EEN 693. **Advanced Topics in Audio Engineering**  
*1-3 credits*  
Offered By Announcement only  
Subject matter offerings in audio engineering based upon student demand and availability. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

EEN 694. **Advanced Topics in Computer Engineering**  
*1-3 credits*  
Offered By Announcement only  
Subject matter offerings in computer engineering based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

EEN 695. **Advanced Topics in Computer Engineering**  
*1-3 credits*  
Offered By Announcement only  
Subject matter offerings in computer engineering based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

EEN 696. **Advanced Topics in Computer Engineering**  
*1-3 credits*  
Offered By Announcement only  
Subject matter offerings in computer engineering based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

EEN 697. **Advanced Topics in Electrical Engineering**  
*1-3 credits*  
Offered By Announcement only  
Subject matter offerings in electrical engineering based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

EEN 698. **Advanced Topics in Electrical Engineering**  
*1-3 credits*  
Offered By Announcement only  
Subject matter offerings in electrical engineering based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

EEN 699. **Advanced Topics**  
*1-3 credits*  
Offered By Announcement only  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

EEN 710. **Master’s Thesis**  
*1-6 credits*  
Offered Fall and Spring Semesters  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

EEN 720. **Research in Residence**  
*0 credits*  
Offered Fall and Spring Semesters  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in EEN 710 (usually six credits). Credit not granted. May be regarded as full time residence.
EEN 725. **Continuous Registration—Master’s Study**
0 credits
*Offered Fall and Spring Semesters*
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

EEN 730. **Doctoral Dissertation**
1-12 credits
*Offered Fall and Spring Semesters*
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of EEN 730 may be taken in a regular semester, nor more than six in a summer session.

EEN 750. **Research in Residence**
0 credits
*Offered Fall and Spring Semesters*
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Industrial Engineering**

IEN 501. **Manufacturing Analysis and Design I**
3 credits
*Offered By Announcement only*
Analysis of Production Systems stressing diagnosis of problems associated with work measurement, manufacturing methodologies, and their interaction with cost factors. Prerequisite: Permission of instructor.

IEN 502. **Manufacturing Analysis and Design II**
3 credits
*Offered By Announcement only*
Analysis of production systems stressing diagnosis of problems of quality and production control, utilizing quantitative techniques and analytical methods. Prerequisite: Permission of instructor.

IEN 505. **Robotics**
3 credits
*Offered Fall Semester*
Fundamentals of robotics including kinematics and dynamics, trajectory planning, sensors and actuators, robotic vision, and case studies. Building your own robot is an integral part of hands-on laboratory exercises. Matlab control toolbox and image analysis toolbox will be extensively used for design and analysis. Prerequisite: IEN 306 or permission of instructor.

IEN 507. **Design of Manufacturing Systems**
3 credits
*Offered Spring Semester*
State-of-the-art techniques and tools relevant to the design, analysis, and control of modern manufacturing systems. Topics include modeling of manufacturing systems, tools for manufacturing system analysis, manufacturing system planning and scheduling, and lean manufacturing systems. Prerequisite: IEN 465 or permission of instructor.

IEN 509. **Automated Assembly**
3 credits
*Offered Fall Semester*
Fundamentals of automated assembly including parts transfer systems and feeders, parts orientation and grasping techniques, product design for automated assembly (DFA), assembly robots, and performance and economics of assembly systems. Prerequisite: IEN 406 or permission of instructor.
IEN 512. Statistical Quality Control and Quality Management  
3 credits  
Offered Fall Semester  
Principles and practices of quality control in industry. Engineering and administrative aspects of quality control programs, process control, and acceptance sampling. Application of quantitative methods to the design and evaluation of engineering and industrial systems and processes are discussed as well as concepts of Total Quality Management. Prerequisite: IEN 311 (MAS 311) or IEN 312 (MAS 312).

IEN 513. Quality Management in Service Organizations  
3 credits  
Offered Fall Semester  
Course examines the issues of quality and productivity management in the service sector. Topics covered include the development and use of questionnaires, service industry applications of quality such as in banking, insurance, healthcare, transportation, government, public utilities, and retail trade. Prerequisite: Senior standing or permission of instructor.

IEN 524. Decision Support Systems in Industrial Engineering  
3 credits  
Offered Spring Semester  
Theory and application of decision support systems in industrial engineering. Topics include the study of model-based, data-based, knowledge-based, and communication-based decision support systems. Emphasis is placed on the selection process of the appropriate systems for various decision problems in industrial environments. Prerequisite: Senior standing or permission of instructor.

IEN 547. Computer Simulation Systems  
3 credits  
Offered Spring Semester  
Computer simulation and the development of simulation models. Application of discrete and continuous system simulation languages to systems studies is also included. Prerequisite: IEN 442 (MAS 442) or permission of instructor.

IEN 551. Accident Prevention Systems  
3 credits  
Offered Spring Semester  
Introduction to the basic principles of accident prevention and how to apply the safety engineering approach to the design of industrial accident prevention systems. Prerequisite: IEN 351 or permission of instructor.

IEN 557. Ergonomics and Human Factors Engineering  
3 credits  
Offered Fall Semester  
The study of human capacities and limitations with emphasis on human performance in system design. Topics include design of displays and controls, workload, job design, human information processing, anthropometry, workplace design, biomechanics, task analysis, and research techniques in human factors engineering. Lecture, 3 hours. Prerequisite: IEN 312 (MAS 312) or permission of instructor.

IEN 558. Industrial Hygiene I  
3 credits  
Offered Fall Semester  
Recognition of occupational chemical health hazards. Evaluation methods and analytical procedures used to determine level of exposure to chemical and toxic hazards. Control measures and compliance with OSHA requirements with special emphasis on industrial ventilation, and other methods of control are included. Prerequisite: ((CHM 111 or CHM 151) and senior standing) or permission of instructor.
IEN 559. Industrial Hygiene II  
3 credits  
Offered Spring Semester  
Recognition of physical occupational health hazards and evaluation methods and instruments used in measuring exposure levels with special emphasis on physical hazards. Protective measures and compliance with OHSA requirements is also included. Lecture, 3 hours. Prerequisite: ((CHM 111 or CHM 151) and senior standing) or permission of instructor.

IEN 565. Design of Integrated Manufacturing Systems  
3 credits  
Offered By Announcement only  
The design of integrated manufacturing systems including concepts of production planning and control, forecasting techniques, inventory systems, production planning and scheduling methods, material requirement planning, plant layout and facility location, design principles of material handling, new trends in batch, and discrete-parts are discussed. Prerequisite: Senior standing or permission of instructor.

IEN 568. Materials Handling and Facilities Planning  
3 credits  
Offered Spring Semester  
Analysis and design of production and service facilities, emphasis on material handling requirements. Capacity requirements, facility location, layout, storage systems and warehousing are discussed. Prerequisite: Senior standing or permission of instructor.

IEN 570. Engineering Management  
3 credits  
Offered Spring Semester  
Integrating engineering discipline into the social and economic considerations of managing systems. Tools and techniques used by engineering managers including engineering project life cycle, role playing, communication, decision-making in engineering management, and managing change in engineering organizations are discussed. Prerequisite: IEN 311 (MAS 311) or IEN 312 (MAS 312) or permission of instructor.

IEN 571. Engineering Entrepreneurship  
3 credits  
Offered Spring Semester  
The conversion of technological know-how and engineering theories into business enterprises. The role of technology in creating wealth, connecting technology with market, the role and characteristics of entrepreneurs, starting a business and the business plan, innovation, industrial and service organizations, and the new business environment. Prerequisite: Senior standing or permission of instructor.

IEN 572. Management of Technology  
3 credits  
Offered Fall Semester and Second Summer Session  
Engineering, Science and Management Principles contributing to the development of a successful framework for Managing technology within an organization, nationally, or internationally. The process of technological innovations, technological planning and forecasting, and socio-economic changes. Prerequisite: Senior standing or permission of instructor.

IEN 590. Special Topics in Industrial Engineering  
1- 3 credits  
Offered By Announcement only  
Sub-titles describing the topics are shown in parentheses in the class schedule, following the title “Special Topics”. Prerequisite: Permission of instructor.

IEN 591. Dean’s Seminar: Entrepreneurship  
1 credit  
Offered By Announcement only  
Weekly seminar given by guest speakers on topics including process of management, marketing, planning, R & D, financing, taxation, governmental regulations, and international commerce. Prerequisite: Permission of instructor.
IEN 594. Master’s Capstone Design Project
3 credits Offered Fall Semester
A capstone design project for students in the five-year BSIE/MSIE program. Integration of Industrial Engineering principles and techniques in the design and improvement of production and service systems is emphasized. Offered for students in this program only. Prerequisite: Methods Analysis, Applied Probability, Statistics, and senior standing.

IEN 595. Special Problems
1- 3 credits Offered By Announcement only
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of department chairman.

IEN 596. Special Problems
1- 3 credits Offered By Announcement only
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of department chairman.

IEN 599. Cooperative Education
1 credit Offered By Announcement only
Practical application of classroom theory through alternating semester or summer employment with industries offering positions consistent with the student’s field of study. Course may be repeated. Periodic reports and conferences are required.

IEN 601. Advanced Industrial Engineering Concepts
3 credits Offered Fall Semester
The application of advanced concepts of Industrial Engineering to modern systems with an emphasis on the solution of real world problems. Prerequisite: IEN 301 or permission of instructor.

IEN 607. New Product Development and Introduction
3 credits Offered Fall Semester
Dynamics of converting ideas into marketable products, selecting products, and defining their specifications to achieve competitive advantage. Product development steps are examined critically in the context of real case studies. Topics include the process of fostering a creative environment for new products and processes, planning for innovation, process of product patenting, organizing the technical effort, integration of functions, risk assessment and evaluation, and management techniques for improving manufacturing operations. Prerequisite: Graduate standing.

IEN 612. Design of Experiments
3 credits Offered Fall Semester
Design and analysis of experiments, randomized blocks, Latin Squares, factorials, multiple correlation and regression, and application to response surfaces are discussed. 3 hours. Prerequisite: IEN 311 or MAS 311 or equivalent.

IEN 613. Quality Through Planned Experimentation
3 credits Offered By Announcement only
Sequential experimentation and guidance on how to build the sequence and use graphical methods to ascertain how much the planned changes contribute to the variation in the data. Experimentation is presented as a system in the context of a model to improve quality, and integrate statistical process control (SPC) with methods of design. Examples presented contain problems often encountered in actual experimentation in a manufacturing or a service facility. Not open to students with credit in IEN 612. Prerequisite: IEN 311 or permission of instructor.
IEN 614. Advanced Quality Control  
3 credits  
Offered By Announcement only  

IEN 617. Quality Through Design  
3 credits  
Offered By Announcement only  
The integrated processes and teamwork essential to success with products are presented. All activities of product development are covered. Topics include concept of a new region, concurrent engineering, competitive benchmarking, house of quality, robust design, and production preparation. Special emphasis is placed on the integration of quality function deployment and Taguchi’s quality engineering into total development. Prerequisite: IEN 612 or MAS 603.

IEN 641. Applied Operations Research  
3 credits  
Offered By Announcement only  
Inventory theory, queueing theory, optimization models, and linear and dynamic programming for deterministic and probabilistic cases. Emphasis is placed on applications. Prerequisite: IEN 441 or permission of instructor.

IEN 642. Linear Programming and Extensions  
3 credits  
Offered Fall Semester  
Formulation, solution, postoptimality analysis of linear programming problems; revised simplex, parametric programming, decomposition of large-scale systems. Use of computer packages. Introduction to integer programming, network flows, and nonlinear programming applications. Prerequisite: Linear Algebra or equivalent.

IEN 643. Integer Programming and Network Flows  
3 credits  
Offered By Announcement only  
Computationally effective approaches to integer optimization, cutting planes, implicit enumeration, network flows, single commodity, and multi-commodity flows are covered. Prerequisite: MAS 647/IEN 642.

IEN 644. Nonlinear and Dynamic Programming  
3 credits  
Offered By Announcement only  
Solution of nonlinear optimization problems by classical procedures and search algorithms. Recursive optimization using computationally effective techniques is also included. Prerequisite: MAS 112 or equivalent.

IEN 645. Stochastic Processes  
3 credits  
Offered Fall Semester  
Introduction to discrete state Markov processes and renewal processes with applications to queueing, replacement, and reliability problems. Prerequisite: MAS 311, IEN 311, MTH 524 or equivalent.

IEN 646. Queueing Models  
3 credits  
Offered By Announcement only  
Formulation, solution, and application of models useful in the analysis of waiting lines. Prerequisite: MAS 311, IEN 311, or MTH 524 or equivalent.

IEN 651. System Safety Engineering  
3 credits  
Offered Fall Semester  
Understanding system safety, evaluating a system for its state of safety over its life cycle, determining if that state is acceptable, and evaluating counter-measures for their effectiveness in bringing the system to an acceptable state are discussed. Presenting quantitative methods that may be used in safety data analysis is also included. Prerequisite: IEN 311 and 351.
IEN 655. **Human Factors in Management of Technology**

*3 credits*  
Offered By Announcement only

Implications of the influx of computer and automation technologies into work settings for behavior within organizations. Human factors issues associated with the implementation of technology including hardware and software design, job design, and workplace design. Organizational issues such as decision-making, communication, and human centered design of products.

IEN 656. **Human Information Processing and System Design**

*3 credits*  
Offered Spring Semester

Understanding the capabilities of humans as information processors in relation to system design, including job and equipment (hardware and software) design. Course topics include attentional capacity, vigilance, mental workload, verbal and non-verbal perception, speech recognition, decision making, skilled performance, human reliability, and process control. Prerequisite: IEN 557.

IEN 657. **Ergonomics and Occupational Biomechanics**

*3 credits*  
Offered Spring Semester

Effects of human factors in the improvement of performance of systems. Human capacities, capabilities, and limitations as derived from anatomical, physiological, and psychological principles are applied to the design of tools and equipment. Incorporation of all factors into systems design to achieve better system performance is emphasized. Prerequisite: Permission of instructor.

IEN 658. **Ergonomics and Special Populations**

*3 credits*  
Offered Spring Semester

Ergonomic issues relevant to design for older adults and special populations such as the handicapped. Primary emphasis is placed on work environments, transportation and communication systems, and home environments. Topics include cognitive and physiological characteristics of special populations, workplace design, job and equipment design, rehabilitation engineering, clinical ergonomics, and legislation such as the ADA. Lecture, 3 hours. Prerequisite: IEN 557.

IEN 659. **Work Physiology**

*3 credits*  
Offered By Announcement only

Physiological responses to occupational work including aspects of endurance, fatigue, recovery, and the energy cost of work. Application of work physiology to job design and personnel assignment is included. Prerequisite: IEN 557 or permission of instructor.

IEN 660. **Productivity Measurement and Evaluation**

*3 credits*  
Offered Fall Semester

Basic concepts. Productivity measurement approaches at international, national, industry, and company levels. Latest measurement models for manufacturing companies. Relationships between total and partial productivities, profit and total productivity. Productivity evaluation: theory and methodology. Prerequisite: IEN 360 or permission.

IEN 661. **Engineering Cost Management**

*3 credits*  
Offered Fall Semester

Issues of cost management, including activity based costing of engineering projects. A detailed study of how to separate, identify, understand and manage the major activities performed, and how these activities relate to customer needs. Overall view of costs associated with products, processes, and customers. Prerequisite: Graduate standing.
IEN 662. **Productivity Planning and Improvement**  
3 credits  
Offered Fall Semester  
Planning and improvement as part of the productivity cycle. Concepts and tools. Productivity planning and improvement in manufacturing and non-manufacturing companies: technology, materials, employee, product, and task based techniques. The PIP package. Prerequisite: IEN 360 or permission.

IEN 663. **Project Management Techniques**  
3 credits  
Offered Fall Semester  
Techniques and Tools in Project Management. Use of network flow techniques including PERT/CPM, planning, systems concepts, time management, conflicts, cost and resource control, tradeoff analysis. Prerequisite: IEN 311 or equivalent.

IEN 664. **Supply Chain Management**  
3 credits  
Offered By Announcement only  
Supply Chain Management focuses on the flow of products, information, and money throughout the supply chain. An overview of issues, opportunities, tools, and approaches is provided. Emphasis is placed on business processes, system dynamics, control, design and re-engineering, and on the relationship between the supply chain and the company’s strategic position relative to its clients and its competition. The dimensions of inter-corporate relationships with partners, including decision-making, incentives, and risk are also covered. Prerequisite: IEN 465 or permission of instructor.

IEN 665. **Advanced Production Systems**  
3 credits  
Offered Spring Semester  

IEN 672. **Strategic Management of Technology**  
3 credits  
Offered Fall and Spring Semesters  
Advanced topics in the management of technology emphasizing the relationship between technology and competitiveness in the global marketplace. Technology development in the U.S., Japan, and Europe, industrial R & D, strategic technological planning, and conditions for successful implementations. Case studies are used with individual and group assignments. Prerequisite: IEN 572 or permission of instructor.

IEN 691. **Industrial Engineering Seminar**  
0 credits  
Offered Spring Semester  
Oral presentation and discussion of current topics in Industrial Engineering.

IEN 692. **Industrial Engineering Seminar II**  
0 credits  
Offered Spring Semester  
Oral presentation and discussion of current topics of Industrial Engineering.

IEN 694. **Master’s Project**  
3 credits  
Offered Fall and Spring Semesters  
A capstone project for M.S. students in the non-thesis option.

IEN 695. **Special Problems**  
1-3 credits  
Offered By Announcement only  
Research and/or design projects through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of instructor.
IEN 696. Special Problems
1-3 credits  Offered By Announcement only
Research and/or design projects through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of instructor.

IEN 699. Advanced Topics
1-3 credits  Offered By Announcement only
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

IEN 710. Master’s Thesis
1-6 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

IEN 720. Research in Residence
0 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in IEN 710 (usually six credits). Credit not granted. May be regarded as full time residence.

IEN 725. Continuous Registration—Master’s Study
0 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

IEN 730. Doctoral Dissertation
1-12 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of IEN 730 may be taken in a regular semester, nor more than six in a summer session.

IEN 750. Research in Residence
0 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Mechanical and Aerospace Engineering**

MAE 501. Methods of Engineering Analysis
3 credits  Offered Fall Semester
Analysis of engineering systems in equilibrium and motion. Examples considered from mechanical, electrical, thermal and fluids engineering. Mathematical theory and computer methods for obtaining numerical solutions are developed for various cases involving discrete and continuous systems. Lecture, 3 hours. Prerequisite: MAE 412, MTH 311 or permission of instructor.
MAE 502. Vibrations  
3 credits  
Basic theory of free and forced vibrations of mechanical systems with and without damping. Applications to systems with one and several degrees of freedom are included. Prerequisite: MAE 202, 207, 412 or permission of instructor.

MAE 503. Internal Combustion Engines  
3 credits  
Offered Fall Semester  
Course discusses engine types, characteristics, and operation. Topics include performance factors, fuel combustion, power cycles, knock and engine variables, exhaust emissions, fuel metering, compressors, and turbines. Prerequisite: MAE 303, senior standing, or permission of instructor.

MAE 505. Design for Manufacturability  
3 credits  
Manufacturing concerns at design stage. Design theory and methodology. Statistical considerations in geometric dimensioning, tolerances, reliability-based design, and quality control. Productibility, design for assembly, and value engineering. Life cycle costs and optimum design using nonlinear programming and Taguchi approaches. Hands on projects on machine tools. Prerequisite: MAE 341 and 342 or permission of instructor.

MAE 506. Nuclear Engineering  
3 credits  
Offered By Announcement only  
Course topics include a review of neutron physics, chain reactions, reactor theory, steady state operation, and reactor kinetics. Control, long term reactivity changes, materials, heat transfer, and shielding are also included. Lecture, 3 hours. Prerequisite: Senior standing in Mechanical and Aerospace Engineering or permission of instructor.

MAE 507. Advanced Mechanics of Solids  
3 credits  
Offered Spring Semester  
Courses discuss the basic elements of elasticity, plasticity, and viscoelasticity. Application to mechanical systems at rest and in motion are included. Prerequisite: MAE 202, 207, senior standing or permission of instructor.

MAE 508. Intermediate Heat Transfer  
3 credits  
Offered Spring Semester  
Course discusses steady and unsteady heat transfer by conduction, convective heat transfer in laminar and turbulent fluid flow, natural convection, and heat transfer by radiation. Prerequisite: MAE 310.

MAE 509. Hydrogen Energy  
3 credits  
Offered Fall Semester  
Evaluation of new energy sources, need for an intermediary system, hydrogen energy system, hydrogen as energy carrier, hydrogen production methods, hydrogen storage and distribution, utilization of hydrogen by residential, commercial, transportation, and industrial sectors are discussed as well as environmental, safety, and economical considerations. Prerequisite: Senior standing or permission of instructor.

MAE 510. Fundamentals of Solar Energy Utilization  
3 credits  
Offered Spring Semester  
Fundamentals basic to the design and performance analysis of thermal systems for the capture and utilization of Solar Energy. Prerequisite: MAE 303, MTH 211 and PHY 207.
MAE 511. Engineering Fracture Mechanics
3 credits
Course addresses the consequence of fracture including some illustrative applications of fracture mechanics, Griffith’s fracture theory, review of relevant results from solid mechanics, the three basic modes of fracture, stress intensity factor, introduction to elasto-plastic and dynamic fracture, fatigue crack propagation, fracture and non-destructive evaluation procedures. Prerequisite: MAE 207, senior standing or permission of instructor.

MAE 512. Intermediate Fluid Mechanics
3 credits
Course topics include conservation of mass, momentum, and energy, potential flow, viscous laminar and turbulent flows, the Reynolds analogy, and Boundary-layer approximations. Gas dynamics are also discussed. Prerequisite: MAE 309.

MAE 513. Kinematics for Robotics
3 credits
Geometry of unconstrained plane motion with applications to linkage design. Topics include type and number synthesis, introduction to 3-D mechanism with applications to robotics, graphical, analytical, and computer techniques, including the use of analysis software. Prerequisite: MAE 202, senior standing or permission of the instructor.

MAE 514. Advanced Internal Combustion Engines Experimental Studies
3 credits
Offered Spring Semester
Experimental mechanical engineering as it pertains to internal combustion engines. The principal measurements necessary to analyze the operation of an internal combustion engine are covered. Emphasis is placed on experiment planning, data interpretation, and error analysis. Prerequisite: MAE 503 or permission of instructor.

MAE 516. Introduction to Composite Materials
3 credits
Course provides an introduction to composite materials and terminology. Topics include advantages offered by composite materials, current aerospace, automotive, and bio-mechanics applications, experimental results, analytical models, and effects of impact and fatigue loads. The environment’s impact on composite materials’ performance and design procedures are discussed. Case studies examining composite materials as efficient replacements are also included. Prerequisite: MAE 207, senior standing, or permission of instructor.

MAE 517. CAD Applications Using Interactive Computer Graphics
3 credits
Offered By Announcement only
Computer methods and graphics in the engineering design process. Introduction to available engineering analysis codes, principles of computer graphics, and interactive graphical methods in problem solving. Mathematics for 2-D and 3-D graphical manipulation. Programming project work is required. Prerequisite: Senior standing or permission of instructor.

MAE 518. Chemical and Process Engineering A
3 credits
Offered By Announcement only
Course analyzes single and multi-stage concentration processes in the liquid-solid systems such as crystallization and drying. Processes apart from equilibrium, controlled diffusion, mathematical treatment, and equipment design are also discussed. Prerequisite: MAE 310, 311; Corequisite: MAE 308.
MAE 519. Chemical and Process Engineering B
3 credits
Offered By Announcement only
Stagewise equilibrium separation processes in liquid-liquid systems such as distillation, rectification, absorption, and extraction. Application of phase equilibria and balance equations, mathematical treatment, and equipment design. Prerequisite: MAE 310, 311, 308.

MAE 520. Air Pollution
3 credits
Offered Spring Semester
Course topics include fundamentals of air pollution, air quality, properties of air pollutants, effect of pollutants on the environment, analysis and modeling, diffusion of pollutants, and air pollution control. Prerequisite: MAE 303, 309/CAE 330 or permission of instructor.

MAE 521. Exhaust Emission Control
3 credits
Offered Spring Semester
Course topics include automotive emissions, air pollution, combustion of homogeneous mixtures, emission control systems, Federal emission standards, and emission instrumentation and measurement. Lecture, 2 hours; Laboratory, 3 hours. Prerequisite: Senior engineering standing or permission of instructor.

MAE 538. Computer-Aided Air Conditioning Design and Energy Management
3 credits
Offered By Announcement only
Course topics include equipment and components, air conditioning system, all-air systems, air-and-water systems, all water systems, heat recovery systems, cogeneration systems, heat pump systems, central heating and cooling, energy management, and computer applications. Prerequisite: MAE 405 or 408 or permission of instructor.

MAE 539. Heating, Ventilating and Air Conditioning System Design
3 credits
Offered Fall Semester
Course topics include basic HVAC systems, multizone systems, dual-duct systems, terminal reheat systems, variable air volume systems, induction and induction reheat systems, special applications, hydronic systems, unitary and heat pump systems, hydronic heat recovery systems, cooling and heating load calculation duct and piping design, overall system design, and integration. Prerequisite: MAE 405 or 408 or permission of instructor.

MAE 540. Energy Conversion
3 credits
Offered Spring Semester
Course topics include energy conversion, utilization, present and projected consumption of energy, thermodynamic principles, nuclear energy, fission and fusion reactions, hydroelectric power, and solar energy. Alternative energy sources, the hydrogen economy, and the energy-environment-economy system are also discussed. Prerequisite: Senior standing in Mechanical and Aerospace Engineering or permission of instructor.

MAE 541. Two-Phase Flow Fundamentals and Design
3 credits
Offered By Announcement only
Course topics include two-phase flow fundamentals for thermal design, heat transfer, pressure drop analysis of two-phase flows in tube and around tube bundles, heat transfer design correlations in boiling, evaporation, and condensation. Classifications of heat vapor generation and vapor condensation, heat exchangers for air-conditioning and refrigeration, enhancement of boiling, condensation, evaporation heat transfer, and fouling of heat exchangers are also discussed. Design examples are included. Prerequisite: MAE 303 and 310 or permission of instructor.
MAE 550. **Product Safety Engineering**  
3 credits  
*Offered By Announcement only*  
Product safety for the designer and the design review process. Topics include hazard analysis of products including use of regulatory and voluntary standards and analytical tools such as fault tree analysis. Constraints imposed by product liability law, design techniques, and process requirements to minimize hazards are also discussed. Prerequisite: Senior standing in Engineering or permission of instructor.

MAE 551. **Special Problems**  
1-3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

MAE 552. **Special Problems**  
1-3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Project course introducing methods of research through an individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of Department Chairman.

MAE 570. **Aero Propulsion**  
3 credits  
*Offered Fall Semester*  
Definition of the atmosphere, propulsion basics, rocket fundamentals, turbine fundamentals, gas turbine cycles, component matching, math and computer models, aircraft missions, cycle section, reliability, and durability are analyzed. Prerequisite: MEN 303, 309.d computer models, aircraft missions, cycle section, reliability, and durability are analyzed. Prerequisite: MAE 303, 309.

MAE 571. **Introduction to Aerospace Control**  
3 credits  
*Offered Spring Semester*  
Course topics include modeling of Aerospace systems, properties of state space realizations, coordinate transforms solution of state equations, controllability, observability, equivalent realizations, model reduction, stability, optimal control, and estimation. Prerequisite: MAE 412 or EEN 308, or permission of instructor.

MAE 590. **Special Topics**  
1-4 credits  
*Offered Fall Semester*  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the "Special Topics." Prerequisite: Permission of instructor.

MAE 591. **Special Topics**  
1-4 credits  
*Offered By Announcement only*  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the "Special Topics." Prerequisite: Permission of instructor.

MAE 592. **Special Topics**  
1-4 credits  
*Offered By Announcement only*  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the "Special Topics." Prerequisite: Permission of instructor.

MAE 593. **Special Topics**  
1-4 credits  
*Offered By Announcement only*  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the "Special Topics." Prerequisite: Permission of instructor.

MAE 594. **Special Topics**  
1-4 credits  
*Offered By Announcement only*  
Subtitles describing the topics will be shown in parentheses in the class schedule, following the "Special Topics." Prerequisite: Permission of instructor.
MAE 595. Special Topics
1-4 credits  
Offered By Announcement only
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 596. Special Topics
1-4 credits  
Offered By Announcement only
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 597. Special Topics
1-4 credits  
Offered By Announcement only
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 598. Special Topics
1-4 credits  
Offered By Announcement only
Subtitles describing the topics will be shown in parentheses in the class schedule, following the “Special Topics.” Prerequisite: Permission of instructor.

MAE 599. Cooperative Education
1 credit  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical application of classroom theory through alternating semester or summer employment with industries offering positions consistent with the student’s field of study. Course may be repeated. Periodic reports and conferences are required. Prerequisite: Permission of Department Chairman.

MAE 601. Advanced Heat Transfer—Conduction and Radiation
3 credits  
Offered Spring Semester
Advanced analytical methods of solutions of boundary value problems of steady, periodic, and unsteady heat conduction. Topics include techniques of transient point, line, and plane sources and sinks, thermodynamics of radiative equilibrium, radiative exchange, geometrical factors, network, and other methods. Lecture, 3 hours. Prerequisite: MAE 508 or permission of instructor.

MAE 602. Advanced Heat Transfer—Convection
3 credits  
Offered Spring Semester
The analogy between heat, mass, and momentum transfers. Topics include the transfer mechanism, heat transfer to liquid metals, boiling and condensation mechanisms, heat transfer in two-phase flow, ablation heat transfer, transpiration, film cooling, and heat exchanges. Lecture, 3 hours. Prerequisite: MAE 508 or permission of instructor.

MAE 605. Finite Element Methods in Mechanical and Aerospace Engineering
3 credits  
Offered Spring Semester
Finite-element analysis methods for static and dynamic analysis of mechanical and aerospace structures, heat transfer analysis, and fluid flow applications. Primary emphasis is placed on underlying mechanics and numerical techniques. Consideration is also given to the use of existing programs, such as ANSYS, NASTRAN and FIDAP, designing proper meshes, and choosing the proper element. A term project is included. Prerequisite: MEN 501, 507 or permission of instructor.

MAE 606. Experimental Methods in Fluid Mechanics
3 credits  
Offered By Announcement only
Course topics include methods of flow visualization, laser techniques in measurement of wall motions, conduit compliance, Newtonian and non-Newtonian properties of fluids, measurement of unsteady flow and pressure, laser Doppler anemometry, ultrasound Doppler velocimetry, electro-magnetic flowmetry, measurement of steady and unsteady wall sheer stresses and boundary layers. Prerequisite: Advanced standing in Fluid Mechanics.
MAE 610. Fluid Dynamics in Porous Media  
3 credits  
Offered By Announcement only  
Course discusses the properties and principles of flow in porous media. Topics include groundwater flow, with reference to transpiration cooling, use of flow nets for the computation of the velocity field, and how geohydrology affects groundwater flow. Groundwater resource evaluation, groundwater contamination, and discussion of field data are included. Prerequisite: MAE 512, or CAE 630.

MAE 611. Gas Dynamics  
3 credits  
Offered By Announcement only  
Course analyzes one-dimensional compressible flow with effects of area change, friction, heat transfer, and combustion. Supersonic diffusers, wind tunnels, compression shocks, and methods of small perturbations are also discussed. Prerequisite: MAE 512

MAE 612. Viscous Fluid Flow  
3 credits  
Offered Spring Semester  
Course discusses derivations and exact solutions of Navier-Stokes equations, approximations at low Reynolds numbers and low Mach numbers, boundary layer theory, stability, and turbulence. Lecture, 3 hours. Prerequisite: MAE 512.

MAE 613. Transport Phenomena  
3 credits  
Offered By Announcement only  
Course topics include laws of molecular transfer, the kinetic theory explanation of molecular transfer phenomena, introduction to turbulence, and molecular transfer in laminar and turbulent flows with experimental results. A unified treatment of salient aspects of momentum, heat, and mass transfer including the relationship between rate and conservation equations are also discussed. Prerequisite: MAE 309, MTH 311 or permission of instructor.

MAE 614. Computational Fluid Dynamics  
3 credits  
Offered Spring Semester  
Incompressible flow equations in rectangular co-ordinates. Topics include basic computational methods for incompressible flow, three dimensional flows, compressible flow equations in rectangular coordinates, basic computational methods for compressible flows, treatment of shocks, artificial viscosities, convergence, other mesh systems, programming, testing, and information processing. Prerequisite: MAE 512.

MAE 615. Turbulence  
3 credits  
Offered By Announcement only  
The nature and origin of turbulence. Topics include turbulent transport of momentum and heat, dynamics of turbulence, Boundary-free shear flows, Wall-Bounded shear flows, statistical description of turbulence, turbulent transport, Spectra dynamics, and methods and techniques of measurements in turbulent flows. Prerequisite: MAE 512.

MAE 620. Linear Robust Control  
3 credits  
Offered By Announcement only  
Analysis of multivariable systems in the frequency domain. Topics include norms on signals and systems, uncertainty models, closed loop transfer matrices for performer specifications, role of weighting matrices, and synthesis of Robust controllers in State-Space. Prerequisite: EEN 518 or permission of instructor.
MAE 625. Advanced Aerospace Structures  
3 credits  
Offered By Announcement only  
Elastic analysis of aerospace structures. Topics include failure modes and criteria, buckling, matrix methods for analysis, plane truss design, Energy and Castigliano methods for statically indeterminate structures, and torsion and bending of asymmetrical thin-walled open and closed sections. The use of computer packages to solve moderately sized problems of analysis and design of trusses, plane frames, torsion, plane stress, and combinations structures is also included. Prerequisite: MAE 470 or 507 or permission of instructor.

MAE 630. Mechanical Systems Optimization  
3 credits  
Offered Spring Semester  
Optimization as an element of the engineering design process. Topics include comparative examination of unconstrained algorithms, as well as development and application of methods for constrained optimization problems. Case studies which demonstrate the theory and application of mathematical programming as a design tool are also included. Prerequisite: MAE 501 or permission of instructor.

MAE 635. Expert Systems in Mechanical and Aerospace Engineering  
3 credits  
Offered By Announcement only  
Application of artificial intelligence techniques to problem solving in Mechanical Engineering. Coverage of AI programming languages and paradigms, expert systems technology, as well as applications of expert system to the processes of design, operations, maintenance, and simulation are included. Prerequisite: MAE 501 or permission of instructor.

MAE 640. Continuum Mechanics  
3 credits  
Offered Fall Semester  
Course discusses concepts that are common to all continuous media. Topics include elements of tensor analysis, motion, deformation, vorticity, material derivatives, mass and the continuity equation, and balance of linear and angular momentum as well as energy. Stress and its geometric characterization, constitutive equations of solid and fluid type behavior, virtual work, fundamental applications, and the Clausius-Duhem inequality are also covered. Prerequisite: MAE 507 or 512 or permission of the instructor.

MAE 641. Vibration of Continuous Systems  
3 credits  
Mathematical modeling and formulation of continuous vibration problems. Exact and approximate analytical methods of solution. Numerical methods of solution. Case studies and current literature on vibration of continuous systems. Prerequisite: MAE 502 or consent of instructor.

MAE 651. Master’s Project  
3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
A required project for M.S. students in the non-thesis option. Prerequisite: Permission of instructor.

MAE 652. Master’s Capstone Project  
4 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
A required project for the five year BSME/MSME program. Prerequisite: Permission of instructor.

MAE 680. Graduate Colloquium  
0 credits  
Offered Fall and Spring Semesters  
Presentations by selected speakers of weekly programs dealing with topics of interest in Mechanical Engineering. Attendance is required of all students registered in Mechanical Engineering graduate programs. Prerequisite: Graduate standing.
MAE 692. Special Problems
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Research and/or design projects consisting of individual investigation of current problems. Offered by special arrangement only. Prerequisite: Permission of instructor.

MAE 697. Advanced Topics
1-3 credits
Offered By Announcement only
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

MAE 698. Advanced Topics
1-3 credits
Offered By Announcement only
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission of instructor.

MAE 710. Master’s Thesis
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MAE 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MAE 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MAE 725. Continuous Registration—Master’s Study
0 credits
Offered Fall Semester

MAE 730. Doctoral Dissertation
1-12 credits
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of MAE 730 may be taken in a regular semester, nor more than six in a summer session.

MAE 750. Research in Residence
0 credits
Used to establish research in residence for the Ph.D. and D.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
Interdisciplinary Graduate Studies

IDS 500.  Research Methods and Topics
4 credits       Offered Fall and Spring Semesters and First and Second
                Summer Sessions
Disciplined laboratory experiences for selected undergraduate students placed in
various laboratories on the medical, main and marine campuses under the
mentorship of faculty researchers. Includes a series of class lectures and
demonstrations of scientific equipment. Prerequisite: Permission of Program
Director.

IDS 715.  Research Activities
0 credits       Offered Fall and Spring Semesters and First and Second
                Summer Sessions
Students conducting research, practica, field experience or special projects as
part of their graduate experience. Regarded as full-time residence. May be
repeated. Prerequisite: Permission of the program director.

IDS 730.  Doctoral Dissertation
1-12 credits     Offered Fall and Spring Semesters and First and Second
                Summer Sessions
Required of all candidates for the Ph.D. The student will enroll for credit as
determined by his/her advisor but not for less than a total of 24. Not more than 12
hours of IDS 730 may be taken in a regular semester, nor more than six in a
summer session. Where a student has passed his/her (a) qualifying examinations,
and (b) is engaged in an assistantship, he/she may still take the maximum
allowable credit stated above.

IDS 750.  Research in Residence
0 credits       Offered Fall and Spring Semesters and First and Second
                Summer Sessions
Used to establish research in residence for the Ph.D., after the student has been
enrolled for the permissible cumulative total in appropriate doctoral research.
Credit not granted. May be regarded as full-time residence as determined by the
Dean of the Graduate School.
**MARINE and Atmospheric SCIENCE**

**RSMAS—General**

**RSM 500. Research Diving Techniques**

3 credits

*Offered By Announcement only*

This course is designed to introduce students to the practices and policies of scientific diving. The object is to prepare students to use SCUBA as a research tool for the marine sciences. The course content will qualify students as RESEARCH DIVERS under the UM/RSMAS Scientific Diving Program and will meet the standards set by the American Academy of Underwater Sciences (AAUS).

**RSM 510. Environmental Ethics**

3 credits

This course will introduce students to a variety of key issues and concepts in environmental ethics. The course will be a joint scientific and philosophic collaboration, exploring the ethical dimensions of controversial and emerging issues in biotechnology and the environment. After students are exposed to the scientific background of various actual case studies focusing on current environmental and social impact, the ethical and philosophical issues raised by the discussions will be explored using the tools and methods of analytic philosophy. The course will develop the student's ability to construct and evaluate philosophical arguments in the field of environmental ethics, and to reason philosophically on numerous questions in contemporary applied ethics. Prerequisite: Although there are no philosophy prerequisites for this course, permission of instructor is required.

**RSM 520. Climate and Society**

3 credits

*Offered Spring Semester*

This course is designed to provide students from different disciplinary backgrounds with an overview of physical processes, general concepts and policy debates surrounding climate issues.

**RSM 560. Investigating Nature through Science Teacher Active Research (INSTAR) in Physical Science**

2 credits

*Offered First and Second Summer Sessions*

This is a graduate level marine science course that provides a hands-on approach to education focused on geological and meteorological research in South Florida environment. The course provides training in marine science content, field techniques, state-of-the-art field, computer technology, and science educational reform measures. Participants work collaboratively with marine and atmospheric scientists to bring cutting edge marine science content and research to the classroom focusing on the following coastal themes: geology, hydrology and meteorology. The course will be applicable to all graduate and qualified undergraduate marine science students, per-service teachers in colleges of education, and in-service teachers in school systems throughout the country.

**RSM 561. INSTAR for Physical Sciences Follow-up**

1 credit

*Offered First and Second Summer Sessions*

This is a follow-up course for participants in MGG 560 and is designed to test the application of the methods learned in MGG 560 to the teaching of high school students. Participants are expected to show evidence of teaching material learned in MGG 560. Prerequisite: RSM 560.
RSM 562. Investigating Nature through Science Teacher Active Research in Biological Science
2 credits
Offered First and Second Summer Sessions
This is a graduate level marine science course that provides a hands-on approach to education focused on marine science research and technology in South Florida coastal environments. The course provides training in marine science content, field techniques, state-of-the-art field and computer technology, and science educational reform measures. Participants work collaboratively with marine scientists to bring cutting edge marine science content and research to the classroom focusing on the following coastal themes: coral reefs and marine fisheries. The course will be applicable to all graduate and qualified undergraduate marine science students, per-service teachers in colleges of education, and in-service teachers in school systems throughout the country.

RSM 563. INSTAR Biological Sciences Follow-up
1 credit
Offered First and Second Summer Sessions
This is a follow-up course for participants in RSM 562 and is designed to test the application of the methods learned in RSM 562 to the teaching of high school students. Participants are expected to show evidence of teaching material learned in RSM 562. Prerequisite: RSM 562.

RSM 571. Special Topics
1- 4 credits
Offered By Announcement only
Lectures and research projects in special topics related to Marine and Atmospheric Science. Prerequisite: Permission of instructor.

RSM 572. Special Topics
1- 4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Lectures and research projects in special topics related to Marine and Atmospheric Science. Prerequisite: Permission of instructor.

RSM 600. Research Ethics
0 credits
Offered Fall Semester
The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. The University of Miami Rosenstiel School has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each.

RSM 610. Marine and Atmospheric Science Colloquia
0 credits
Offered Fall and Spring Semesters
An interdisciplinary series of seminars presented by various faculty on current research projects. Course consists of one 1-hour seminar per week. All students are required to register for this course at least once and be expected to attend two consecutive semesters.

RSM 620. Object-oriented Programming and Agent-based Modeling
3 credits
Offered Spring Semester
Basics of object-oriented programming using Java, including Java statistical packages, and hands-on development of agent-based simulation models for social, economic, biological and physical sciences. Includes introductions to automaton and individual-based models. Prerequisite: Students must be committed to rapid learning to advanced levels in a short time. Only 8 students per class due to facility limitations.

RSM 671. Advanced Studies
1- 4 credits
Offered By Announcement only
Supervised study or advanced special topics. Prerequisite: Permission of instructor.
Applied Marine Physics

AMP 509. Coastal Physics and Engineering
3 credits
Offered Spring Semester
Course addresses linear wave theory, wave statistics, wave generation, tides, wind-driven currents, nearshore circulation, sediment transport by waves and currents, bedforms, bedload, and suspended load. Other topics include longshore and cross-shore transport, equilibrium beach profiles, coastal processes models, Pelnard-Considere model for shoreline change, and Escoffier model for inlet stability. Prerequisite: CAE 330 or AMP 575.

AMP 515. Environmental Hydrology
3 credits
Offered Fall Semester
An introduction to the physical processes of hydrological science. The principles of evapotranspiration, precipitation, infiltration, groundwater flow, seepage, overland flow, and stream flow are expounded. Areas of interrelation with environmental, marine, and geophysical sciences are emphasized. Measurement techniques for hydrological variables and the statistical analysis of hydrological data time series for runs and extremes are also described. Prerequisite: Permission of instructor.

AMP 531. Ocean Measurements
3 credits
Offered Spring Semester
Course topics include instrumentation, automatic data acquisition and analysis, time series analysis, signals and noise, filtering, and applied statistics. Prerequisite: MTH 311.

AMP 535. Introduction to Underwater Acoustics
3 credits
Offered Spring Semester
Course topics include sound waves and pulses, harmonic analysis, sound propagation in the ocean, sonar systems, scattering and absorption, acoustic measurement of marine life and sea-floor properties, sound transmission in waveguides, ambient noise, transducers, and hydrophones. Prerequisite: MTH 311.

AMP 542. Physics of Remote Sensing
3 credits
Offered By Announcement only
This course discusses basic physical principles of remote sensing. The main topics are (1) Introduction, (2) Sampling issues, (3) Fundamental laws of electromagnetic waves, (4) Passive sensing, (5) Active sensing, and (6) Brief survey of satellite sensors. Prerequisite: Permission of instructor.

AMP 551. Special Topics
1-3 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 552. Special Topics
1-3 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 553. Special Topics
1-3 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 554. Special Topics
1-3 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.
AMP 555. Special Topics  
1-3 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 575. Applied Ocean Hydrodynamics  
3 credits  
Offered Fall Semester  
The equations governing the dynamics of homogeneous fluids are derived. The concepts of deformation rates, vorticity, stream function, and ideal fluid flow are introduced and demonstrated in applications describing flows in the marine environment. Semi-empirical methods for analyzing viscous flows, boundary layers, and turbulence are presented. Eddy viscosity and more advanced turbulence closure schemes are discussed in the context of coastal circulation, bottom boundary layers and sediment transport. Prerequisite: Permission of instructor.

AMP 576. Wave Propagation in the Ocean Environment  
3 credits  
Offered Fall Semester  
Wave equation models, acoustic and other elastic waves, surface gravity waves, boundary conditions, ray tracing, dispersion, diffraction, reflection attenuation, and radiation transport laws are discussed. Prerequisite: MTH 311.

AMP 577. Marine Soil Mechanics  
3 credits  
Offered Spring Semester  
Course topics include principles of soil and rock mechanics and dynamics, theories of poro-elasticity, sea-seabed and interactions, and measurement methods of physical properties of sediments. An introduction to wave propagation through porous media is included. Prerequisite: AMP 576 and 575 or permission of instructor.

AMP 590. Sustainable Fisheries - Assessment and Conservation  
3 credits  
Offered Spring Semester  
This is the second of a three course series. This course will focus on advanced stock assessment techniques using acoustics and optics. It will cover, for example: - History of sampling fish stocks - “from catching to measuring fish” - Measuring with underwater sound and light - Sounds and echoes in marine ecosystem - Survey of fish stocks and their habitat. Prerequisite: MSC 471, or equivalent.

AMP 601. Analytical Methods in Marine Physics  
3 credits  
Offered Fall Semester  

AMP 610. Environmental Optics and Electromagnetic Wave Propagation  
3 credits  
Offered Spring Semester  
The course will allow students to understand the physical background of geophysical optical and microwave measurements, to learn how to carry out and interpret optical measurements, and how to work with microwave passive/active remote sensing platforms. The student will leave with a thorough understanding of existing physical background of optical instrumentation for underwater measurements as well as active/passive optical and microwave remote sensing. Prerequisite: Permission of the instructor.
AMP 631. Air-Sea Interaction
3 credits
Offered By Announcement only
Course topics include the flux of momentum, heat, moisture, and salt, vertical distribution of energy sources and sinks near the interface, surface waves, mixed layers, and large scale interactions. (Same as MPO 631.) Prerequisite: AMP 575 or 576 and permission of instructor.

AMP 636. Marine Vehicle Dynamics
3 credits
Offered By Announcement only
Course topics include dynamics of floating bodies, free surface potential flow, boundary value problems, dynamics of marine vehicles, resistance and motions in waves, slender body hydrodynamics, strip theory of ship motions, seakeeping, and maneuvering. Prerequisite: AMP 534, 575.

AMP 640. Numerical Modeling in Applied Marine Physics
3 credits
Offered Spring Semester
Techniques and applications of numerical modeling in one of the following topical areas: sound propagation and scattering in the ocean; surface gravity wave propagation and scattering in regions of shallow and intermediate depths; and hydrodynamics in the coastal ocean environment. Emphasis (sound propagation versus gravity wave propagation or hydrodynamics) alternates from one year to the other. Prerequisite: AMP 535, 575 or 576 and permission of instructor.

AMP 650. Coastal Ocean Circulation
3 credits
Offered Spring Semester
Circulation and stratification in the coastal ocean, including the dynamics of wind-driven, tidally-driven, and buoyancy-driven mean and transient flows over variable topography with density stratification. Design of numerical models and observing systems for coastal ocean circulation is also included. Prerequisite: MPO 503, or AMP 575, and 601 or equivalent, consent of instructor.

AMP 672. Advanced Underwater Acoustics
3 credits
Offered Spring Semester
Analysis and numerical modeling of sound propagation in the ocean: geometrical acoustics, normal mode theory, and the parabolic equation method. Recent advances in underwater acoustics: effects of oceanic variability, signal fluctuations, random medium propagation, ocean bottom interactions, and shallowwater propagation are also examined. Prerequisite: AMP 535.

AMP 673. Applied Underwater Acoustics
3 credits
Offered Fall Semester
Course topics include sonar systems and operating characteristics, scattering and reverberation, target strength, signal processing, transducers and arrays, detection and noise, and acoustic telemetry. Prerequisite: AMP 535.

AMP 675. Estuary Dynamics
3 credits
Offered By Announcement only
Course topics include water motions in estuaries, lagoons and inlets. shallow water tides including tide generation, harmonic analysis, and analytical solutions to the shallow waterwave equations. Classification of estuaries by topography, circulation, and stratification are also discussed as well as mixing concepts, diffusion, dispersion, and buoyancy effects. tide, wind, density induced circulation, and residence time. Prerequisite: AMP 575.

AMP 676. Advanced Wave Hydrodynamics
3 credits
Offered Spring Semester
Wave hindcasting/forecasting, one dimensional and directional wave spectra, probability distributions, transformations in shallow water, nonlinear analysis, and wave breaking. Prerequisite: AMP 576.
AMP 677. Advanced Geoacoustics  
**3 credits**  
Offered Fall Semester  
Theory of elastic wave propagation in fluid filled porous media. Energy loss mechanisms in sediments, methods to measure geoacoustic properties and their spatial variability, and theory of scattering of elastic waves in random poroelastic media are discussed. Prerequisite: AMP 577 or instructor’s approval.

AMP 680. Transport and Mixing Process in the Marine Environment  
**3 credits**  
Offered By Announcement only  
Heat and constituent transport and mixing processes in the marine environment. Derivation of the fundamental equations governing heat and constituent transport and mixing processes, steady and unsteady state heat transfer by conduction, laminar and turbulent convection, and radiation, steady and unsteady state constituent transfer by diffusion and laminar and turbulent convection, mixing and flushing in tidally driven coastal waters are also discussed. Prerequisite: AMP 575.

AMP 686. Advanced Ocean Measurements  
**2 credits**  
Offered By Announcement only  
Theory and techniques of ocean measurements, ocean data systems, and processing and ocean data transmission are discussed. Lecture, 2 hours. Prerequisite: AMP 531 and permission of instructor.

AMP 689. Applied Marine Physics Seminar  
**1 credit**  
Offered By Announcement only  
Oral presentation and discussion of research and special topics by students, faculty, and visiting scientists. Attendance is required each semester for students in Applied Marine Physics. Prerequisite: Permission of instructor.

AMP 690. Mechanics and Thermodynamics of the Air-Sea Interface  
**3 credits**  
Offered Spring Semester  
This course deals with the theory and practice of air-sea interaction. Two hours of lectures and one hour in the wind-wave laboratory provide an appropriate mix of theory and experiment. The topics covered include: thermodynamics of the interface; conservation equations; wave generation, propagation, and dissipation; boundary layer turbulence; heat, mass, and momentum transfer; energy dissipation, intermittency; turbulence closure; and wave prediction models. Prerequisite: AMP 575 or permission of instructor.

AMP 691. Sustainable Fisheries - Advanced Acoustic Surveying  
**3 credits**  
Offered Spring Semester  
This is the third and final course in the three course series. It addresses graduate students with a strong research interest in measuring fish and their habitat on the stock and population level. This course will focus on advanced stock assessment techniques using acoustics and optics. It will cover, for example: - A critical review of classical and current research papers - Signal processing and laboratory experiments - Field surveys and stock assessment reports. Prerequisite: AMP/MBF 590.

AMP 694. Advanced Studies  
**1-3 credits**  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

AMP 695. Advanced Studies  
**1-3 credits**  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.
AMP 696. **Advanced Studies**
1- 3 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

AMP 697. **Advanced Studies**
1- 3 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

AMP 698. **Advanced Studies**
1- 3 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

AMP 700. **Practical Training and Internship**
1- 6 credits  
Offered By Announcement only  
Supervised internships or off-campus employment for students pursuing the M.A., M.S., or Ph.D. degree. Consists of work related to research in progress.

AMP 705. **Special Project**
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Supervised project for students pursuing the Master of Arts degree. Consists of a paper which is researched and written on a topic approved by the student’s advisory committee, and presented as a seminar to the student’s division. Six credits are required for graduation. Prerequisite: Completion of 24 graduate course credits.

AMP 710. **Master’s Thesis**
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

AMP 720. **Research in Residence**
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in AMP 710 (usually six credits). Credit not granted. May be regarded as full time residence.

AMP 730. **Doctoral Dissertation**
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of AMP 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

AMP 750. **Research in Residence**
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
Marine and Atmospheric Chemistry

MAC 503. Principles of Marine and Atmospheric Chemistry
3 credits Offered Fall Semester
Introduction to the chemical aspects of the sea and atmosphere chemical composition, physico-chemical properties and relationships, methodology of study, fundamental aspects of marine and atmospheric chemistry. Prerequisite: CHM 111 or permission of instructor.

MAC 504. Analytical Methods in Marine and Atmospheric Chemistry
1 credit Offered Fall Semester
A survey of analytical methods as applied to oceanographic and atmospheric chemistry. Course is taught in a multi-instructor format. Topics include trace organic analysis by HPLC, GC, and GC-MS, laser induced fluorescence detection of gas phase atoms, differential absorption detection of atmospheric species, aerosol sampling, ion chromatography, photochemical techniques, oceanographic tracers, microbiological techniques, and computational resources. Course is designed to be taught in conjunction with MAC 503. Prerequisite: Permission of instructor.

MAC 560. Tropospheric Chemistry I
3 credits Offered Spring Semester
Process-Oriented lower atmospheric chemistry. Topics include photochemical oxidant formation, nighttime chemistry, air-sea exchange, cloud droplet and aerosol reactions, physical properties of aerosols, and transport properties of the troposphere. Prerequisite: MPO 552 or an undergraduate meteorology course, or permission of instructor.

MAC 581. Special Topics in Marine and Atmospheric Chemistry
1- 4 credits Offered By Announcement only
Lectures, research projects or direct readings in special topics of marine and atmospheric chemistry. Prerequisite: Permission of instructor.

MAC 582. Special Topics in Marine and Atmospheric Chemistry
1- 4 credits Offered By Announcement only
Lectures, research projects or direct readings in special topics of marine and atmospheric chemistry. Prerequisite: Permission of instructor

MAC 583. Special Topics in Marine and Atmospheric Chemistry
1- 4 credits Offered By Announcement only
Lectures, research projects or directed readings in special topics of marine and atmospheric chemistry. Prerequisite: Permission of instructor

MAC 584. Special Topics
1- 4 credits Offered By Announcement only
Lectures, research projects or directed readings in special topics of Marine and Atmospheric Chemistry. Prerequisite: Permission of instructor.

MAC 585. Special Topics in Marine and Atmospheric Chemistry
1- 4 credits Offered By Announcement only
Lectures, research projects or directed readings in special topics of marine and atmospheric chemistry. Prerequisite: Permission of instructor

MAC 605. Chemical Oceanography
3 credits Offered Spring Semester
Course consists of lecture and discussions with renowned experts in the major disciplinary foci and topical issues dominating the field of Chemical Oceanography. Topics include the chemistry and biogeochemical processes of the carbon cycle, ocean tracers, photochemistry, and specific marine environments (geothermal vents, anoxic waters, sediments, air/sea interface). Prerequisite: MAC 503 or permission of instructor.
MAC 615. Tracers of Oceanographic Processes  
3 credits  
Offered Spring Semester  
Course describes the various tracer techniques used by oceanographers to understand water transport and mixing, sedimentation, gas exchange, nutrient recycling, and transport. Tracers used are both natural occurring and anthropogenic. This course is of interest to students from various disciplines.

MAC 620. Marine Physical Chemistry  
3 credits  
Offered Spring Semester  
Physical-chemical principles applied to the marine environment, based on thermodynamics and the study of rate processes. Prerequisite: Two semesters of physical chemistry, calculus through differential equations.

MAC 625. Marine Biochemical Cycles  
3 credits  
Offered Spring Semester  
Course discusses the roles of bacteria in the transformation of compounds in the marine environment, their functions in the carbon, nitrogen, sulfur, and phosphorus cycles, and transformation of metals. Bacterial activities in the deep-sea environment and their involvement in corrosion and fouling is also discussed. Prerequisite: Permission of instructor.

MAC 630. Marine Organic Chemistry  
3 credits  
Offered By Announcement only  
Organic chemistry of the marine environment. Inventory of organic constituents, their sources and sinks, sampling and analytical techniques, functions of and processes involving organic compounds in the ocean are discussed. Review of current research topics is included. Prerequisite: MAC 502 and two semesters of undergraduate organic chemistry or biochemistry.

MAC 640. Global Geochemical Fluxes  
3 credits  
Offered By Announcement only  
Use of chemical and isotopic tracers to evaluate the pathways and rates at which dissolved and particulate material are cycled through the atmosphere and oceans. Course emphasizes the use of diagnostic computer models as tools for the study of geochemical systems. Prerequisite: Marine Chemistry.

MAC 645. Marine Trace Organic Analysis  
3 credits  
Offered By Announcement only  
Application of modern liquid and gas chromatographic techniques to marine chemical problems. Stress is placed on determination of natural trace organic compounds in seawater and atmospheric samples. 50% reading and 50% lab project. Prerequisite: MAC 504 or 630.

MAC 650. Reaction Kinetics and Molecular Dynamics  
3 credits  
Offered Spring Semester  
Theories and experimental techniques for studying kinetics in the gas-phase, association, unimolecular and bimolecular reactions, chain reactions, flames, statistical theories, potential energy surfaces, collision dynamics, kinetics in solution and the solid-state, experimental methods, diffusion-controlled processes, transition state theory, thermal decomposition, and nucleation are discussed. Prerequisite: Thermodynamics, elementary statistical mechanics.

MAC 661. Tropospheric Chemistry II  
3 credits  
Offered Fall Semester  
Chemical and physical properties of tropospheric aerosols. Topics include properties of aerosols, dynamics of single aerosol particles, thermodynamics of aerosols, nucleation theory, aerosol growth, heterogeneous processes, dynamics of aerosol populations, and radiative properties of atmospheric aerosols. Prerequisite: Tropospheric Chemistry I.
MAC 662. Environmental Photochemistry
3 credits
Offered By Announcement only
Introduction to the principles of photochemistry and their application to understanding sunlight initiated processes in the region of the ocean-atmosphere interface. Organic and inorganic photochemical reactions and subsequent thermal reactions in solution, gas, and solid media are discussed. Prerequisite: Permission of instructor.

MAC 665. Chemistry of Middle and Upper Atmosphere
3 credits
Offered Fall Semester
Course addresses the structure of the stratosphere, mesosphere, and ionosphere, ion chemistry, aurorae, meteoritic chemistry, the ozone layer and anthropogenic influences, techniques for making atmospheric observations, and development of chemical models with simple transport. Prerequisite: Elementary Gas-phase kinetics, thermodynamics.

MAC 668. Isotopic Processes in Earth Sciences
3 credits
Offered By Announcement only
The use of isotopic methods in geology, geochemistry, and geophysics including oceanography and meteorology. General laws governing isotopic effects in chemical and physical processes are discussed as well as specific problems in dating, tracing, and paleotemperatures. Same as MGG 668. Prerequisite: Permission of instructor.

MAC 670. Seminar in Marine and Atmospheric Chemistry
1 credit
Offered Fall and Spring Semesters
Oral presentation of research and special topics by students, faculty, and visiting scientists.

MAC 671. Diagenesis of Carbonate Sediments
3 credits
Offered By Announcement only
Application of geochemical and mineralogic principles to the behavior of carbonate minerals in sediments. Physical and chemical conditions responsible for cementation, dolomitization, and aragonite-calcite phase transitions are emphasized. Types of depositional and diagenetic information which may be preserved in carbonate sediments are also examined. Laboratory studies of sediments is included. Identical to MGG 671. Prerequisite: MGG 511 and 513 (or 514).

MAC 680. Advanced Studies
1- 4 credits
Offered By Announcement only
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MAC 681. Advanced Studies
1- 4 credits
Offered By Announcement only
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MAC 682. Advanced Studies
1- 4 credits
Offered By Announcement only
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MAC 684. Advanced Studies
1- 4 credits
Offered By Announcement only
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.
MAC 685. **Advanced Studies**  
1-4 credits  
*Offered By Announcement only*  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MAC 700. **Practical Training and Internship**  
1-6 credits  
*Offered By Announcement only*  
Supervised internships or off-campus employment for students pursuing the M.A., M.S., or Ph.D. degree. Consists of work related to research in progress.

MAC 705. **Special Report**  
1-6 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Supervised project for students pursuing the Master of Arts degree in Marine Studies. Consists of a paper, researched, and written on a topic approved by the student’s advisory committee, and presented as a seminar to the student’s division. Six credits are required for graduation. Prerequisite: Completion of 24 graduate course credits.

MAC 710. **Master’s Thesis**  
1-6 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MAC 720. **Research in Residence**  
0 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MAC 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MAC 730. **Doctoral Dissertation**  
1-12 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of MAC 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MAC 750. **Research in Residence**  
0 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Marine Affairs and Policy**

MAF 501. **Political Ecology of Marine Management**  
3 credits  
*Offered Spring Semester*  
Course provides a grounding in political ecology as an important theoretical approach to resource policy and management. The social analysis of resource use, social change, and development are discussed. Models of development and concepts of nature relate to resource use and policy formation are also included. Within this framework, ethnicity, class, and the politics of conservation are explored. Prerequisite: MAF 505.
MAF 502. Economics of Natural Resources
3 credits
Course brings together the approaches of natural resource and environmental economics to provide a comprehensive overview of the economics of national, international, and global environmental problems. A unifying theme throughout the course is the concept of sustainable development, defined as maximizing the net benefit to economic development while maintaining the services and quality of natural resources over time. Economic reasoning is used to examine the causes and consequences of environmental and resource problems and measures for dealing with them. Prerequisite: Permission of instructor. Intermediate level statistics (including multiple regressions) and a minimal working knowledge of calculus is useful but not required. All models are presented in graphical as well as mathematical forms.

MAF 503. Marine Resource Economics
3 credits
Offered By Announcement only
This course surveys the economics of international and global marine resource problems, with particular emphasis on biodiversity loss and climate change. The mainstream economics focus on efficiency—getting the most welfare out a given endowment of resources—in complemented with a range of social science and natural science interdisciplinary linkages. Three themes stand out. First, economic efficiency may not be the only or even dominant concern in the provision of environmental assets. Issues of fairness and access to those assets, both within a time frame period and over time, may be of greater importance to both individuals and societies. Second, if habitats and their non-human occupants have some form of “intrinsic” value unrelated to human preferences, then we face the problem of how to account for those values. Third, economics lacks a “sustainability” theorem that would ensure whatever economy we might devise would be ecologically sustainable. To be sure of sustainability, economic models must have sustainability conditions build into them. Prerequisite: MAF 502, ECO 345, or permission of instructor.

MAF 505. Fieldwork in Coastal Cultures
3 credits
Offered Spring Semester
Field course in which the student participates in a social and economic analysis of a coastal culture (i.e., stone crab fishermen in Everglades City, spiny lobster fishermen in Key West, boat builders and commercial divers in the Abacos, Bahamas). Preliminary lectures and reading introduce the theory and method which the student then practices during a week-long field trip. Prerequisite: MSC 310 or permission of instructor.

MAF 506. Advance Fieldwork in Coastal Cultures
3 credits
Offered Spring Semester
Advanced field course in which the students participate in the social and economic analysis of a coastal culture (e.g. Louisiana bayou fishermen, Abacos boat builders, Tarpon Spring spongers). Students utilize field research techniques learned in MAF 505 and develop skills in framing a research problem. Students examine a coastal issue from an anthropological perspective, structuring a field research paper. Prerequisite: MAF 505.

MAF 510. Environmental Planning and the Environmental Impact Statement
3 credits
Offered Spring Semester
Course takes a broad view of environmental planning and analysis while focusing specifically on the preparation of environmental impact statements. Statutory requirements and procedures at the federal level are examined. Judicial opinions are studied that reflect environmental disputes and controversies. The course also considers some of the substantive requirements of environmental impact analyses such as the assessment of physical and biological environment and socioeconomic impacts.
MAF 512. Aquaculture Management
3 credits  
Offered Fall Semester
Course examines the various strategies of resource exploitation and utilization in developing aquaculture projects. Resources include environmental, technological, social, economical, and administrative aspects encountered in commercial aquaculture development. The course covers all stages of planning and development, with emphasis on determining the technical and economic feasibility of aquaculture projects.

MAF 513. Aquaculture Management II
3 credits  
Offered Spring Semester
Course is a complement to Aquaculture Management (MAF 512) and examines advanced aquaculture management techniques and strategies with emphasis on commercial operations. Course requires a background in either aquaculture or business. Prerequisite: MAF 512 or permission of instructor.

MAF 514. Field Techniques in Prehistoric Underwater Archaeological Excavation
3 credits  
Offered First Summer Session
An introduction to specialized techniques of underwater excavation applicable to the excavation of Little Salt Spring (LSS), a prehistoric site owned and operated by Rosenstiel School of Marine and Atmospheric Science. All students participate in a one-week intensive lecture course in the prehistory of Florida and general techniques of underwater excavation. The field course begins after that. All students must be present for all of the field course in order to complete the basic requirements. Activities include daily underwater excavation in depths of 10-30 feet of water, as well as surface support activities relating to diving and the recording and basic conservation of recovered ecofacts and artifacts dating before 9,000 radiocarbon years before present. Prerequisite: Students who intend to dive (not required) must have already been qualified as RSMAS scientific divers (basic), under guidelines established by the American Academy of Underwater Sciences (AAUS) in order to participate in course-related SCUBA-diving activities.

MAF 515. Techniques of Marine Archaeological Survey and Recording
3 credits  
Offered By Announcement only
The location and study of underwater archaeological sites is undergoing fundamental changes because of application of advanced technologies developed for other fields, notably remote sensing, and the general availability of computer power for individual users. This course introduces the student to the latest techniques of survey and recording, focusing on hardware and software that can greatly increase the efficiency of any underwater excavation. Prerequisite: Previous course in archaeology or marine archaeology or permission of instructor.

MAF 516. Ocean Policy and Development and Analysis
3 credits  
Offered Fall Semester
Ocean policy development and analysis of issues such as: offshore oil drilling, fisheries resource conflicts, marine mammal protection, ocean dumping and incineration, multiple use conflicts in marine protected areas, pollution from land based sources, and oil spill contingency planning.

MAF 517. Aquaculture and the Law
3 credits  
Offered By Announcement only
This course examines the substantive legal issues concerning Aquaculture and the Coastal Zone. Legal aspects of Aquaculture related to ownership and boundaries in the coastal zone, legal and regulatory constraints, international consideration private and public rights, risks and incentives. Fish and shellfish as personal property and conservation laws affecting the fish farmer.
MAF 518. Coastal Zone Management
3 credits
Offered Fall Semester
Development of a framework for formulation and assessment of coastal zone policy. Analysis of issues and conflicts in coastal zone management (CZM), such as: zoning and planning, coastal and beach protection, ecosystem protection, the federal flood insurance program, adaptations to sea level rise, coastal pollution from land-based sources, and tourism impacts.

MAF 519. Aquaculture Management III (Fieldwork)
3 credits
Offered First Summer Session
Students will conduct fieldwork on environmental, technological, social, economical, and administrative aspects encountered in commercial aquaculture operations. This fieldcourse will complement Aquaculture Management I and II. Students will be able to apply most of the topics taught in MAF 512 and MAF 513. They will participate in all stages of the production process, including maturation, spawning, larval husbandry, nursery and growout techniques, as well as harvesting, processing and exporting. Students will visit several large commercial hatcheries, farms and processing plants currently producing processing, packing and exporting shrimp and fish (both marine and freshwater) for US and European and Asian markets. Prerequisite: MAF 512, 513 or permission from the instructor.

MAF 520. Environmental Law
3 credits
Offered Fall Semester
An introductory course focusing on environmental problems. The study of Regulatory legislation, common law, and administrative law. Topics include toxic substances, air and water pollution, and habitat and species protection. Prerequisite: Permission of instructor.

MAF 525. Fisheries Socioeconomics and Management
3 credits
Offered Fall Semester
This course applies microeconomic theory to fisheries resource problems and policies. Economic models with the value of production as their objective, will contrast economists’ and biologists’ definitions of maximum yield and show why an unregulated fishery will not operate at either level. We will use economic reasoning to examine causes and consequences of fisheries problems and measures for dealing with them.

MAF 526. Marine Cultural Resource Management
3 credits
Offered Spring Semester
Submerged archaeological sites as exhaustible resources of a country’s cultural heritage. Policies and procedures for their protection or mitigation will be surveyed using as examples the statutes and regulations of foreign states, the federal government, and the US states. Prerequisite: APY 340.

MAF 530. Port Operations and Policy
3 credits
Offered By Announcement only
The course will include: Introduction to ports; port geography; port operations; port administration; Federal port policy; free ports/free zones; port investment/tariffs; port marketing; Coastal Zone Management and ports; case studies, CZM; fostering economic development; and Port planning and development. Prerequisite: Junior standing.

MAF 560. Introduction to Marine Geographic Information Systems
3 credits
Offered Fall Semester
Marine Geographic Information Systems are emerging as a distinct subset of GIS, due to fundamental differences between terrestrial and underwater spatial information (2-D vs. 3-D, multiresolution, synoptic data collection, time depth (4-D) modeling). Approximately the first half of this course is a brief review of basic GIS, and the second half concentrates on aspects of marine data acquisition and manipulation in the GIS context.
MAF 561. Introduction to Marine Geographic Information Systems - Laboratory
1 credit  
Offered Fall Semester and First Summer Session  
Introduction to Marine Geographic Information Systems - Laboratory introduces students to the basic methods and technology in Marine Geographic Information Systems. The course is taught with hands-on laboratory exercises following the evolution of Marine Geographic Information Systems, from basic cartography to topological and network modeling to internet access and application.

MAF 562. Spatial Analysis: Intermediate Course in Marine GIS
3 credits  
Offered Spring Semester  
Course provides a general survey of available quantitative methods for spatial analysis using Geographic Information Systems (GIS). Although GIS has been widely used for mapping and database management, this course is focused on the functionality of GIS as an effective tool for modeling and analyzing complex spatial relationships. Quantitative methods suitable for analyzing different features types are discussed. Applications for such methods are also presented. Prerequisite: MAF 560, 561 or permission of the instructor.

MAF 570. Conservation and Management of Large Marine Vertebrates
3 credits  
Offered Fall Semester  
This course emphasizes on the notion that proper conservation and management of large marine vertebrates (i.e., marine mammals, sea turtles, sharks and rays) require the understanding and integration of some important aspects of the (comparative) biology and ecology of these groups of animals with the multifaceted nature (e.g., social, economical, ethical and cultural dimensions) of these concerns.

MAF 576. Special Topics
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.

MAF 577. Special Topics
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.

MAF 578. Special Topics
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.

MAF 579. Special Topics
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.

MAF 580. Special Topics
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to marine affairs. Prerequisite: Permission of instructor.

MAF 610. International Ocean Law
3 credits  
Offered Spring Semester  
Course analyses how international and municipal law deals with navigation, pollution, fisheries, exploitation of natural resources, and other uses of the ocean. In addition to jurisdictional issues, sources of international law and scientific research in ocean areas are examined.
MAF 620. Coastal Law and Policy  
3 credits  
Offered Fall Semester  
Course examines the authority of different levels and agencies of government to make decisions affecting the coastal zone. Course also explores the coastal problems of shoreline use and development, uses of water areas and the seabed, and the related questions of environmental protection.

MAF 630. Case Studies in Marine Policy  
3 credits  
Offered By Announcement only  
This team-taught course is an interdisciplinary research and writing seminar for graduate students. The objective is to give students “hands on” problem solving and decision making experience under conditions of competing interests and scientific uncertainty. Each student team will develop an investigative report for inclusion into a document that will serve future courses as well as the policy and research communities at large.

MAF 670. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MAF 671. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MAF 672. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MAF 673. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MAF 674. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MAF 705. M.A. Internship  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The M.A. student must complete an approved six credit internship with an organization engaged in activities associated with marine affairs. Credits are not awarded until the internship has been successfully completed, a written report approved and a formal letter of evaluation received from the cooperating institution. Prerequisite: Completion of all other requirements for M.A. degree in Marine Affairs.

MAF 710. Master’s Thesis  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s thesis enrolls for credit in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.
MAF 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MAF 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MAF 725. Continuous Registration—Master’s Study
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

Marine Biology and Fisheries

MBF 508. Biometrics in Marine Science
3 credits
Offered Fall Semester
Applied statistical analysis in marine biology and biological oceanography. Descriptive statistics, probability distributions, and hypothesis testing are discussed. Concepts of analysis of variance, simple linear regression, and computer statistical distribution-free methods are also included as well as principles and procedures with computer statistical packages for data analysis. Lecture and laboratory. Prerequisite: Permission of instructor.

MBF 511. Aquaculture
3 credits
Offered By Announcement only
Focus on techniques to culture marine organisms. The growth and physiology of early life stages, the culture of food organisms for larval stages, food requirements of larval and juvenile stages, water quality measurement, disease control, tank design, grow out, composition of artificial feeds and artificial spawning are discussed in detail. Applications of these techniques in commercial aquaculture, culture of animals for research, and for stock enhancement programs are examined. Practical examples are presented for laboratory and hands on rearing of fish larvae. Commercial aquaculture facilities are visited in field trips during the laboratory. Lecture, 2 hours; laboratory, 2 hours.

MBF 512. Aquaculture Laboratory
2 credits
Offered By Announcement only
Determining and monitoring water quality, culturing food organisms, larval rearing of shrimp and fish, feeding techniques, identifying parasites and diseases, and avoiding causes of mortality are discussed. Visits to local fish and shrimp hatcheries and farms is included. Corequisite: MBF 511.

MBF 513. Biology and Ecology of Mangroves
3 credits
Offered Spring Semester
Recent research advances in the study of mangroves as a dynamic interface between terrestrial and marine systems. Topics include taxonomy, biogeography, morphology and physiognomy, water relations and mineral nutrition, and physiology and reproduction with emphasis on how mangroves modify tropical coastal environments and how they are affected by external stressors including global climate change. Lecture, 2 hours; field trips, 1 hour; field and laboratory work, minimum 2 hours. Prerequisite: Permission of instructor.
MBF 514. Tropical Marine Biology: A Field Course
3 credits
Offered Spring Semester
General survey of marine flora and fauna of tropical marine ecosystems. Inhabitants and communities of the sandy shore, rocky shore, seagrass meadows, mangrove shoreline, coral and artificial reefs are collected, identified, maintained. Life histories of representatives are presented. Concepts of island biology and geology such as shore zonation local reef formation and the geological history of the lagoon are also discussed. The 10 day course involves 90 contact hours and approximately 40 hours of formal lectures. Grades are based on a laboratory practicum and written final exam. The course is given in its entirety at the University’s field station at Bimini, Bahamas. Prerequisite: By permission of instructor.

MBF 515. Tropical Marine Ecology
3 credits
Offered By Announcement only
Marine ecology with emphasis on tropical ecosystems and local habitats. Physical environmental and biotic adaptations, population, and community ecology are discussed. Field exercises in mangrove, sea grass, and coral reef ecosystems are also included. Prerequisite: Invertebrate Zoology and Ecology or permission of instructor.

MBF 518. Ecology and Physiology of Coral Reef Systems
3 credits
Offered By Announcement only
Coral reefs as integrated systems are examined from geological, ecological, and biological perspectives. The roles of global and local environmental fluctuations, physical disturbance, and biotic interactions in controlling reef formation and community structure is emphasized. The physiology of scleractinian corals and their algal symbionts is described and the prevalence of algal-invertebrate symbiosis on coral reefs related to nutrient cycling, productivity, and food webs on coral reefs. Prerequisite: Permission of instructors.

MBF 519. Tropical Marine Ecology Lab
1 credit
Offered By Announcement only
Combined field-laboratory exercises in mangrove, sea grass, and coral reef ecosystems.

MBF 520. Tropical Marine Ecology: A Short Course
2 credits
Offered Spring Semester
This tropical Marine Biology course established primarily for Florida high school marine biology teachers is taught from an interactive point of view where students are afforded the opportunity to both learn in the conventional way of classroom lectures, and more importantly to learn by involvement and participation. Students are exposed to the major marine communities found in Bimini and South Florida such as: 1) coral reef; 2) artificial reef; 3) mangrove; 4) seagrass flats; and intertidal zones. Students learn about the uniqueness of each of these ecosystems and the plants and animals which inhabit them. Lectures are divided up by habitat and are given in the morning. In the afternoon students go into the field and traverse on foot or snorkel in each ecosystem. Specimens are collected and identified at night and students are required to learn and identify 50 organisms found in six ecosystems. Field guides are used as reference material. A written exam and laboratory practical is given on the last day of class. Prerequisite: College Biology.
MBF 525. Biology of Elasmobranch Fishes: A Field Course
2 credits  Offered By Announcement only
Course discusses the first aspects of elasmobranch biology including systematics of the major taxa, paleontology, and the evolutionary history of sharks as well as anatomical aspects. Course also addresses the physiology and biochemistry of sharks, circulatory, respiratory, developmental, skeletal, and sensory systems involving behavior, ecology, and life history strategies. Factors such as feeding, reproduction, and social and swimming behavior are also discussed. The relation between man and shark: overexploitation as it affects shark conservation, survival, and biodiversity is included. Course is given in its entirety at Bimini, Bahamas. Prerequisite: By permission of instructor.

MBF 531. Plankton
3 credits  Offered Spring Semester
Course topics include the drifting organisms, their central role in the economy of the sea, the influence of the environment, and their adaptations to it. The dynamic and productivity of the plant and animal plankton, the ecology and physiology of animal plankton, especially in connection with special distribution and nutrition, and an introduction to the taxonomy, and quantitative enumeration of the animal plankton is included. Lecture, 3 hours. Prerequisite: Permission of the instructor.

MBF 540. Introduction to Ecological Modeling
3 credits  Offered By Announcement only
An introduction to conceptual and mathematical model building methods for ecological processes at population, community, ecosystem, and landscape/seascape-level scales. Other topics include mathematical foundations, numerical modeling, holistic and structured population models, demography, density-independent and -dependent models, linear and nonlinear systems, community composition, competition, succession, and ecosystem structure and function are discussed. Gap-phase, process-based, compartmental, and coupled biological-physical ecosystem models at landscape scales are also examined. Prerequisite: Calculus and permission of instructor.

MBF 550. Analytical Techniques in Marine Biology
2 credits  Offered By Announcement only
Theory and applications of selected analytical techniques necessary to conduct quantitative research in marine biology (e.g., electrophoresis, metabolite assays, enzyme assays, radioisotope methodology). One hour lecture followed by three hour laboratory per week.

MBF 557. Special Topics
1-4 credits  Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.

MBF 571. Special Topics
1-4 credits  Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.

MBF 572. Special Topics
1-4 credits  Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.

MBF 573. Special Topics
1-4 credits  Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.
MBF 574. Special Topics  
1- 4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Marine Biology and Fisheries. Prerequisite: Permission of instructor.

MBF 575. Current Applications of Ecological Theory  
3 credits  
Offered By Announcement only  
Course examines current applications of ecological theory. Topics include issues of stress ecology, methodologies for evaluating stress responses, methodologies for ecological risk assessment, general systems theory, and human/environmental interactions. Lecture, 3 hours. Prerequisite: Permission of the instructor.

MBF 576. Diseases of Marine Organisms  
3 credits  
Offered By Announcement only  
Infectious, genetic, and environmentally induced diseases of marine fishes and invertebrates as well as diagnostic methods, cellular, and molecular pathology. Lecture, 3 hours. Prerequisite: Graduate standing, or BIL 150, 160, 255 and permission of the instructor.

MBF 586. Environmental Biology of Fishes  
3 credits  
Offered By Announcement only  
Ecology, dispersal, and modes of life of fishes. Adaptations by larvae and adults to various habitats are covered as well as the effects of man on fish faunas and the importance of fishes to various ecological systems. Lecture, 3 hours.

MBF 590. Sustainable Fisheries - Assessment and Conservation  
3 credits  
Offered Spring Semester  
This is the second of a three course series. This course will focus on advanced stock assessment techniques using acoustics and optics. It will cover, for example: - History of sampling fish stocks - “from catching to measuring fish” - Measuring with underwater sound and light - Sounds and echoes in marine ecosystem - Survey of fish stocks and their habitat. Prerequisite: MSC 471, or equivalent.

MBF 602. Biological Oceanography Seminar  
1 credit  
Offered Fall and Spring Semesters  
Participation is required of all students in Marine Biology and Fisheries department every semester they are in residence whether or not they are registered for the course. Students past their second semester must give one 20-minute presentation per year, on their research or other acceptable topic. Dates are be assigned by lottery. Course may be taken for credit only once.

MBF 604. Biological Oceanography  
4 credits  
Offered Fall Semester  
A comprehensive course in Biological Oceanography, including energy flow, biogeochemical cycles, planktonic and benthic ecosystem structure, evolutionary ecology, adaptations of marine organisms, and paleoceanography. Course is required of all MBF students and should be taken in sequence with Oceanography I (MPO 501), Oceanography II (MAC 502), and Oceanography IV (MGG 504). Prerequisite: Non-marine biology majors need permission of instructor.

MBF 607. Biochemical Toxicology  
2 credits  
Offered By Announcement only  
Biochemical mechanisms of absorption, distribution, metabolism, and excretion of natural and synthetic environmental toxicants. Methods for evaluation of acute and chronic toxicity, carcinogenesis, mutagenesis, and teratogenesis including in vivo, isolated organ, tissue culture, and subcellular approaches to toxicity testing are included. Prerequisite: BMB 506 or permission of instructor.
MBF 610. The Physical Environment of Marine Organisms
3 credits  Offered Spring Semester
The fluid environment of the sea influences the growth, distribution, and survival of marine organisms. The physical processes that affect organisms occur in space and time, ranging from the molecular properties of water to basin-wide linkages between oceanic regime and climate shifts are discussed. Course emphasis is placed on how physical processes affect the life of plankton to nekton, Students are required to present reviews based on the literature.

MBF 613. Marine Population Dynamics
3 credits  Offered Spring Semester
The concepts of stocks, sub-populations, and populations as biological systems in the marine environment. Quantitative studies of growth, mortality, recruitment, and abundance of marine populations are discussed. Data requirements, experimental design, sampling, and mathematical procedures for estimating population parameters are included. Lecture and laboratory. Prerequisite: MBF 508, 510 or permission of instructor.

MBF 614. Population Modeling and Management
3 credits  Offered Fall Semester
Mathematical and computer-intensive models of exploited populations fish, shellfish, marine mammals, and sea turtles. Stock production (surplus production), structured analytical yield (yield-per-recruit and age-size structured assessments), stock and recruitment, simulation modeling, adaptive control theory, risk assessments, and decision theoretic analyses are discussed. Techniques of management, concepts of resource allocation, and fishery management institutions with case studies are also included. Lecture and computer-based laboratory. Prerequisite: MBF 613 or permission of instructor.

MBF 615. Advanced Biometrics in Marine Science
3 credits  Offered Spring Semester
An introduction to advanced statistical analysis of multivariate empirical observations with primary emphasis on applications in the assessment and interpretation of the dynamics of marine populations and communities in marine biology, biomedical sciences, fisheries, and biological oceanography. Advanced methods in linear, multiple and nonlinear regression analysis, probability and estimation theory, multiple partial correlation, ANCOVA, GLIM, general additive models, nonlinear optimization, multivariate statistics (classification and ordination), and sampling techniques. Exploratory data analysis and modeling are emphasized using the software SAS, S-PLUS, and MATLAB. Prerequisite: MBF 508 or permission of instructor.

MBF 633. Physiological and Biochemical Adaptations of Marine Organisms
2 credits
Biochemical processes unique to marine organisms. Topics include ion transport and regulation, biochemical adaptations to high pressures and low temperatures, bioluminescence, biochemical aspects of migration and behavior, marine toxins and prostaglandins, and symbiotic associations. Prerequisite: BMB 506 or BIL 255.

MBF 640. Marine Phytoplankton and Primary Productivity
3 credits  Offered By Announcement only
Ecology of marine photoplankton and overview of major taxa including cyanobacteria. Distribution and magnitude of primary production in the sea and relationship to marine food webs and biogeochemical cycling is included. Prerequisite: Permission of instructor.
MBF 671. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of Division Academic Committee.

MBF 672. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of Division Academic Committee.

MBF 673. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of Division Academic Committee.

MBF 674. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of Division Academic Committee.

MBF 675. Advanced Studies  
1- 4 credits  
Offered By Announcement only  
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of Division Academic Committee.

MBF 687. Biology and Systematics of Fishes  
3 credits  
Offered By Announcement only  
Lectures and laboratories on comparative evolution, morphology, physiology, and ecology of fishes. Laboratory emphasis is placed on family level taxonomy and systematics of marine and estuarine fishes. Prerequisite: General biology; Comparative Anatomy desirable; permission of instructor.

MBF 690. Sustainable Fisheries - Advanced Acoustic Surveying  
3 credits  
Offered Fall Semester  
This is the third and final course in the three course series. It addresses graduate students with a strong research interest in measuring fish and their habitat on the stock and population level. This course will include: This course will focus on advanced stock assessment techniques using acoustics and optics. It will cover, for example: - A critical review of classical and current research papers - Signal processing and laboratory experiments - Field surveys and stock assessment reports. Prerequisite: MBF 571.

MBF 700. Practical Training and Internship  
1- 6 credits  
Offered By Announcement only  
Supervised internship or off-campus employment for students pursuing the M.A., M.S., or Ph.D. degree. Consists of work related to research in progress.

MBF 705. Special Project  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Supervised project for students pursuing the Master of Arts degree in Marine Studies. Consists of a paper, researched, and written on a topic approved by the student’s advisory committee, and presented as a seminar to the student’s division. Six credits are required for graduation. Prerequisite: Completion of 24 graduate course credits.

MBF 710. Master’s Thesis  
1- 6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.
MBF 720. Research in Residence
0 credits \textit{Offered Fall and Spring Semesters and First and Second Summer Sessions}

Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in MBF 710 (usually six credits). Credit not granted. May be regarded as full-time residence.

MBF 730. Doctoral Dissertation
1-12 credits \textit{Offered Fall and Spring Semesters and First and Second Summer Sessions}

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of MBF 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MBF 750. Research in Residence
0 credits \textit{Offered Fall and Spring Semesters and First and Second Summer Sessions}

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Marine Geology and Geophysics**

MGG 501. Oceanography I (Geological)
2 credits \textit{Offered Fall Semester}

The first section of the core course curriculum designed as an integrated and multidisciplinary view of ocean processes, covering the major disciplines of marine science and their applications to the study of the marine environment. To be taken in sequence with Oceanography II - Physical (MPO 502), Oceanography III - Chemical (MAC 501), and Oceanography IV - Biological (MBF 502). This course is for non-MGG majors only. Prerequisite: Undergraduates require permission of instructor.

MGG 511. Earth Surface Systems
3 credits \textit{Offered Fall Semester}

An introduction to the elements of the earth surface environment and their interactions with an emphasis on the application to understanding the geologic record. Course includes discussions of the processes and agents that influence and shape the character of the earth's surface, the attributes of the resultant sedimentary features, and the use of these features to unravel geologic and geomorphic history. Focus is placed on systems dynamics and interactions among sedimentologic, geomorphic, biotic, and hydrologic processes. Prerequisite: Permission of instructor.

MGG 512. Marine Micropaleontology
3 credits \textit{Offered Fall Semester}

An introduction to the field of marine micropaleontology with an emphasis on applications in biostratigraphy, biochronology, paleoecology, and paleoceanography. Topics include morphology, taxonomy, ecology, and geologic record of the major microfossil groups, methods of environmental inference, and stable isotope and trace element geochemical studies. Lab work includes a survey of the most important taxonomic groups. Lecture, 3 hours; laboratory, 2 hours. Prerequisite: Permission of instructor.
MGG 513. Introductory Geochemistry
3 credits
Offered Fall Semester
Fundamentals of atomic structure and quantum mechanics applied to Chemistry. Topics include origin and distribution of the elements, chemical bonding and substitution, basic thermodynamics of solids, liquids, and gases. Applications of these concepts to such geochemical processes as magmatic differentiation, rock-water interactions, low temperature aqueous geochemistry, and the geochemical cycling of the elements is also included.

MGG 514. Geophysics
3 credits
Offered Fall Semester
Course topics include seismology, gravity, heat flow, thermal history, geomagnetism, plate tectonics, and their importance in understanding the Earth’s crust, mantle, and core. Prerequisite: One year of calculus and one year of physics.

MGG 515. Environmental Hydrology
3 credits
Offered Fall Semester
Course offers an introduction to the physical processes of hydrological science. The mechanisms of evaporation, condensation, precipitation, infiltration, groundwater flow, overland flow, and stream flow are described. Areas of interrelation with environmental science, marine science, and geophysical science is emphasized. Description of appropriate measurement techniques and data interpretation methods are important parts of the course. Prerequisite: Physics.

MGG 520. Igneous Petrology
3 credits
Offered Fall Semester
Origin and differentiation of magmas in oceanic and continental settings. Igneous systems traced from the mantle and magma chambers to the eruptive of stage. What we can tell from textures and mineralogy of igneous rocks. Use of trace-element and isotopes to understand igneous processes and magma source compositions. Magma types and the plate-tectonic cycle. Magmatism when the Earth was young. Extra-terrestrial igneous rocks.

MGG 525. Applied Environmental Geophysics
3 credits
Offered By Announcement only
Application of subsurface geophysical tools to environmental problems. Course includes the theory and application of shallow refraction and reflection seismology, conducting field experiments and processing both marine and land seismic data, other marine survey techniques such as side-scan sonar surveying, potential field techniques (gravity, magnetics, EM), ground penetrating radar, and borehole geophysics. Prerequisite: Permission of instructor.

MGG 533. Environmental Geology
3 credits
Offered By Announcement only

MGG 541. Field Evaluation of Fossil Platforms, Margins, and Basins
2 credits
Offered By Announcement only
Field investigation of classic rock sequences formed within ancient platform, margin, and basin environments. The use of ancient exposures as a guide to the interpretation of modern marine environments. Prerequisite: Permission of instructor.
MGG 550. Mathematical Methods for Geoscientists
3 credits       Offered Fall Semester
Background mathematics needed to solve problems in the geosciences. Applications in tectonics, geodynamics, structural geology, seismology, and hydrology. Topics include linear inverse problems, least squares, linear algebra, matrix theory, vectors, dimensional analysis, probability and scientific inference, continuum mechanics, transform and numerical methods to solve differential, and partial differential equations. Prerequisite: One year of calculus and one year of physics.

MGG 570. Continental Tectonics
3 credits       Offered Spring Semester
Reviews major research techniques used in the study of the structure and evolution of continental crust and topical discoveries, with an emphasis on the Neogene to Recent time. The course begins with brief introductions to the fields of structural geology, seismology, and geodesy as they relate to continental tectonics. New research in areas such as the rheology of the lithosphere, plate motion models, deformation of continental crust in plate boundary zones, oblique subduction, and earthquake hazard assessment are also discussed. Prerequisite: Permission of instructor.

MGG 580. Geological and Environmental Remote Sensing
3 credits       Offered Spring Semester
This one semester course will cover major remote sensing techniques used in the geological and environmental sciences. The course will begin with an introduction to the basic physics of remote sensing, followed by a review of major remote sensing techniques used in aircraft and satellite platforms, including IR and near IR, optical and microwave systems. We will then discuss specific terrestrial and coastal applications using a case history approach, including geologic, soil and biomass mapping, environmental monitoring, and natural hazard assessment. The course is aimed at graduate students and senior undergraduates with some background in math and physics. Grades are based on problems sets (a minimum of three), a mid-term test, and a report or lab exercise involving image processing, due at the end of the semester. Prerequisite: Calculus and Physics.

MGG 581. Image Analysis and Interpretation
3 credits       Offered By Announcement only
Course provides a hands-on approach to learning how to use aerial photography, satellite imagery, and other remotely sensed data to derive information about the physical environment. This course enables the student to process, interpret, and analyze remotely sensed data for use in environmental research. Image Analysis and Interpretation complements the course, MGG 580.

MGG 583. Scanning Electron Microscopy
2 credits       Offered Spring Semester
Theory and practical application of the SEM and the electron probe to research problems. Lectures and laboratory with emphasis on independent operation of the SEM, special preparation techniques, and interpretation of results are included. Course is designed to provide students with a broad and thorough background in scanning electron microscopy. Prerequisite: Permission of instructor.

MGG 584. Special Topics
1- 4 credits      Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.

MGG 585. Special Topics
1- 4 credits      Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.
MGG 586. Special Topics
1- 4 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.

MGG 587. Special Topics
1- 4 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.

MGG 588. Special Topics
1- 4 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Marine Geology and Geophysics. Prerequisite: Permission of instructor.

MGG 601. Seminar in Marine Geology and Geophysics
1 credit
Offered Fall and Spring Semesters
Oral presentation and discussion of research and special topics by students, faculty, and visiting scientists. Students receiving credit are required to present a seminar.

MGG 650. Stable Isotopes in Biogeochemical Processes
3 credits
Offered By Announcement only
Theory of stable isotope fractionation, methods of measurement, and application of results to geological, biological, and oceanographic processes. Hands-on experience in the stable isotope laboratory is provided utilizing a range of techniques. A project chosen either by the student or instructor is required. All students who wish to use the stable isotope facility should take this course. Lecture, 2 hours; laboratory, 3 hours. Prerequisite: Permission of instructor.

MGG 660. GIS Programming
1 credit
Offered Spring Semester
Course provides a hands-on approach to learning GIS programming using Avenue for ArcView GIS (ESRI). Avenue is an object-oriented programming language used to create customized graphical user interfaces, automated tasks, and spatial and spatially enabled applications. Students learn how to employ object-oriented programming techniques and modeling methods to develop spatially explicit applications. Prerequisite: MAF 561 or permission from the instructor.

MGG 661. Sedimentary Petrology
3 credits
Offered Fall Semester
Composition, texture, fabric, and structures of sediments and sedimentary rocks. The occurrence and properties of the major clans of detrital and chemical sediments from a petrologic and historical perspective is discussed. Prerequisite: MGG 520.

MGG 662. Comparative Sedimentology
3 credits
Offered Spring Semester
The use of modern sediments to decipher processes of origin, accumulation, and early diagenesis as the basis for interpreting environments and architecture of ancient deposits in outcrop and in the subsurface. Evaluation of the sedimentary record of climate and sea level changes is included as well as the application of facies models for interpretation of seismic and log data. Prerequisite: MGG 511.

MGG 663. Deep Sea Sedimentation
3 credits
Offered By Announcement only
Course topics include classification and major constituents of deep-sea sediments, origin of red clay, production, dissolution, deposition of pelagic carbonate and silica, turbidite sedimentation, hemipelagic deposits, interpretation of the record (plate tectonics and plate stratigraphy, ancient deep-sea sediments and ancient oceans). Prerequisite: Permission of the instructor.
MGG 668. Isotopic Processes in Earth Sciences
3 credits
Offered By Announcement only
The use of isotopic methods in geology, geochemistry, and geophysics, including oceanography and meteorology. General laws governing isotopic effects in chemical and physical processes are discussed. Specific problems in dating, tracing, and paleotemperatures are also included. Prerequisite: Permission of instructor.

MGG 669. Advanced Geophysics
3 credits
Offered By Announcement only
The application of geophysical methods, including seismic refraction, seismic reflection, heat flow, gravity, magnetic field and paleomagnetism, to the study of the structure of oceanic crust. Prerequisite: MGG 514.

MGG 670. Seismic Exploration
3 credits
Offered Spring Semester
Elementary theory of seismic waves. Topics include techniques of seismic data acquisition and processing, methods of geophysical and geological interpretation of seismic data, application to hydrocarbon exploration, principles of seismic stratigraphy, and other geophysical methods related to hydrocarbon exploration. Prerequisite: Permission of instructor.

MGG 671. Diagenesis of Carbonate Sediments
3 credits
Offered Spring Semester
Application of geochemical, mineralogical, and petrological principles to the behavior of carbonate minerals in sediments. Physical and chemical conditions responsible for cementation, dolomitization, and aragonite-calcite phase transitions are emphasized. Types of depositional and diagenetic information which may be preserved in carbonate sediments. Laboratory studies of sediments are included. Prerequisite: MGG 513; permission of instructor.

MGG 672. Basin Analysis and Seismic Interpretation
3 credits
Offered Spring Semester
The processes of basin formation and filling. The principles of seismic facies analysis, seismic sequence stratigraphy, and their applications in basin analysis, groundwater management, and exploration for hydrocarbons are discussed. Prerequisite: Permission of instructor.

MGG 676. Paleoclimatology
3 credits
Offered Fall Semester
Climatic variables and their effects on geological and biological processes. The development of the paleoclimatic record, modeling of present climate, and the extrapolation to past and future climates are discussed. Prerequisite: Permission of instructor.

MGG 677. Submarine Volcanism and Its Products
3 credits
Offered Fall Semester
Course topics include classification of volcanoes, their activity and products, submarine versus subaerial volcanoes, historical submarine eruptions, and hydrothermal activities, origin and differentiation of magmas, petrology of submarine, volcanic rocks, geographic distribution of volcanoes, and their tectonic setting are also discussed. Prerequisite: MGG 520 or permission of instructor.

MGG 678. Modeling of Marine Biogeochemical Processes
3 credits
Offered By Announcement only
Diagenesis models, including bioturbation and dissolution in the CaCO3 and SiO2 systems. Energy balance climate models and oscillatory states of a simple air-water-ice system are discussed as well as modeling of sedimentation and transport processes.
MGG 679. **Plate Tectonics**
3 credits
Offered Fall and Spring Semesters

The theory of plate tectonics, sea floor spreading, and continental drift. Mathematical description of plate motions, finite and instantaneous rotation poles, consequences of plate tectonics, mountain building, rifting, erosion, and recycling of continental materials are also discussed. Prerequisite: Permission of instructor.

MGG 681. **Advanced Studies**
1-4 credits
Offered By Announcement only

Special study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MGG 682. **Advanced Studies**
1-4 credits
Offered By Announcement only

Special study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MGG 683. **Advanced Studies**
1-4 credits
Offered By Announcement only

Special study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MGG 684. **Advanced Studies**
1-4 credits
Offered By Announcement only

Special study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MGG 685. **Advanced Studies**
1-4 credits
Offered By Announcement only

Special study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MGG 700. **Practical Training and Internship**
1-6 credits
Offered By Announcement only

Supervised internship or off-campus employment for students pursuing the M.A., M.S., or Ph.D. degree. Consists of work related to research in progress.

MGG 705. **Special Report**
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Supervised project for students pursuing the Master of Arts degree in Marine Studies. Course consists of a research paper, researched, and written on a topic approved by the student’s advisory committee, and presented as a seminar to the student’s division. Six credits are required for graduation. Prerequisite: Completion of 24 graduate course credits.

MGG 710. **Master’s Thesis**
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MGG 720. **Research in Residence**
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MGG 710 (usually six credits). Credit not granted. May be regarded as full time residence.
MGG 730. Doctoral Dissertation
1-12 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of MGG 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MGG 750. Research in Residence
0 credits  Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Marine and Physical Oceanography
MPO 502. Oceanography II (Physical)
2 credits  Offered Fall Semester
The second section of the course core curriculum designed as an integrated and multidisciplinary view of ocean processes, covering the major disciplines of marine science and their applications to the study of the marine environment. To be taken in sequence with Oceanography I - Geological (MGG 501), Oceanography III - Chemical (MAC 501), and Oceanography IV - Biological (MBF 502). This course is for non-MPO majors only. Prerequisite: Undergraduates require permission of instructor.

MPO 503. Physical Oceanography
3 credits  Offered Fall Semester
Introduction to properties of seawater, instruments and methods, heat budget, general ocean circulation, formation of water masses, dynamics of circulation, regional oceanography, waves, tides, and sea level. A mathematical and problem solving course for majors in MPO. Prerequisite: PHY 202 or 206, MTH 310 or 311, or permission of instructor.

MPO 511. Geophysical Fluid Dynamics I
3 credits  Offered Fall Semester
The basic equations of state, continuity, and motion. Topics include wave motions, group velocity, theory of stratified fluids and internal waves turbulence. Prerequisite: MPO 551, or permission of instructor.

MPO 518. Remote Sensing of the Atmosphere
3 credits  Offered By Announcement only
Methods and techniques for remote sensing of the earth’s atmosphere. Absorption and scattering of radiation by atmospheric constituents, molecular line or band absorption, and radiative transfer equation are discussed. Application to microwave radar, laser, and optical radar, ground and satellite and optical radar and radiometry, scattering of acoustic waves by turbulence, and to acoustic echo sounding methods are also included. Prerequisite: EEN 533 and/or permission of instructor.
MPO 531. Physical Meteorology
3 credits
Offered By Announcement only
Electromagnetic and acoustic wave propagation, absorption, and emission. Application to remote sensing, basic physics of dry aerosols, clouds and precipitation, fundamentals of atmospheric electricity, charge separation processes, and electrical field effects are also discussed. Other topics include air pollution physics, dispersal, and removal of particulate and gaseous materials from natural and anthropogenic sources. Prerequisite: Basic calculus and ordinary differential equations.

MPO 542. Physics of Remote Sensing
3 credits
Offered Spring Semester
Course discusses basic physical principles of remote sensing. Topics include an introduction, sampling issues, fundamental laws of electromagnetic waves, passive sensing, active sensing, and a brief survey of satellite sensors. Prerequisite: Permission of instructor.

MPO 551. Introduction to Atmospheric Science
3 credits
Offered Fall Semester
Thermodynamics of dry and moist processes; elementary dynamical meteorology; description of weather systems and phenomena on all scales; structure and mechanics of the general circulation. Corequisite: MPO 552. Prerequisite: PHY 206, MTH 310 or 311, or permission of instructor.

MPO 552. Synoptic Meteorological Laboratory
1 credit
Offered Fall Semester
Analysis of the structure of atmospheric systems. Prerequisite: PHY 206, MTH 310 or 311, or permission of instructor.

MPO 561. Tropical Meteorology
3 credits
Offered Spring Semester
Observed structure of large-scale tropical circulations, including the Trades, the Intertropical Convergence Zone, the Walker circulation, and equatorial wave disturbances. An overview of tropical climate, including El Nino/Southern Oscillation, and tropical monsoons is included as well as the formation, structure, and dynamics of tropical cyclone interactions between tropical convection and large-scale circulations, equatorial waves, and flow instabilities. Prerequisite: MPO 511, 551, or permission of instructor.

MPO 562. Synoptic Scale Meteorology
3 credits
Offered By Announcement only
Course topics include the structure and behavior of cyclones, anticyclones, and other temperate latitude synoptic scale disturbances. Objective analysis of synoptic observations, perturbation, stability analysis of large scale synoptic motions, and barotropic and baroclinic waves are also analyzed. Prerequisite: MSC 405 or MPO 551 and permission of instructor.

MPO 563. Mesoscale Meteorology and Severe Storms
3 credits
Offered By Announcement only
Course topics include the structure and dynamics of clouds, thunderstorms, and mesoscale convective systems, radar and satellite observations of clouds and precipitation, severe storm forecasting, mesoscale disturbances, frontal and orographic clouds, and precipitation. Prerequisite: MSC 405 or MPO 551 and permission of instructor.

MPO 581. Special Topics
1-4 credits
Offered By Announcement only
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.
MPO 582. Special Topics  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.

MPO 583. Special Topics  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.

MPO 584. Special Topics  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.

MPO 585. Special Topics  
1-4 credits  
Offered By Announcement only  
Lectures, research projects or directed readings in special topics related to Meteorology and Physical Oceanography. Prerequisite: Permission of instructor.

MPO 601. Seminars in Meteorology and Physical Oceanography  
1 credit  
Offered Fall and Spring Semesters

MPO 611. Geophysical Fluid Dynamics II  
3 credits  
Offered Spring Semester  
Course topics include fluid motion in rotating systems, quasi-geostrophic scale analysis, Rossby waves, baroclinic instability, waves on an equatorial beta-plane, and boundary layers in rotating fluids. Prerequisite: MPO 511.

MPO 612. Large Scale Ocean Circulation: Models and Observations  
3 credits  
Offered Spring Semester  
Course topics include theoretical models of the oceanic current systems, wind-driven and thermohaline circulation, effects of bottom topography, and lateral bounding. Prerequisite: MPO 611 or permission of instructor.

MPO 615. Numerical Weather Prediction  
3 credits  
Offered By Announcement only  
Review of fundamental equations and principal wave solutions. Course topics include finite differences, the filtering problem, the equivalent-barotropic model, multi-level primitive equation models, model initialization and verification, and models currently used by the weather service. Prerequisite: MPO 551.

MPO 621. Waves and Tides I  
3 credits  
Offered Fall Semester  
Systematic development of equations governing long waves in the ocean. Course topics include tidal dynamics and tide-generating forces, inertio-gravity, planetary, and longs, presurface waves, waves trapped and scattered by topography, and equatorial waves. Prerequisite: MPO 511 or permission of instructor.

MPO 623. Statistical Analysis of Geophysical Data  
3 credits  
Offered Spring Semester  
Review of statistical methods. Course topics include statistical description of wave fields, especially inertio-gravity waves, processing methods for general and hydrodynamically conditioned signals, time series analysis, objective analysis, and empirical spectral analysis. Prerequisite: Permission of instructor.
MPO 624. Statistical Modeling of Geophysical Fields
3 credits
Offered Spring Semester
An advanced course in statistical modeling, analysis, and assimilation of geophysical data. Emphasis is placed on practical applications, computer software, and new nonstandard techniques. Prerequisite: One linear algebra class and MPO 623 or permission of instructor.

MPO 631. Air-Sea Interaction
3 credits
Offered Spring Semester
Course topics include the flux of momentum, heat, moisture, and salt, vertical distribution of energy sources and sinks near the interface, surface waves, mixed layers, and large scale interactions. Prerequisite: MPO 611 or permission of instructor.

MPO 632. Climate Dynamics
3 credits
Offered By Announcement only
Basic understanding of the Earth’s Climate System and its variability on time scales ranging from weeks to millennia. Topics include internal atmospheric variability, coupled ocean-atmosphere interactions, and the theory, observations and modeling of climate change. Prerequisite or corequisite: MPO 551.

MPO 633. The Marine Atmospheric Boundary Layer
3 credits
Offered Spring Semester
The marine atmospheric boundary layer plays a key role in the two-way interaction between the atmosphere and the ocean. This course will focus on describing and explaining marine atmospheric boundary layer structure and its evolution. This will include an emphasis on the cloud-topped boundary layer (marine stratocumulus) and the trade-wind boundary layer. Thus, in addition to turbulence, the physical processes considered in this treatment of the marine boundary layer will include shallow moist convection and radiation. The course will start with a basic description of the atmospheric boundary layer that will include a review of the relevant dynamics and thermodynamics. More advance topics will be covered in the second half of the course. Although the course will be a series of formal lectures, students will independently research selected topics, prepare a short review paper, and give an oral summary class. Prerequisite: Students enrolling in this class should have a basic knowledge of atmospheric thermodynamics and dynamics (MPO 511 and 551 or equivalent).

MPO 650. Coastal Ocean Circulation
3 credits
Offered Spring Semester
Circulation and stratification in the coastal ocean, including the dynamics of wind-driven, tidally-driven, and buoyancy-driven mean and transit flows over variable topography with density stratification are discussed. Design of numerical models and observing systems for coastal ocean circulation are also included. (AMP 650). Prerequisite: AMP 535, 575 or 576 and permission of instructor.

MPO 651. Dynamic and Modeling of Weather and Climate Systems
1 credit
Offered Fall and Spring Semesters
This course will cover a number of advanced topics not currently covered in other courses, such as mesoscale meteorology, mesoscale modeling, cloud physics, and storm dynamics. Prerequisite: MPO 551.

MPO 662. Computer Models in Fluid Dynamics
3 credits
Offered Spring Semester
Course topics include numerical techniques of dealing with dynamic problems in meteorology and oceanography. Dynamic prediction models, initial data conditioning, computational stability, and error estimates are also included. Prerequisite: MPO 611 and knowledge of computer programming.
MPO 663. Convective and Mesoscale Meteorology
3 credits  
Offered Spring Semester
This course begins by establishing the dynamics, thermodynamics, and cloud microphysics fundamentals needed to understand convective clouds and storms. We also review the types of observations, both in situ and remote sensing, available for studying these storms. Observations of both tropical convection and more-vigorous midlatitude severe storms are presented and compared to numerical modeling results, with an emphasis on scientific understanding. Prerequisite: MPO 551 or equivalent.

MPO 664. Atmospheric and Oceanic Turbulence
3 credits  
Offered Spring Semester
Structure and dynamics of planetary boundary layers, turbulent transport processes, Fickian and statistical theories of turbulence, influence of stratification, and rotation on turbulent motion are discussed. Prerequisite: MPO 611 or permission of instructor.

MPO 665. General Circulation of the Atmosphere
3 credits  
Offered Spring Semester
Course topics include structure and behavior of planetary scale motions, energy, momentum, and moisture budgets of the general circulation, and models of the general circulation and climatic change. Lectures and three laboratories are included. Prerequisite: MPO 611 or permission of instructor.

MPO 671. Advanced Studies in Meteorology and Physical Oceanography
1-4 credits  
Offered By Announcement only
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MPO 672. Advanced Studies
1-4 credits  
Offered By Announcement only
Supervised study of special interest to graduate students. Prerequisite: Permission of instructor.

MPO 673. Advanced Studies in Meteorology and Physical Oceanography
1-4 credits  
Offered By Announcement only
Supervised study in areas of special interest to graduate students. Prerequisite: Permission of instructor.

MPO 674. Advanced Studies
1-4 credits  
Offered By Announcement only
Supervised study of special interest to graduate students. Prerequisite: Permission of instructor.

MPO 675. Advanced Studies
1-4 credits  
Offered By Announcement only
Supervised study of special interest to graduate students. Prerequisite: Permission of instructor.

MPO 700. Practical Training and Internship
1-6 credits  
Offered By Announcement only
Supervised internship or off-campus employment for students pursuing the M.A., M.S., or Ph.D. degree. Consists of work related to research in progress.

MPO 705. Special Project
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised project for students pursuing the Master of Arts degree. Consists of a paper, researched and written on a topic approved by the student’s advisory committee, and presented as a seminar to the student’s division. Six credits are required for graduation. Prerequisite: Completion of 24 graduate course credits.
MPO 710. Master’s Thesis
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MPO 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in MPO 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MPO 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 12. Not more than 12 hours of MPO 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MPO 750. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
**MEDICINE**

**Interdisciplinary Biomedical Studies**

**IBS 601. Interdisciplinary Biomedical Studies I**

*5 credits*  
Offered Fall Semester  
An interdisciplinary survey of molecular and cellular biology. Topics include protein structure and function, protein synthesis, nucleic acids, genetic code, gene technology, genetic analysis, control of cellular activity, molecular anatomy of genes and chromosomes, DNA replication, repair, and recombination, regulation of transcription, RNA processing, and post-transcriptional control. Prerequisite: Permission of the instructor.

**IBS 602. Interdisciplinary Biomedical Studies II**

*4 credits*  
Offered Spring Semester  
A continuation of IBS 602. Topics include cell organization, membrane structure, signal transduction, transport across cell membranes, protein sorting, nerve signaling, microfilaments and microtubules, cell-cell and cell-matrix interactions, cell cycle, cancer, and immunity. Prerequisite: Permission of the instructor.

**IBS 611. Accelerated Basic Science Curriculum**

*1-18 credits*  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The following accelerated and intensive complete basic science curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A maximum of 18 credits will be entered in the graduate transcript for these courses. Prerequisite: Admission to the MD/PHD degree program.

**IBS 620. Scientific Writing I**

*2 credits*  
Offered Fall and Spring Semesters  
This course will help students to strengthen their scientific writing skills. We will review the standards and expectations of scientific discourse, focusing on the scientific paper as a refined tool for conveying research findings in a clear, objective fashion and positioning the author/s within a specific research community. Sequenced writing assignments will address the functions and conventions of the various forms of scientific communication, from short correspondences to full research reports to review articles. The proper use and presentation of graphs and illustrations will also be covered.

**IBS 631. Laboratory Research**

*1-6 credits*  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Laboratory rotations to gain experience with a variety of modern techniques in molecular and cellular biology. Prerequisite: Permission of the instructor.

**IBS 680. Research Ethics**

*0 credits*  
Offered Fall Semester  
The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the department or program. This is a six-hour course and will be given in two sessions of three hours each. Prerequisite: Permission of the Graduate Advisor.
IBS 683. Professional Skills and Ethics I  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Two-day intensive workshop involves a combination of lectures, discussions, readings and writing to enhance the professional development of beginning graduate students. Topics include strategies for selecting mentors, professional writing, giving oral presentations and research ethics.

IBS 684. Professional Skills and Ethics II  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Two-day intensive workshop involves a combination of lectures, discussions, readings and writing exercises, and practical experiences to enhance the professional development of advanced graduate students, postdoctoral fellows and junior faculty. Topics include career choices, job search strategies and skills, fellowship/grant applications and research ethics.

Biochemistry and Molecular Biology

BMB 501. Senior Seminars  
1 credit  
Offered Fall and Spring Semesters  
Students attend seminars by faculty or graduate students on recent research topics in Biochemistry and Molecular Biology. Students write short reports on these seminars and critically evaluate the presentations. Prerequisite or corequisite: BMB 506.

BMB 502. Physical Biochemistry  
3 credits  
Offered By Announcement only  
Thermodynamics of biochemical reactions including chemical potential and equilibrium constants. Principles of diffusion and viscosity with applications to the ultracentrifuge, electrophoresis and chromatography are included. Topics in spectroscopy including visible, UV, IR absorption, and fluorescence. Biochemical applications of ORD, CD, NMR, and ESR. X-ray crystallography. Prerequisite: BMB 407.

BMB 505. Metabolic Processes  
2 credits  
Offered By Announcement only  
Intermediary metabolic processes. Catabolism of carbohydrates, lipids, and nitrogen compounds. Biosynthetic processes leading to amino acids, lipids, and isoprenoids, sugars, are addressed. Regulation of metabolism and cellular economy by various means, including hormones is also included. Lecture, 2 hours. Prerequisite: BMB 506 or permission of instructor.

BMB 506. Principles of Biochemistry and Molecular Biology  
3 credits  
Offered Fall Semester  
Protein structure and function, enzyme mechanism and kinetics, and metabolism, focusing on energy metabolism and central concepts of metabolic regulation and of molecular biology including nucleic acid structure, protein synthesis, and DNA replication. (Not open to students with credit in BMB 401 or 406; for undergraduate honors credit or graduate student not majoring in biochemistry. Prerequisite: A grade of C or better in CHM 202, BIL 150 and 160 or permission of instructor.

BMB 507. Proteins and Enzymes  
3 credits  
Offered Spring Semester  
Course analyzes the folding and binding of proteins, kinetics and mechanisms of enzyme action. For honors undergraduates. Not open to students in BMB 407. Prerequisite: BMB 406 or 506 or permission of instructor; for undergraduate honors credit or graduate students not majoring in biochemistry.
BMB 508. Biochemistry and Molecular Biology Laboratory  
1 credit  
Offered By Announcement only 
Experience in a spectrum of biochemical experiments ranging from enzyme chemistry to recombinant DNA. Laboratory, 3 hours. Prerequisite or corequisite: BMB 506.

BMB 509. Molecular Biology of the Gene I  
3 credits  
Offered Fall Semester 
Biochemical processes involved in the propagation and expression of genetic information in both prokaryotes and eukaryotes. Basic cellular processes of DNA replication, repair, genetic recombination, RNA transcription and processing, protein synthesis, control of gene expression, cell differentiation, and recombinant DNA technology. Reading includes both textbook assignments and original research papers. Prerequisite: BMB 506 or permission of instructor.

BMB 511. Topics in Applied BCH and Molecular Biology  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions 
Selected topics from the fields of applied and pure biochemistry and molecular biology taught as a tutorial. Prerequisite: BMB 406 or 506 and permission of instructor.

BMB 545. Research Problems in Biochemistry and Molecular Biology  
2- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions 
Laboratory research problems in various fields of biochemistry, including literature search, experiment design, data gathering, and evaluation or results. Prerequisite: Permission of instructor.

BMB 601. Journal Club/Seminar  
1 credit  
Offered Fall and Spring Semesters 
All registered students must participate in the Journal Club/Seminar. Students are required to critically review published paper(s) of their choice and describe in detail the findings described therein.

BMB 609. Advanced Biochemistry and Molecular Biology  
3 credits  
Offered Fall Semester 
This course is a continuation course for BMB 616. It covers essentially the same topics as BMB 616 but at a more advanced level. It brings the student to the forefront of research in Molecular Biology. The course material is discussed exclusively in the form of original research papers. Based on this experience, students are required to propose experimental approaches to biological problems and defend them. Prerequisite: BMB 616.

BMB 610. Advanced Topics in Biochemistry  
1- 5 credits  
Offered Fall and Spring Semesters 
Senior seminars designed to cover in depth recent developments in the field of biochemistry with the purpose of keeping advanced graduate students abreast with new theoretical and experimental findings. General subjects such as mechanisms of enzyme action, oxidative phosphorylation, active transport, metabolic controls and disorders, steroid biochemistry, and biochemical genetics are discussed. The detailed program is announced annually. Majors in Biochemistry and Molecular Biology are expected to take this course each semester in their second and third years. Prerequisite: BMB 506 and departmental permission.
BMB 611. Accelerated Basic Science Medical Curriculum  
18 credits  
Offered Fall Semester  
Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neuropathology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course. Prerequisite: Admission to the Combined M.D./Ph.D. Program.

BMB 614. Molecular Genetics  
3 credits  
Offered Fall Semester  
This course deals with mechanisms of inheritance with particular emphasis on fundamental genetic processes in bacteria, bacteriophage, fungi, and animal viruses. Topics include the nature of mutations and mechanisms of mutagenesis, genetic complementation, recombination, transposition, transcriptional and post-transcriptional regulation, yeast and other fungi as tools for eukaryotic molecular biology, human genetic analysis, and genetic mechanisms in bacterial and mammalian viruses. Prerequisite: BMB 506 or equivalent or permission of instructor.

BMB 615. Structure and Function of Biological Macromolecules  
4 credits  
Offered Spring Semester  
The structure and function of proteins and their complexes with nucleic acids, carbohydrates, and lipids. Various biophysical methods used to investigate structure-function relationships are introduced and their applications illustrated by specific examples. Prerequisite: BMB 506 or equivalent, or permission of the instructor.

BMB 616. Biochemistry and Molecular Biology  
4 credits  
Offered By Announcement only  
The course begins with an introduction to the basic structures of proteins, protein folding, allostery, enzyme kinetics, and mechanisms of catalysis. This is followed by a thorough description of the molecular basis of cellular function and regulation in both prokaryotic and eukaryotic systems. The mechanisms of DNA replication, DNA repair, recombination, transcription, regulation of gene expression, and translation is discussed in detail. In addition, the methods of gene cloning, recombinant DNA technology, in vitro mutagenesis, DNA sequencing, and PCR applications are discussed. There are three hours of lecture and one hour of discussion per week. This course is designed for graduate students in the biological sciences and serves as a core course for several departments. A good background in Biology and Biochemistry is recommended. Prerequisite: BMB 506 or equivalent, or permission of instructor.

BMB 617. Readings in Molecular Biology  
1 credit  
Offered Fall Semester  
Discussion of classical papers in molecular biology beginning with the concept of the gene and continuing into modern studies. Format consists of student presentations and group discussions. Prerequisite: BMB 506 or equivalent, or permission of instructor.

BMB 631. Special Work  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Special work, lecture, or laboratory or a combination of these, as determined by advisor in accord with student’s individual interest. Prerequisite: Approval of Committee.
BMB 645. Research Problems in Biochemistry, Cell and Molecular Biology
2-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Laboratory research problems in various areas of biochemistry, cell biology, and molecular biology, including literature search, experimental design, data gathering, and evaluation of results. This course is the mechanism by which graduate laboratory rotations are done in preparation for selection of Ph.D. mentor. Prerequisite: BMB 506 or equivalent or permission of instructor.

BMB 680. Research Ethics
0 credits
Offered Fall Semester
The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each. Prerequisite: Permission of the Graduate Advisor.

BMB 710. Master’s Thesis
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

BMB 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in BMB 710 (usually six credits). Credit not granted. May be regarded as full time residence.

BMB 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of BMB 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

BMB 750. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
Cancer Biology

CAB 601. CAB Student Seminar
1 credit  
*Offered Fall Semester*
This course offers instruction about the fundamental elements of scientific speaking. The ability to communicate effectively is essential for scientists. Using a series of sample-based lectures and discussion groups students will be exposed to various oral presentations. In addition, during the first year, all students will be asked to present a 20 minute seminar following each of their rotation projects. Once students enter a research laboratory, students will be required to present their research each year as a one hour seminar.

CAB 602. Research Methods in Cancer
2 credits  
*Offered Fall Semester*
This interactive lecture course will teach students specific methodologies used to solve problems in cancer research. By using specific examples of basic and clinical avenues of research students will be taught the use of various approaches to address problems in cancer biology, i.e., reasoning and logic. The overall goal is to expose students to how different approaches are used and integrated to solve specific research questions and the critically interpret experimental design and data. The use and advantages of various approaches, e.g., biochemical, molecular, genetic, immunological, epidemiology, and the use of model systems e.g., cell and animal models will be discussed. Methods used in clinical trials will be presented. Emphasis will be placed on research strategy and design, limitations and strengths of various techniques.

CAB 603. CAB Clinical Oncology
1 credit  
*Offered Fall Semester*
Year 1: During the first year students will attend a series of lectures by CAB physician mentors that will discuss clinical aspects of cancer treatment for specific patients with an emphasis on continuity of care of newly diagnosed patients between disciplines. Students will attend existing Sylvester Cancer Center tumor boards on a rotating monthly basis to understand how the treatment of cancers varies depending on histology.

CAB 604. Scientific Reasoning and Logic in Clinical Cancer Biology
3 credits  
*Offered Spring Semester*
One aspect of the Cancer Biology PhD Program is to train students in the application of basic research to clinical problems i.e., translational research. The goal of this course is to expose students to the scientific reasoning the logic behind solving problems in clinical cancer research. The philosophy of this course is to teach students how knowledge obtained from basic research laboratories is applied to clinical problems including prevention, diagnosis, prognosis and therapeutic treatment of cancer. This course has 11 weekly segments, each of which has a different theme plus student presentations.

CAB 630. Colloquia in Clinical Cancer Research
2 credits  
*Offered Fall Semester*
Students will attend Colloquia at which faculty members present seminars on their current clinical research topics and methods of investigation. Here students will learn the rationale and methodologies that researchers are using to approach a problem in clinical cancer research. Topics will cover the areas of prevention, control, diagnosis (molecular and microscopic pathology), prognosis and therapeutics.
CAB 631. Lab Rotations
1-6 credits
Offered Fall Semester
During the first year students will be required to carry out three research rotations. The students will then select their PhD advisor in June of their first year. The evaluation will be based on an oral presentation (20 minutes and 10 minutes for questions) by the student to a committee consisting of three faculty members, other than the rotation advisor. The rotation mentor will submit a confidential written evaluation of the student in a standard format to be designed by the Curriculum committee. It will include a statement regarding the willingness of the mentor to accept the student into the lab for their thesis research.

CAB 680. Research Ethics
0 credits
Offered Fall Semester
The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each. Prerequisite: Permission of the Graduate Advisor.

CAB 730. Dissertation Research
1-12 credits
Offered Fall Semester
Required of all candidates for the Ph.D. The student will enroll for credits as determined by the Office of Graduate Studies but not less than a total of 24. Not more than six in the summer. If a student has a) passed qualifying exam(s) and (b) is engaged in an assistantship, he/she may still take the maximum allowable credits.

CAB 750. Research in Residence
0 credits
Offered Fall Semester
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Epidemiology and Public Health

EPH 501. Medical Biostatistics I
3 credits
Offered Fall Semester
Introduction to probability and statistics including descriptive statistics, tests of hypothesis, regression analysis, contingency tables, nonparametric tests, and life tables. Students gain hands-on experience in the analysis of medical data using several computer systems and at least one of the different statistical packages such as: BMDP, SAS, PSTAT, SYSTAT, and Minitab. Prerequisite: Ability to use a spreadsheet program on a personal computer. Open only to EPH majors.

EPH 502. Biostatistics II
3 credits
Offered Spring Semester
Continuation and elaboration of EPH 501. Topics include design of factorial experiments, analysis of variance and variance components, multiple linear regression, and life tables. Prerequisite: EPH 501 or permission of instructor. Open only to EPH majors.
EPH 512. Global Health  
3 credits  
Offered Fall Semester  
This seminar examines current global public health issues, governance and decision-making challenges for the 21st Century across developing, transitioning, and developed countries. Topics of discussion include new actors for world health in the era of globalization; linking human development, poverty and health inequities; social, cultural and ethical considerations for health planning; role of industry, trade and public health; evidence based research for improved global health initiatives; foreign policy and health security challenges associated with emergence and re-emergence of infectious diseases and public and private partnerships in global health. Open only to EPH majors.

EPH 514. Mental Health and Mental Illness: Public Health Perspective  
3 credits  
Offered Fall Semester  
The purpose of this course is to give an overview of mental health and illness as a public health issue. This will include an analysis of how mental illness became a major public health concern both in the United States and Globally. The use of population-based epidemiological studies to inform the development of public policy will also be explored. In addition, an analysis of mental health programs in various community settings such as schools, the workplace and in the context of disasters will provide an opportunity to understand how theories regarding the etiology of mental illness are applied in the development of prevention and intervention programs. Prerequisite: Permission of Program Director for non-EPH majors.

EPH 520. Health Education and Behavior  
3 credits  
Offered Spring Semester  
Educational processes with special emphasis on the social and cultural determinants of health behavior, health education as a process of social change, and community based health education organizations. Open only to EPH majors.

EPH 521. Fundamentals of Epidemiology  
3 credits  
Offered Fall Semester  
Principles and methods of epidemiology. Descriptive epidemiology, environmental and other risk factors, detection of outbreaks, basic demography, and etiologic studies. Prerequisite: Permission of the instructor. Open only to EPH majors.

EPH 522. Applied Health Education  
3 credits  
Offered Fall Semester  
The goal of this course is to introduce students to the principals of Applied Health Education utilizing the theoretical background they received in the course prerequisite, EPH 520. Means of affecting health behavior change will be examined as well as methods of health communication, needs assessment and issues of cultural competency. Students will explore various settings in which health educational material is distributed including clinical settings, the Internet and through the mass media. Students will develop their own binder of high quality health educational information and develop their own educational material on a topic of their choice. Prerequisite: EPH 520. Open only to EPH majors.

EPH 525. Ethical Issues in Epidemiology  
3 credits  
Offered Fall Semester  
The course identifies and analyzes ethical issues in epidemiologic practice and research. Issues include data acquisition and management, confidentiality, valid consent, advocacy, public policy, subgroup stigma, research sponsorship, conflicts of interest, communication of risk, and international and intercultural difference. Prerequisite: EPH 501 and 521 or permission of instructor. Open only to EPH majors.
**EPH 541. Integrated Aspects of Environmental Health**  
3 credits  
Offered Spring Semester  
Interdisciplinary scope of environmental health problems. Development of a practical, dynamic model for integrating fundamental concepts from a variety of environmental disciplines. Open only to EPH majors.

**EPH 561. Public Health Nutrition**  
3 credits  
Offered Spring Semester  
This course provides a dynamic, interactive approach to public health designed to prepare students in basic policy, epidemiology, and health education related to nutrition. Recognizing the multiple social, cultural, environmental, and physiological factors leading to nutritional disease. The course includes experts from a variety of disciplines. Public health nutrition addresses issues germane to the public’s health by elucidating their extent, determinants and consequences, and the policies and programs to address them. Open only to EPH majors.

**EPH 570. Bioterrorism: The Public Health Challenge**  
3 credits  
Offered Fall Semester  
Studies the key elements of bioterrorism and the challenges to effective public health response. A principal focus of the course is the epidemiologic triad of agent, host, and environment applied to bioterrorism. The course explores the roles of epidemiologists and public health professionals working in tandem with medical, first-responder, law enforcement, Department of Defense and volunteer participants in prevention and response to bioterrorist attacks. This course is intended for graduate students in public health and social sciences, medical, and health care professionals. Prerequisite: Permission of the instructor/program.

**EPH 571. Maternal and Child Health**  
3 credits  
Offered Spring Semester  
Preventative and therapeutic concepts pertinent to the reduction of morbidity and mortality among mothers and their children. Prerequisite: EPH 521 or permission of the instructor. Open only to EPH majors.

**EPH 572. Public Health Law**  
3 credits  
Offered Fall and Spring Semesters  
This course is designed for non-law students studying in epidemiology and public health. The course will begin with a general overview of the fundamental principles and processes of the US legal system, focusing on public health law and ethics. Topics will include privacy, communications, screening and vaccinations, economic regulations and public health reform. Prerequisite: Permission of instructor(s). Open only to EPH majors.

**EPH 581. Advanced Topics**  
0-4 credits  
Offered By Announcement only  
Subject matter offering based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule following the title “Advanced Topics”. Prerequisite: Core requirements for MPH program or permission of instructor. Open only to EPH majors.

**EPH 583. AIDS as a Public Health Issue**  
3 credits  
Offered First Summer Session  
Course examines AIDS as a public health issue, including material on HIV epidemiology, etiology, treatments, co-factors, transmission, behavioral change, psychological factors, sociocultural factors, political aspects, legal issues, policy formulation, and medical ethics. The course primarily covers AIDS in North America and Africa, with some attention to other geographical areas. Open only to EPH majors.
EPH 585. Perinatal Epidemiology
3 credits
Offered Fall and Spring Semesters
This survey course includes vital statistics data and sources, prenatal care, the influence of maternal and paternal age, maternal obesity, smoking, and alcohol use in pregnancy outcomes, infertility and assisted conceptions - including multiple births, birth defects, cerebral palsy, prematurity, preeclampsia and maternal and infant mortality. Prerequisite: EPH 521 and permission of instructor.

EPH 590. Adolescent Substance Abuse: Etiology, Prevention, and Treatment
3 credits
Offered Spring Semester
This course covers the specialty of adolescent substance abuse. Approached from a systemic and multidisciplinary perspective, the course first provides an historical exploration of teen alcohol and drug abuse in the U.S. and other cultures. Next we focus on the etiology or causes of teen alcohol and drug problems with a highlight-oriented review and summary of twenty years of research on the basic science aspects of adolescent substance misuse. Using this foundation, the focus shifts to more applied aspects of the field. The middle and last third of the course cover prevention and treatment. Here we cover contemporary prevention and treatment theory, how research has informed intervention thinking, philosophy, design and evaluation, and how prevention and treatment studies are influencing public policy in substance abuse and related areas such as juvenile justice and child welfare. Prerequisite: Junior, senior or graduate standing.

EPH 600. Research Seminar
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Course consists of bi-weekly research seminars. Seminar format is individual student-led presentations and discussions with faculty supervision. Topics may include epidemiologic methods, analytic strategies, study design, conduct of human subjects research, bio-ethics, and other pertinent topics. Ph.D. students are required to complete 3 credit hours of EPH 600 prior to graduation. Prerequisite: Admission to the Ph.D. in Epidemiology program. Open only to EPH majors.

EPH 603. Statistical Methods in Epidemiology
3 credits
Offered Fall Semester
Advanced statistical methods used in analyzing data from epidemiologic investigations. Topics include Mantel-Haenszel chi-square, interaction, standardization of rates, incidence density, logistics regression, and other special topics. Prerequisite: EPH 501 and 521. Open only to EPH majors.

EPH 604. Clinical Trials
3 credits
Offered Spring Semester
Planning, design, analysis, and data management for clinical therapeutic and prophylactic trials. Illustrations are provided through case examples. Prerequisite: EPH 502 and permission of instructor. Open only to EPH majors.

EPH 605. Statistical Methods in Epidemiology II
3 credits
Offered Spring Semester
Continuation and elaboration of EPH 603. Advanced statistical methods used in analyzing data from epidemiologic investigations. Topics include Kappa statistics, life tables, survival analyses, logistic regression, Poisson regression, log linear models, clusters, meta-analysis, and other special topics. Prerequisite: EPH 603 and permission of instructor. Open only to EPH majors.
EPH 611. Cancer Epidemiology
3 credits
Offered Spring Semester
This course covers the basic epidemiology of cancer. Major sites and exposures are stressed, highlighting descriptive, etiologic and preventive aspects. A major course project and one final exam are included. Prerequisite: Permission of instructor. Open only to EPH majors.

EPH 612. Forensic Epidemiology
3 credits
Offered Fall Semester
The course emphasizes the analysis of forensic and medical investigative aspects of the subject as well as the epidemiologic patterns and significance. Topics include suicide, vehicular accidents, industrial deaths, drownings, drug related fatalities, abuse, and fire related deaths. Observations of autopsies are also incorporated into the course. Prerequisite: EPH 501 and 521 or permission of instructor.

EPH 620. Cardiovascular Disease Epidemiology and Prevention
3 credits
Offered Fall Semester
Course aims to teach and train MPH students in the epidemiology and prevention of cardiovascular and cerebrovascular diseases which are the leading causes of morbidity and mortality among the adult U.S. population. Essential knowledge for those working in the area of public health is emphasized. Prerequisite: EPH 502 and 521 or permission of instructor. Open only to EPH majors.

EPH 621. Chronic Disease Epidemiology
3 credits
Offered Spring Semester
The major chronic diseases (e.g. Heart Disease, Cancer, diabetes) their population impact and methods of prevention. Specialized problems associated with chronic disease studies are also included. Prerequisite: EPH 521. Open only to EPH majors.

EPH 622. Infectious Disease Epidemiology and Control
3 credits
Offered Fall Semester
Surveillance, investigation, control, and problems related to infectious diseases. Prerequisite: EPH 501 and 521. Open only to EPH majors.

EPH 623. Epidemiology and Public Health Aspects of Diabetes Mellitus
3 credits
Offered Spring Semester
This course presents an overview of the epidemiology and public health impact of an important chronic disease, diabetes mellitus (DM). Topics include the classification and descriptive epidemiology of DM and associated health complications, disease screening, evaluation of risk factors, methodological issues associated with DM research, DM among special populations, and the public health impact of DM in the U.S. Prerequisite: EPH 521 or permission of instructor. Open only to EPH majors.

EPH 624. Advanced Applied Epidemiology
3 credits
Offered Spring Semester
Principles and methods of analytical studies including case-control, cohort, and clinical trials. Emphasis is placed on quantitation of influences of change, bias, and confounding in design, conduct, analyses, and interpretation of epidemiologic studies. Evaluation of cause-effect relationships is included. Prerequisite: EPH 501 and 521 or permission of the instructor. Open only to EPH majors.

EPH 630. Drug Abuse Epidemiology
3 credits
Offered Fall Semester
The purpose of this course is to educate students how to design, implement, and conduct studies of drug abuse epidemiology and its related scientific disciplines. Prerequisite: EPH 501 and 521. Open only to EPH majors.
EPH 631. Public Health Administration  
3 credits  
Offered Fall Semester  
An overview of the historical background, philosophy, and purpose of public health. Relationship between government, law, and public health. Organization, management, and intergovernmental relationships of public health agencies in the United States at the federal, state, and local level. Basic principles of management, decision making, and prioritizing in public health are discussed. Overview of programs and services provided by public health organizations with emphasis on current public health issues and problems are also included. Open only to EPH majors.

EPH 640. Basic Pathology and Patho-physiology  
3 credits  
Offered Fall Semester  
The course emphasizes basic patho-physiological mechanisms and diseases of particular interest to students of public health. Students obtain an understanding of basic pathological processes, nomenclature of pathological findings, and common natural and unnatural diseases affecting various body systems. Observations of autopsies and the gross pathology of selected organs are also incorporated in the course. Prerequisite: EPH 521 and permission of instructor. Open only to EPH majors.

EPH 641. Research Methods  
3 credits  
Offered Fall Semester  
The purpose of the course is to provide students with a sound understanding of the fundamental concepts and methods for conducting public health research. After a brief introduction to the philosophy of science, the major emphasis in the early portion of the course is on research conceptualization, design and measurement, with a particular focus on the logic of minimizing rival alternative explanations of finding for experimental and quasi-experimental studies. Prerequisite: EPH 501, 521 or instructor permission. Open only to EPH majors.

EPH 642. Survey Methods: Planning and Conducting Health Surveys  
3 credits  
Offered Spring Semester  
The purpose of this class is to introduce students to theories, principles, methods, and best practices of survey design, measurement, and sampling as applied to health surveys. Students develop an understanding of the survey research process including problem definition, strengths and limitations of survey research, survey design, survey sampling techniques, data entry and management, data analysis, and proper reporting of results. Prerequisite: EPH 501, 521, and 641 or instructor permission. Open only to EPH majors.

EPH 643. Qualitative Research Methods in the Social Sciences  
3 credits  
Offered First Summer Session  
The course has been designed to provide an introduction to qualitative research methods. In addition to providing the student with the theoretical basis of a variety of qualitative methods, this course also includes practical experience in designing, conducting, and reporting on a qualitative research project. Prerequisite: EPH 521 and 501 or permission of instructor.

EPH 645. Behavioral Epidemiology  
3 credits  
Offered Fall Semester  
A sub-discipline of epidemiology with a principal focus on lifestyle behaviors that are health-enhancing or health-compromising. With a focus on health behavior rather than disease endpoints, behavioral epidemiology has a primary prevention orientation. This course explores epidemiologic approaches to description/intervention upon dietary behaviors, exercise, substance use behaviors (cigarettes, alcohol, illicit drugs), and sexual behaviors. Prerequisite: EPH 521 and permission of the instructor. Open only to EPH majors.
EPH 650. Health Economics for Evaluation and Policy
3 credits  
Offered Spring Semester
This course centers on a discussion of the criteria used to evaluate the allocation of resources and analyze the behavior of two of the principal actors—consumers and firms. The principles of microeconomics are presented in the context of health care systems and markets. Numerous real-world issues and case studies are used to demonstrate economic decision-making techniques, especially for health care organizations and consumers. Prerequisite: EPH 501 and 521. Open only to EPH majors.

EPH 651. Survival Analysis in Clinical Trials
3 credits  
Offered Fall Semester
Statistical methods for analysis and interpretation of survival data arising from clinical trials. Topics include survival curves, estimation of sample size, survival curves, proportional-hazard models, time dependent variables, and prognostic indices. Prerequisite: Permission of the instructor and EPH 501 and 502. Open only to EPH majors.

EPH 652. Health Policy
3 credits  
Offered Spring Semester
Part I will examine seven models encompassing different perspectives on public health: philosophy, political theory and politics, law, economic, science and information culture and religion, and organization and management, including how they relate and their relevance in formulating, implementing, and evaluating public policy. Part II will examine the policy making process including how issues reach the government agenda, how laws are formulated, and how the process affects substance. Part III describes the core elements of policy analysis including: problem definition; background; political, economic, and social landscape; development of policy options; and recommendation. It will also include discussions of how to find and analyze documents and data as well as discuss the financing of health care. Prerequisite: Permission of program director.

EPH 680. Practical Field Experience
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical field experience for MSPH/MPH students, e.g. an internship with a physician, public health department, clinic, school system, Health Center, or an ongoing epidemiological project. Prerequisite: Core requirements for MPH program. Open only to EPH majors.

EPH 681. Geographic Information Systems in Public Health
3 credits  
Offered Spring Semester
Learn GIS techniques to interpret, analyze, and understand spatial patterns utilizing the software Arc View. Prerequisite: Core requirements for MPH program. Open only to EPH majors.

EPH 682. Advanced Individual Study
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Individual work on a special project under faculty guidance. Prerequisite: Permission of the directing faculty member and the Director of Graduate Programs. Open only to EPH majors.

EPH 699. Public Health Projects
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Research and/or design projects. Individual investigation of current public health problems. Required of all MPH students. Prerequisite: Permission of Master’s Programs Director and completion of at least 12 credits in EPH. Open only to EPH majors.
EPH 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in EPH 710 (usually six credits). Credit not granted. May be regarded as full time residence.

EPH 725. Continuous Registration—Master's Study
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
To establish residence for MPH students who are preparing for project presentation. Credit not granted. Regarded as full time residence.

EPH 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the PhD. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of EPH 730 may be taken in a regular semester, nor more than six in a summer session.

EPH 750. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Microbiology and Immunology

MIC 501. Medical Microbiology
5 credits
Offered By Announcement only
Course discusses the nature of microbial agents of infectious disease as well as relationship of virulence to host resistance and fundamental immunologic concepts. Microbial physiology and genetics, the structure, design, and mechanism of action on antimicrobials are also. Prerequisite: Permission of Department Chairman.

MIC 523. Molecular and Microbial Pathogenesis
5 credits
Offered Spring Semester
Factors implicated in bacterial pathogenesis and pathogenic “strategies”. Lectures and interactive discussions concerning molecular mechanisms of viral transcription, translation, and replication are included. Emphasis is placed on DNA and RNA tumor viruses. Prerequisite: Permission of instructor or IBS 601.

MIC 605. Faculty Research and Discussions
1 credit
Offered Fall Semester
Forum for the discussion of the current research projects and interests of the faculty. This course provides students with the opportunity to exchange ideas about important scientific questions and the technologies being applied to experimentally address the hypotheses being tested.

MIC 611. Accelerated Basic Science Medical Curriculum
18 credits
Offered Fall Semester
Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. single grade will be entered on the graduate transcript for this course. Prerequisite: Admission to the Combined M.D./Ph.D. degree Program.
MIC 616. Advanced Molecular Biology  
3 credits  
Offered Fall Semester  
The molecular basis of cellular function and regulation in both procaryotic and eucaryotic systems. The molecular genetics and biochemistry of the genetic material and its utilization during replication, transcription, translation, cellular growth, division, and differentiation. Recombinant DNA technology and molecular genetics are discussed. This course is designed for graduate students in biological sciences. A good background in biology or biochemistry is recommended.

MIC 626. Laboratory Experimentation  
4 credits  
Offered Fall Semester  
One or two laboratory training sessions of 6-12 weeks each. Each student rotates through faculty research laboratories in the areas of immunology, molecular biology, and microbiology, (bacteriology, virology, parasitology) where they receive “hands on” experience by participating in ongoing research projects. Prerequisite: MIC 501 and permission of Chairman of Graduate Studies Committee.

MIC 627. Laboratory Experimentation  
6 credits  
Offered Spring Semester  
Two or three laboratory training sessions of 6-12 weeks each. Each student rotates through faculty research laboratories in the areas of immunology, molecular biology and microbiology, (bacteriology, virology, parasitology) where they receive “hands on” experience by participating in ongoing research projects. Prerequisite: MIC 501 and permission of Chairman of Graduate Studies Committee.

MIC 628. Advanced Cellular and Molecular Immunology  
5 credits  
Offered Fall Semester  
This course examines the cellular and molecular components for the development and maintenance of the immune system. The topics include hematopoiesis, antigens, immunoglobulins, the major histocompatibility complex, lymphocyte ontogeny and activation, regulation of the immune response, and the effector mechanisms of immunity. Lectures and discussion of current and classic research papers is included. Prerequisite: Permission of Graduate Program.

MIC 631. Special Work  
1- 5 credits  
Offered Fall Semester  
Special work, lecture, laboratory or a combination of these, as determined by advisor in accord with student’s individual interest. Prerequisite: Permission of advisor and department chairman. Course is offered only on demand.

MIC 651. Advanced Molecular Immunology  
3 credits  
Offered Fall Semester  
The molecular mechanisms for generation of antigen specific receptor diversity and the specific gene activation during lymphocyte differentiation. Prerequisite: MIC 628.

MIC 655. Infectious Agents and the Immune System  
3 credits  
Offered Spring Semester  
This course is intended to explore, at an advanced level, the dynamic equilibrium that exists between microbial pathogens and host immune systems with emphasis on factors that influence progression to disease or sterilizing immunity. Mechanisms employed by the host and pathogen to shift that equilibrium in their favor will be discussed taking into account interactions at the cell system, cellular, and sub-cellular levels. To facilitate interaction between the two fields, both an immunological and a microbial/viral faculty member will be present at all classes. Prerequisite: MIC 523 or permission of instructor.
MIC 661. Advanced Topics in Molecular Biology of Animal Viruses  
2 credits  
Offered By Announcement only  
This course is organized around four major themes of virological studies: (i) viral genome transcription, replication, and virus assembly; (ii) viral pathogenesis; (iii) virus cell interactions; and (iv) antiviral strategies. Most recent research developments in these areas are covered through lectures by participating faculty members as well as paper presentations by students. Prerequisite: MIC 523 or permission on instructor.

MIC 680. Research Ethics  
0 credits  
Offered Fall Semester  
The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and is given in two sessions of three hours each. Prerequisite: Permission of the Graduate Advisor.

MIC 699. Advanced Topics  
1-3 credits  
Offered By Announcement only  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Advanced Topics”. Prerequisite: Permission from instructor.

MIC 710. Master’s Thesis  
1-6 credits  
Offered By Announcement only  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MIC 720. Research in Residence  
0 credits  
Offered By Announcement only  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MIC 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MIC 730. Doctoral Dissertation  
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MIC 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MIC 750. Research in Residence  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
MCP 601. Molecular and Cellular Pharmacology

1 credit

Offered Fall and Spring Semesters

Review of the literature and discussion of specific topics. Course may be repeated for a total of four credits. Prerequisite: Consent of instructor.

MCP 604. Mechanisms of Drug Action

2 credits

Offered Fall Semester

Mechanisms underlying the therapeutic and pharmacodynamic properties of pharmacological agents. Emphasis is placed on cellular and molecular aspects and the quantitative factors governing equilibration within multicompartment systems and drug control of nervous and muscular function in relation to therapeutic action. Prerequisite: Consent of instructor.

MCP 605. Pharmacology and Therapeutics

4 credits

Offered By Announcement only

Course places emphasis on the principles of action of drugs having therapeutic value in medicine. The student is introduced to the scientific rationale of drug administration. Topics include central nervous system pharmacology, peripheral and autonomic nervous system, cardiovascular pharmacology, control of electrolyte and metabolite balance, chemotherapy, mechanisms of toxicity, and pharmacogenetics. Prerequisite: MCP 604.

MCP 607. Toxicology, Its Principles and Environmental Application

2 credits

Offered By Announcement only

The principles of toxicology, toxicity, and carcinogenic testing procedures, and their interpretation. Relevance to man is stressed. Application of these principles to environmental problems with the heavy metals, pesticides, poisonous plants, animal toxins, environmental carcinogens, radioisotopes, the abuse of drugs, alcohol, and mycotoxins is covered in detail. Prerequisite: Consent of instructor.

MCP 608. Drug Metabolism

2 credits

Offered By Announcement only

Factors affecting the absorption, metabolic rate, excretion of drugs, chemicals, and toxic substances. Prerequisite: Consent of instructor.

MCP 610. Membrane Biophysics Seminar

1 credit

Offered By Announcement only

The student may be required to submit a term paper. Prerequisite: Permission of the Departmental Graduate Studies Committee.

MCP 611. Accelerated Basic Science Medical Curriculum

18 credits

Offered Fall and Spring Semesters

Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course. Prerequisite: Admission to the Combined M.D./Ph.D. degree Program.
MCP 612. Pathobiology I  
3 credits  
Offered By Announcement only  
Required for Physician Scientist Program students; open to graduate students.  
Two, three-hour sessions (first hour at multi-headed scope followed by two hours of laboratory) per week for eight weeks in the fall semester (September and October; days and times to be arranged). The purpose of the pathobiology course is to provide graduate students with knowledge of basic principles for understanding normal histomorphology and pathologic lesions associated with experimentally induced and naturally occurring diseases. The keystone of this innovative, short course is the small group’s socratic study of a series of autopsy cases—each represented by a set of microscopic slides. The cases are preselected to allow the students to focus on specific, basic concepts early and organ-system lesions later. Students spend the first hour of the biweekly sessions at a multi-headed scope creating a profile of the patient—including age, sex, race, and chief disease. At the end of the first hour deliberations, students receive feedback regarding their conclusions by being provided with a summary of the patient’s history and autopsy findings. Students review relevant gross specimens and kodachromes during the biweekly two-hour laboratory sessions. Prerequisite: Admission to the Physician Scientist Program or the graduate program in one of the five basic science departments located at the School of Medicine.

MCP 620. Design and Evaluation of Drug Studies  
1 credit  
Offered By Announcement only  
Practical experience in the design and evaluation of drug studies making use of data from actual field trials conducted in the clinical facilities of the department. Drug evaluation studies in the literature are examined. Prerequisite: MCP 604, 605 and permission of Departmental Graduate Studies Committee.

MCP 621. Clinical Pharmacology  
2 credits  
Offered By Announcement only  
The application of pharmacologic principles of clinical situations. Basic concepts such as drug uptake, distribution, mechanics of action, metabolism, and elimination are discussed as they apply to proper therapeutic use of drugs. Clinical cardiovascular pharmacology is covered in particular depth. Prerequisite: MCP 604, 605 and permission of Departmental Graduate Studies Committee.

MCP 624. Research Opportunities in Human Disease  
1 credit  
Offered By Announcement only  
The course presents human diseases from a research perspective, with each disease forming the basis for four lecture/discussion sections (2 hrs./session; 1 session/wk.). Each disease is discussed with respect to: 1) Clinical presentation, epidemiology, and therapeutics, 2) Cellular and Molecular mechanisms, 3) Current treatment strategies, and 4) Prospects, challenges, and opportunities for research efforts.

MCP 631. Special Topics  
1-6 credits  
Offered Spring Semester  
Directed readings on subjects not ordinarily treated in depth in specific courses. Course may also consist of special laboratory problems.

MCP 632. Cardiovascular Pharmacology  
2-3 credits  
Offered Spring Semester  
A course for advanced students covering the mechanism of action of drugs on the cardiovascular system. Prerequisite: Consent of instructor.
MCP 635. Biophysical Chemistry  
2 credits  
Offered By Announcement only  
This course teaches the physico-chemical principles basic to life science and complements MCP 641, "Principles in Membrane Physiology and Biophysics". The course is designed so that a student lacking previous exposure to physical chemistry can take the two courses concurrently. Topics include equilibrium and thermodynamics, mathematical descriptions of multiple equilibrium, electrolyte theory, rate theory, mathematical descriptions of the rates of enzymatic reactions, diffusion and permeation, mechanistic aspects of ion transport, and the application of fluorescent probe methods to the study of membrane phenomena. The courses uses a problem-solving approach. Prerequisite: Consent of instructor.

MCP 641. Principles of Membrane Physiology and Biophysics I  
2 credits  
Offered By Announcement only  
Course emphasizes chemical and physical structure of membranes, model systems, permeability and transport, membrane potential, ionic channels, excitability in nerve and muscle, ionophores, active transport, and membrane receptors. Identical to Physiology and Biophysics 641. Prerequisite: CHM 365; BMB 506; and permission of Departmental Graduate Studies Committee.

MCP 642. Principles of Membrane Physiology and Biophysics II  
2 credits  
Offered By Announcement only  
Course discusses osmosis and cell volume, tracer analysis of permeability and compartmentation, theory of channels and carriers, and cable properties. The Hodgkin-Huxley formalism; Na, K, and Ca ion channels; regulation of cellular Na and Ca activities; single-channel analysis; chemical synapses; membrane receptors; cell junctions; excitation; and E-C coupling in muscle are also covered. Identical with Physiology and Biophysics 642. Prerequisite: MCP 641.

MCP 643. Methods in Membrane Research  
3 credits  
Offered Fall Semester  
Introduction to research and laboratory techniques. Molecular and membrane pharmacology, radio-tracers, cardiovascular, and neuropharmacology are covered. Prerequisite: Permission of the Departmental Graduate Studies Committee.

MCP 644. Methods in Membrane Research  
3 credits  
Offered Spring Semester  
Introduction to research and laboratory techniques. Molecular and membrane pharmacology, radio-tracers, cardiovascular, and neuropharmacology are covered. Prerequisite: Permission of the Departmental Graduate Studies Committee.

MCP 645. Topics in Membrane Physiology and Biophysics  
3 credits  
Offered By Announcement only  
In-depth examination of selected topics introduced in MCP 641, 642. A term paper is required. Prerequisite: MCP 641, and permission of Departmental Graduate Studies Committee.

MCP 651. Cell Biology I  
2 credits  
Offered By Announcement only  
The dynamics of eukaryotic cells examined from the standpoint of structure and function, regulation of function and interactions of the subcellular organelles. Identical to PHS 651.
MCP 652. Cell Signaling  
3 credits 
Offered Fall Semester 
Recent advances in the molecular biology of cellular activation by hormones and neurotransmitters. Hormone-regulated signal transduction mechanisms and the manner in which they interact to control cellular responses as they pertain to the pharmacology of drug and hormone action. Prerequisite: Permission of the departmental Graduate Studies Committee.

MCP 668. Neuropharmacology  
2-3 credits  
Offered Fall Semester 
A course for advanced students covering the mechanism of action of drugs on neural processes, including action potentials, neurotransmission (storage, release, reception, and metabolism of transmitters), and central nervous system activity. Prerequisite: Consent of instructor. Identical with PHS 668.

MCP 680. Research Ethics  
0 credits  
Offered Fall Semester 
The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each. Prerequisite: Permission of the Graduate Advisor.

MCP 710. Master’s Thesis  
1-6 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions 
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MCP 720. Research in Residence  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions 
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MCP 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MCP 730. Doctoral Dissertation  
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions 
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MCP 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MCP 750. Research in Residence  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions 
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
Molecular Cell and Developmental Biology

MDB 601. Seminar
2 credits Offered Fall and Spring Semesters
For graduate students in Cell Biology and Anatomy, Graduate Program in Molecular Cell and Developmental Biology. Departmental Faculty and graduate student research seminars. Prerequisite: Permission of Department Chairman.

MDB 606. Computer Applications in Research
2 credits Offered By Announcement only
Microcomputer programs beneficial to a wide variety of biomedical research applications. Prerequisite: Permission of instructor and Department Chairman.

MDB 610. Readings in Cell Biology
1-6 credits Offered Fall and Spring Semesters
Current and classical research papers in cell, developmental, and molecular biology. Critical evaluation of papers and the methodologies used is included. Prerequisite: Permission of course supervisor and Department Chairman.

MDB 613. Topics in Cell Biology
1-6 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Formal seminar course in which each student presents a lecture relating to a specific theme. Topic areas include cell, developmental, and molecular biology with the subject changing each term. Prerequisite: Permission of course supervisor and Department Chairman.

MDB 617. Advanced Techniques in Molecular Biology
2-3 credits Offered Fall Semester
Method/techniques type course. Prerequisite: BMB 506 or equivalent, or permission of instructor.

MDB 618. Cell Membranes
2 credits Offered By Announcement only
Cell membrane structure and function including recent developments in intracellular targeting of membrane vesicles, mechanisms of exocytosis, receptor-mediated endocytosis, and regulation of intercellular recognition by cell surface molecules. Prerequisite: Permission of instructor and Department Chairman.

MDB 620. Introduction to Research in Cell Biology
1-6 credits Offered Fall and Spring Semesters
Direct laboratory experience as determined by the Departmental Graduate Committee. Prerequisite: Permission of coordinator and Department Chairman.

MDB 645. Research Problems in Biochemistry, Cell and Molecular Biology
2-3 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Laboratory research problems in various areas of biochemistry, cell biology, and molecular biology. A literature search, experimental design, data gathering, and evaluation of results is included. Course is the mechanism by which graduate laboratory rotations are done in preparation for selection of Ph.D. mentor. Prerequisite: BMB 506 or equivalent or permission of instructor.

MDB 651. Advanced Molecular Cell Biology
3 credits Offered Spring Semester
Structure, function, biogenesis of cellular organelles, and the cytoskeleton including its regulation and dynamic interactions are discussed. Prerequisite: BIL 255 and BMB 401 or 506 and permission of Department Chairman.
MDB 652. Developmental Biology
3 credits  Offered Fall Semester
Continuation of MDB 651. Early developmental events, including fertilization, changes in transcriptional and translational activity, cleavage and gastrulation, nuclear-cytoplasmic interactions, and intercellular recognition. Events are treated at both the molecular and cellular levels, including changes in gene expression. Prerequisite: Successful completion of MDB 651 and permission of Department Chairman.

MDB 654. Methods in Cell Biology
2 credits  Offered By Announcement only
Introduction to the basic biochemical and cytochemical laboratory techniques used in cell biological and biomedical research. Prerequisite: Basic Biology and Chemistry and permission of instructor and Department Chairman.

MDB 663. Development and Regeneration of the Nervous System
3 credits  Offered Fall Semester
Development of the nervous system in all its aspects: origins of neurons and glia; nerve cell differentiation; cellular interactions during neurogenesis; formation of synaptic connections and neuronal circuits; development of nervous functions and ontogeny of behavior; mechanisms of repair and reorganization in the nervous systems; and theories of neuronal plasticity. Prerequisite: Permission of course coordinator and Department Chairman.

MDB 665. Tumor Biology
2-3 credits  Offered Fall Semester
Tumor Biology is intended to provide an overview and update of the most important topics in modern molecular and cellular aspects of cancer biology and research. The sessions are topical and include both lectures and discussions of current papers in the topic areas. A list of the topics is attached. Prerequisite: None. Registration is open to anyone enrolled in a UM graduate program or by permission of the instructors.

MDB 666. Advanced Microscopy and Image Analysis
2 credits  Offered Fall Semester
This course will cover the acquisition, use and maintenance of advanced research microscopes including data analysis using the equipment and software already available in the instructors’ labs. Topics to be covered include types, function and choice of optical and electron microscopes; sample preparation and synthesis of fluorescent and particle-labeled probes; transmitted light microscopy; fluorescent microscopy; confocal microscopy; real time cell and particle tracking; digital image analysis and quantitative fluorescence analysis; transmission and scanning electron microscopy, and digital image data interpretation. The course will meet twice a week for one hour, with one lecture and one hands-on laboratory session per week. Class registration is limited to 4-6 students. Prerequisite: IBS 601 and 602, and some laboratory experience in cell biology and basic microscopy. Admission is with permission of the instructors.

MDB 680. Research Ethics
0 credits  Offered Fall Semester
The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each. Prerequisite: Permission of the Graduate Advisor.
MDB 710. Master’s Thesis
1-6 credits Offered By Announcement only
The student working on his/her master’s thesis enrolls for credit, in most
departments not to exceed six, as determined by his/her advisor. Credit is not
awarded until the thesis has been accepted.

MDB 720. Research in Residence
0 credits Offered By Announcement only
Used to establish research in residence for the thesis for the master’s degree after
the student has enrolled for the permissible cumulative total in MDB 710 (usually
six credits). Credit not granted. May be regarded as full time residence.

MDB 730. Doctoral Dissertation
1-12 credits Offered Fall and Spring Semesters and First and Second
Summer Sessions
Required of all candidates for the Ph.D. The student will enroll for credit as
determined by his/her advisor but not for less than a total of 24. Not more than 12
hours of MDB 730 may be taken in a regular semester, nor more than six in a
summer session. Where a student has passed his/her (a) qualifying examinations,
and (b) is engaged in an assistantship, he/she may still take the maximum
allowable credit stated above.

MDB 750. Research in Residence
0 credits Offered Fall and Spring Semesters and First and Second
Summer Sessions
Used to establish research in residence for the Ph.D., after the student has been
enrolled for the permissible cumulative total in appropriate doctoral research.
Credit not granted. May be regarded as full-time residence as has determined by
the Dean of the Graduate School.

Neuroscience Program

NEU 600. Seminar in Neuroscience
1 credit Offered Fall and Spring Semesters
Students are required to present a short talk on a research area of interest. All
students in the Neuroscience Program are required to register for this seminar,
which also includes journal presentations. For other registrants, permission of the
Departmental Graduate Studies Committee is required.

NEU 601. Introduction to Neuroscience Techniques
1 credit Offered Fall and Spring Semesters
Hands-on exercises in research laboratories introduce first-year Neuroscience
students to methodologies commonly used in the Neurosciences. The course
includes selected techniques from electrophysiology, immunocytochemistry,
fluorescence microscopy, recombinant DNA, protein immunoblotting, and
functional imaging. Students are required to complete a lab notebook of each
exercise. There is also a segment on database searches.

NEU 609. Research
1-5 credits Offered Fall and Spring Semesters and First and Second
Summer Sessions
Students work with individual members of the program faculty on research
problems. Provides orientation as to the areas of research in the field and the
techniques used. Prerequisite: Permission of the Program Steering Committee or
its chairman.
NEU 611. Accelerated Basic Science Medical Curriculum
18 credits

Offered Fall and Spring Semesters

From late June to mid-February, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course. Prerequisite: Admission to the M.D./Ph.D. Degree Program.

NEU 631. Advanced Topics in Neuroscience
1- 5 credits

Offered Fall and Spring Semesters and First and Second Summer Sessions

Special work, lecture, laboratory, reading, seminar, or a combination of these as determined by advisor in accordance with student’s interest. Prerequisite: Permission of the Program Steering Committee.

NEU 661. Neuroscience I
3 credits

Offered Spring Semester

This course is designed to teach Neuroscience to individuals engaged in basic neuroscience research. The course provides comprehensive coverage of Neuroscience. Neuroscience I will cover two general areas: Cell Biology of the Neuron and Sensory Neurobiology. The course will concentrate on the experimental basis for our understanding of nervous system function. Course utilizes both didactic lectures and discussions of current research literature. Prerequisite: Undergraduates require permission of instructor.

NEU 662. Neuroscience II
3 credits

Offered Fall Semester

This course is designed to teach Neuroscience to individuals engaged in basic neuroscience research. The course provides comprehensive coverage of Neuroscience. Neuroscience II covers Network Neurobiology and Higher Nervous System Function. The course concentrates on the experimental basis for our understanding of nervous system function. Course utilizes both didactic lectures and discussions of current research literature. Prerequisite: Undergraduates require permission of instructor.

NEU 663. Developmental Neurobiology
3 credits

Offered By Announcement only

Development of the nervous system in all aspects. Topics include origins of neurons and glia, nerve cell differentiation, cellular interactions during neurogenesis, formation of synaptic connections, neuronal circuits, development of nervous functions, ontogeny of behavior, mechanisms of repair, reorganization in nervous systems, and theories of neuronal plasticity. Prerequisite: A knowledge of neuroscience and developmental biology beyond the elements; for example, PHS 511 and BIL 564 or equivalents. In addition MDB 505 and 632 or BIL 660 will be found very useful. Permission of the Steering Committee.

NEU 680. Research Ethics
0 credits

Offered Fall Semester

The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Program. This is a six-hour course and will be given in two sessions of three hours each. Prerequisite: Permission of the graduate advisor or program director.
NEU 697.  Neuroanatomy
3 credits
Offered Fall Semester
This course is designed to teach functional neuroanatomy to individuals engaged in basic neuroscience research. An important feature of each class period is a laboratory segment in which the students perform dissections of human brains and sheep brains, examine models of the brain, and interact with laser videodiscs and Hypercard-based Macintosh programs which contain pictures, text, clinical examples, and 3-dimensional rotations of the nervous system. Prerequisite: Undergraduates require permission of instructor.

NEU 710.  Master's Thesis
1-12 credits
Offered By Announcement only

NEU 720.  Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in Master's Thesis (usually six credits). Credit not granted. May be regarded as full time residence.

NEU 730.  Doctoral Dissertation
1-12 credits
Offered By Announcement only
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of NEU 730 may be taken in regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

NEU 750.  Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Physiology and Biophysics

PHS 510.  Cell Physiology Biophysics
2 credits
Offered Fall Semester
This course is designed as preparation for the study of mammalian physiology. Course is usually intensive, adapted to the schedule of the medical curriculum and occupying the equivalent of two to three days per week for two-three weeks. The student is introduced to general principles of cell physiology, chemical and physical structure of membranes, membrane transport, and electrical membrane phenomena. Topics include excitation, contraction, energy transduction, nerve impulse conduction, and synaptic transmission. Course utilizes lecture and laboratory. Prerequisite: Permission of the Departmental Graduate Studies Committee.

PHS 511.  Neurophysiology
3 credits
Offered Spring Semester
Physiology of the mammalian nervous system. Course is intensive, adapted to the schedule of the medical curriculum and comprising roughly five hours of lecture and four hours of conference weekly for five to six weeks. A lecture course coordinated with neuroanatomy. Prerequisite: PHS 510 or 641, or an equivalent; Permission of the Departmental Graduate Studies Committee. Prerequisite or corequisite: MDB 505.
PHS 512. Systemic Physiology  
5 credits  
Offered Spring Semester  
Physiology of the mammalian cardiovascular, respiratory, renal, digestive, endocrine, and reproductive systems. Course is intensive and adapted to the schedule of the medical curriculum, occupying the equivalent of about two days a week for most of the semester. Lecture and laboratory are included. Prerequisite: Permission of the Departmental Graduate Studies Committee, including endocrinology.

PHS 600. Research Seminar in Membrane Biophysics and Neurobiology  
1 credit  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student may be required to present a short talk on a research area of interest. All students in the Department of Physiology and Biophysics are required to register for this seminar. For other students, permission of the Departmental Graduate Studies Committee is required.

PHS 609. Research  
1-5 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Students work with individual members of the department on research problems. Orientation to the areas of research in the field and the techniques used is included. Prerequisite: Permission of the Departmental Graduate Studies Committee.

PHS 611. Accelerated Basic Science Medical Curriculum  
18 credits  
Offered By Announcement only  
Beginning in the latter part of June each year, extending to the middle of February of the ensuing year, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course. Prerequisite: Admission to the Combined M.D./Ph.D. degree Program.

PHS 612. Pathobiology I  
3 credits  
Offered By Announcement only  
Required for Physician Scientist Program students; open to graduate students. Two, three-hour sessions (first hour at multi-headed scope followed by two hours of laboratory) per week for eight weeks in the fall semester (September and October; days and times to be arranged). The purpose of the pathobiology course is to provide graduate students with knowledge of basic principles for understanding normal histomorphology and pathologic lesions associated with experimentally induced and naturally occurring diseases. The keystone of this innovative, short course is the small group’s socratic study of a series of autopsy cases—each represented by a set of microscopic slides. The cases are preselected to allow the students to focus on specific, basic concepts early and organ-system lesions later. Students spend the first hour of the biweekly sessions at a multi-headed scope creating a profile of the patient—including age, sex, race, and chief disease. At the end of the first hour deliberations, students receive feedback regarding their conclusions by being provided with a summary of the patient’s history and autopsy findings. Students review relevant gross specimens and kodachromes during the biweekly two-hour laboratory sessions. Prerequisite: Admission to the Physician Scientist Program or the graduate program in one of the five basic science departments located at the School of Medicine.

PHS 620. Neurophysiology  
3 credits  
Offered Spring Semester  
Physiology of the mammalian nervous system. The course will consist of both didactic lectures and discussions of current research literature. Prerequisite: PHS 510 or 641 and permission of the Departmental Graduate Studies Committee.
PHS 631. Special Work  
1-5 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions

Special work, lecture, laboratory, reading, seminar, or a combination of these as determined by advisor in accordance with student’s interest. Prerequisite: Permission of the Departmental Graduate Studies Committee.

PHS 641. Principles of Membrane Physiology and Biophysics I  
2 credits  
Offered Fall Semester

Course discusses chemical and physical structure of membranes, model systems, permeability and transport, membrane potential, ionic channels, excitability in nerve and muscle, ionophores, active transport, and membrane receptors. Identical with MCP 641. Prerequisite: CHM 361; BMB 506; and permission of the Departmental Graduate Studies Committee.

PHS 642. Principles of Membrane Physiology and Biophysics II  
2 credits  
Offered Fall Semester

Course topics include osmosis and cell volume, tracer analysis of permeability and compartmentation, theory of channels and carriers, cable properties, Hodgkin-Huxley formalism, Na, K, and Ca ion channels, regulation of cellular Na, Ca activities, single-channel analysis, chemical synapses, membrane receptors, cell junctions, excitation and E-C coupling in muscle. Identical with MCP 642. Prerequisite: PHS 641.

PHS 651. PHS Cell Biology  
3 credits  
Offered By Announcement only

The dynamics of eukaryotic cells examined from the standpoint of the structure and function, regulation of function, and interactions of the subcellular organelles. Prerequisite: Permission of the Departmental Graduate Studies Committee. Identical with MCP 651.

PHS 652. Developmental Biology  
3 credits  
Offered By Announcement only

Identical to MDB 652. Prerequisite: PHS 651.

PHS 663. Developmental Neurobiology  
3 credits  
Offered By Announcement only

Development of the nervous system in all its aspects. Topics include origins of neurons and glia, nerve cell differentiation, cellular interactions during neurogenesis, formation of synaptic connections, neuronal circuits, development of nervous functions and ontogeny of behavior, mechanisms of repair and reorganization in the nervous systems, and theories of neuronal plasticity. Prerequisite: A knowledge of Neurobiology and Developmental Biology beyond the elements; for example, PHS 511 and BIL 564 or equivalents. Permission of the Departmental Graduate Studies Committee.

PHS 668. Neuropharmacology  
3 credits  
Offered By Announcement only

An intensive seminar course for advanced students covering the mechanism of action of drugs on basic neural processes including action potentials, neurotransmission, and central nervous activity. Course is taught jointly by staff members of Molecular and Cellular Pharmacology and Physiology/Biophysics. Prerequisite: PHS 510, 511 or 641; MCP 605; consent of instructor and Departmental Graduate Studies Committee.

PHS 669. Nerve and Synapse  
2 credits  
Offered Fall Semester

An advanced seminar course in the basic mechanisms underlying the propagated nerve impulse and synaptic transmission. Prerequisite: PHS 510 and 511; consent of instructor and Departmental Graduate Studies Committee.
PHS 680. Research Ethics  
0 credits  
Offered Fall Semester  
The NIH Guide for Grants and Contracts stipulates that Institutions receiving support for National Research Service Award Training Grants are required to develop a program in the principles of Scientific Integrity. This program should be an integral part of the proposed training effort. The University of Miami School of Medicine has chosen to respond to this requirement with this course. This course must be taken during the first semester in the Department or Program. This is a six-hour course and will be given in two sessions of three hours each. Prerequisite: Permission of the graduate advisor.

PHS 710. Master’s Thesis  
1- 6 credits  
Offered By Announcement only  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

PHS 720. Research in Residence  
0 credits  
Offered By Announcement only  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in PHS 710 (usually six credits). Credit not granted. May be regarded as full time residence.

PHS 730. Doctoral Dissertation  
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of PHS 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

PHS 750. Research in Residence  
0 credits  
Offered By Announcement only  
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Physical Therapy  
PTS 501. Therapeutic Rehabilitation of Athletic Injuries  
2 credits  
Offered Spring Semester  
Basic principles of rehabilitation of athletic injuries including, but not limited to, range of motion, strengthening, edema and pain control, balance, proprioception, endurance, and skill acquisition. Prerequisite: For Athletic Training majors only, or with permission of the instructor. Corequisite: PTS 502.

PTS 502. Therapeutic Rehabilitation of Athletic Injuries Clinical Laboratory  
1 credit  
Offered Spring Semester  
Application of basic principles of rehabilitation of athletic injuries including, but not limited to range of motion, strengthening, edema and pain control, balance, proprioception, endurance, and skill acquisition. Prerequisite: For Athletic Training majors only, or with permission of the instructor. Corequisite: PTS 501.
PTS 503. **Therapeutic Modalities in Athletic Training**  
2 credits  
*Offered Fall Semester*  
Basic principles of theory and application of various modalities encountered in athletic training practice, including but not limited to: infrared modalities, ultrasound, electrical stimulation, mechanical modalities, and hydrotherapy. Prerequisite: For Athletic Training majors only, or with permission of the instructor. Corequisite: PTS 504.

PTS 504. **Therapeutic Modalities in Athletic Training Clinical Laboratory**  
1 credit  
*Offered Fall Semester*  
Basic principles of application of various modalities encountered in athletic training practice, including but not limited to: infrared modalities, ultrasound, electrical stimulation, mechanical modalities, and hydrotherapy. Prerequisite: For Athletic Training majors only, or with permission of the instructor. Corequisite: PTS 503.

PTS 505. **Physical Therapy Private Practice Management**  
1 credit  
*Offered Fall Semester*  
Course focuses on establishing a private physical therapy practice, including initial development through marketing and management. Prerequisite: For Physical Therapy majors. only or with permission of the instructor.

PTS 506. **Issues in Women’s Health: Gynecology**  
1 credit  
*Offered Spring Semester*  
Introduction to physical therapy practice for evaluation and treatment of pelvic floor dysfunction. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 507. **Issues in Women’s Health: Obstetrics, Osteoporosis and Breast Health**  
1 credit  
*Offered Spring Semester*  
Introduction to physical therapy practice for evaluation and treatment of problems related to pregnancy, osteoporosis, and other disorders specific to women. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 508. **Rape Aggression Defense for Women (RAD)**  
1 credit  
*Offered Spring Semester*  
A comprehensive self defense course for women including awareness, prevention, risk reduction and avoidance, and the basics of hands-on defense training. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 509. **Exercise for Persons with Spinal Cord Injuries**  
1 credit  
*Offered Spring Semester*  
Course provides a review of etiology and pathology of spinal cord injury as well as current methods of exercise and electrical stimulation systems and their physiological effects on the individual. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 510. **Balance for the Neurologic Patient**  
1 credit  
*Offered By Announcement only*  
Introduction to balance evaluation and treatment concepts for patients with neurological deficits. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 511. **Positioning as a Pediatric Therapeutic Modality**  
1 credit  
*Offered By Announcement only*  
Introduction to adaptive seating and positioning in pediatric physical therapy, neurophysiological, biomechanical, and functional rationale. Prerequisite: For Physical Therapy majors or with permission of the instructor.
PTS 512. **Sports Physical Therapy**
1 credit  
Offered By Announcement only
Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 513. **Clinical Instructor Training**
1 credit  
Offered Spring Semester
Introduction to the roles and responsibilities of being a clinical instructor to physical therapy students. Course material is adapted from the Clinical Instructor Workshop of the Florida Consortium of Clinical Educators. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 516. **Clinical Research I**
3 credits  
Offered Fall Semester
Principles, concepts, and basic skills required to conduct clinical research in physical therapy. Topics include research design, sampling, bias, reliability and validity, questionnaire design, statistical computing, conceptual review of literature, and the preparation of a research proposal. Prerequisite: For Physical Therapy majors only.

PTS 517. **Abdominal Anatomy**
1 credit  
Offered Spring Semester
Course analyzes abdominal anatomy emphasizing structure and function. Cadaver dissection is included. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 518. **Cross-sectional and Radiologic Anatomy**
1 credit  
Offered Spring Semester
Cross-sectional and radiologic anatomy of major joints of the body with emphasis on normal and abnormal images. Cadaver dissection is included. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 519. **Pelvic Anatomy**
1 credit  
Offered Spring Semester
Course analyzes the anatomy of the human pelvic area. Cadaver dissection is included. Prerequisite: For Physical Therapy majors only or with permission of the instructor.

PTS 523. **Myofascial Release**
1 credit  
Offered Spring Semester
Introduction to Myofascial Release technique in rehabilitation. Prerequisite: Open to physical therapy majors only, with permission of instructor.

PTS 524. **Interdisciplinary Fundamentals for Assertive Technology**
3 credits  
Offered Fall Semester
Interdisciplinary assistive technology course for professionals. Comprehensive assistive technology services for individuals with disabilities is included. Course is taught with Department of Pediatrics. Prerequisite: With consent of instructor only.

PTS 525. **Human Development through the Lifespan**
2 credits  
Offered First Summer Session
Course analyzes the stages of development of the motor, cognitive, sensory/perception, and behavioral systems from conception to old age. Prerequisite: Open to Physical Therapy majors only; others with permission of instructor.

PTS 526. **Introduction to Pilates Rehabilitation I**
1 credit  
Offered First and Second Summer Sessions
Course provides historical development, and evidence-based approach to Pilates rehabilitation. Prerequisite: For Physical Therapy majors only; others with permission of instructor.
PTS 527. Introduction to Pilates Rehabilitation II
1 credit  Offered First and Second Summer Sessions
Introduction to the Pilates Environment. Prerequisite: Open to physical therapy majors only; others with permission of instructor.

PTS 530. Foundations of Physical Therapy
2 credits  Offered Spring Semester
Foundations, historical development, and contemporary practice of physical therapy in the United States. Traditional and emerging roles and responsibilities of the physical therapist in the spectrum of health care provision. Examination of current professional issues affecting future roles is discussed. Terminology and a treatment cycle model is also introduced. Prerequisite: Open to Physical Therapy majors only.

PTS 531. Gross Anatomy for Physical Therapy
3 credits  Offered First Summer Session
Gross anatomy with emphasis on the musculoskeletal systems and a survey of other systems that are relevant to physical therapy practice. Prerequisite: For Physical Therapy majors only.

PTS 532. Gross Anatomy for Physical Therapy
3 credits  Offered Spring Semester
Gross Anatomy with emphasis on the musculoskeletal systems and a survey of other systems that are relevant to physical therapy practice. Prerequisite: For Physical Therapy majors only.

PTS 533. Communications in Physical Therapy Practice
3 credits  Offered Spring Semester
Course provides an analysis of communication skills in physical therapy clinical practice. Emphasis is placed on instruction of patients and their families, supportive staff, and health care team members. In-depth examination of patient-therapist interactions is included. Prerequisite: For Physical Therapy majors only.

PTS 540. Neuroscience I
3 credits  Offered Fall Semester
The human central nervous system with emphasis on structure-function relationships, and clinical applications. The brain, spinal cord, cranial nerves, tracts, and nuclei of major systems. Central nervous systems lesions and their clinical significance are discussed. Lecture and human dissection are included. Prerequisite: For Physical Therapy majors only.

PTS 541. Neuroscience II
3 credits  Offered Spring Semester
The central, peripheral, and autonomic nervous systems and their physiological responses to environmental stimuli. Normal systems are contrasted with abnormal systems. The clinical significance of altered neurophysiological states is discussed. Prerequisite: For Physical Therapy majors only.

PTS 542. Electrotherapy
3 credits  Offered Spring Semester
Course provides an evaluation of nerve and skeletal muscle by classical electrical means. The therapeutic application of selected modalities is discussed. Prerequisite: For Physical Therapy majors only.

PTS 543. Medical Pathology Seminar I
1 credit  Offered Fall Semester
Lectures and seminar discussion of pathological conditions with particular emphasis on musculoskeletal disorders. Prerequisite: Open to Physical Therapy majors only.
PTS 544.  **Medical Pathology Seminar II**  
1 credit  
Offered Spring Semester  
Lectures and seminar discussion of pathological conditions with particular emphasis on neuromuscular disorders. Prerequisite: Open to Physical Therapy majors only.

PTS 545.  **Medical Pathology Seminar III**  
1 credit  
Offered First Summer Session  
Lectures and seminar discussion of pathology conditions with particular emphasis on integumentary disorders. Prerequisite: Open to Physical Therapy majors only.

PTS 546.  **Medical Pathology Seminar IV**  
1 credit  
Offered Fall Semester  
Lectures and seminar discussion of pathological conditions with particular emphasis on cardiorespiratory disorders. Prerequisite: Open to Physical Therapy majors only.

PTS 550.  **Pharmacology**  
2 credits  
Offered Fall Semester  
Basic principles of pharmacology and pharmacotherapeutics. Contemporary drug therapies and their effects on patients undergoing rehabilitation are discussed. Prerequisite: For Physical Therapy majors only.

PTS 570.  **Clinical Skills**  
3 credits  
Offered Spring Semester  
Skills essential to the practice of physical therapy, including clinical decision making methodology, theory, and techniques. Students will have initial exposure to clinical education. Prerequisite: Physical Therapy majors only.

PTS 571.  **Therapeutic Physiology**  
2 credits  
Offered Fall Semester  
Physiological effects of exercise and training for the healthy and diseased individual. The use of exercise for joint and muscle mobility, muscle strength, and cardiopulmonary function is included. Prerequisite: For Physical Therapy majors only.

PTS 572.  **Clinical Kinesiology and Biomechanics**  
4 credits  
Offered Fall Semester  
A study of musculoskeletal structure and function, physiological and biomechanical factor, and principles underlying the kinematics and kinetic of normal and abnormal human motion. Prerequisite: Open to Physical Therapy majors only.

PTS 574.  **Clinical Evaluation**  
3 credits  
Offered Fall Semester  
Basic evaluation skills for patients with various diseases and dysfunctions. Skills include clinical decision making, history taking, postural and functional assessment, surface palpation, manual muscle testing, and goniometric measurement. Classroom instruction and laboratory practice is included. Prerequisite: Physical Therapy majors only.

PTS 575.  **Clinical Decision Making I**  
3 credits  
Offered Spring Semester  
Introduction to physical therapy diagnosis, the disablement model, measurement of function screening, and the Physical Therapy Guide to Practice. Prerequisite: For Physical Therapy majors only.

PTS 595.  **Selected Topics in Physical Therapy**  
1-3 credits  
Offered Spring Semester  
Topics in contemporary physical therapy clinical practice with focus on specialty areas such as neonatal pulmonary care, balance/vestibular dysfunction, geriatrics, pediatrics, obstetrics, and gynecology.
PTS 599. **Independent Study in Physical Therapy**  
1-3 credits  
*Offered Fall Semester*  
Each course is designed to meet special interest demands of students. Prerequisite: For Physical Therapists; permission of the instructor.

PTS 606. **Neurological Evaluation**  
2 credits  
*Offered Fall Semester*  
Comprehensive evaluation of the patient with neurological dysfunction. Emphasis is placed on decision making, differential diagnosis, selection, and interpretation of examination components. Prerequisite: For Physical Therapy majors only.

PTS 610. **Clinical Internship II**  
1 credit  
*Offered Fall Semester*  
Supervised clinical education emphasizing clinical skills. Competence is expected in areas such as analysis of normal and abnormal human motion, exercise, and evaluation and treatment for cardiopulmonary dysfunctions. Prerequisite: Physical Therapy majors only.

PTS 611. **Clinical Internship**  
1 credit  
*Offered Fall Semester*  
Supervised clinical education emphasizing clinical skills. Competence is expected in areas such as evaluation and treatment of extremity dysfunctions, wound care, and neuromuscular dysfunctions. Prerequisite: For Physical Therapy majors only.

PTS 614. **Neurorehabilitation I**  
3 credits  
*Offered Spring Semester*  
The theoretical basis and clinical application of the neurophysiological approaches to treatment. Principles of motor control dynamic systems, sensori-motor development, and integration are presented to include discussion and practice of methods of evaluation and intervention. Treatment principles, approaches, and techniques as advocated by the Bobaths, Rood, Brunnstrom, Knott, and Voss are emphasized. An integrated and symptomatic approach, which reinforces the problem solving/differential diagnosis process involved in client care is utilized. Prerequisite: Open to Physical Therapy majors only.

PTS 615. **Rehabilitation of the Complex Patient**  
3 credits  
*Offered Spring Semester*  
Rehabilitation of the complex patient, including spinal cord injury, traumatic brain injury, multi-system, and multi-organ disease. Prerequisite: Open to Physical Therapy Majors only.

PTS 617. **Clinical Research II**  
3 credits  
*Offered Fall Semester*  
This course is a continuation of Clinical Research I that provides the student with continued guidance in the completion of the faculty led research project begun as part of Clinical Research I. A series of lectures also provide exposure to additional topics relevant to clinical research in Physical Therapy. Potential lecture topics include data analysis, design, error, philosophy of science, and research reporting. Prerequisite: PTS 616; for Physical Therapy majors only.

PTS 618. **Physical Therapy Administration**  
3 credits  
*Offered First and Second Summer Sessions*  
Course discusses physical therapy services, departmental policies and procedures, and personnel management. Issues relevant to clinical practice and the physical therapy profession are emphasized. An administrative project. Prerequisite: For Physical Therapy majors only.

PTS 620. **Biomechanical Basis of Human Movement**  
3 credits  
*Offered Fall Semester*  
A study of the basic biomechanical principles underlying the kinetics and kinematics of normal and abnormal human motion as well as the measurement of human movement. Prerequisite: Open to Physical Therapy majors.
PTS 621. Measurement of Impairment and Function in Human Movement  
3 credits  
Offered Spring Semester  
A study of measurement tools utilized in the analysis of normal and abnormal human motion. Prerequisite: Open to Physical Therapy majors.

PTS 622. Pathobiology of Human Function I  
3 credits  
Pathobiology of musculo-skeletal processes that impair human function including skeletal muscle; skin, tendons, ligaments, cartilage; bone; and cardiorespiratory. Prerequisite: Permission of the instructor.

PTS 624. Cardio-Respiratory Physical Therapy  
3 credits  
Offered Spring Semester  
The skills necessary for the evaluation and treatment of patients with various cardio-respiratory diseases and dysfunctions. Inpatient and outpatient cardiac and respiratory rehabilitation is included. Research on prevention of cardio-respiratory diseases and dysfunctions as it relates to evaluative, and therapeutic methods is also discussed. Course utilizes classroom instruction, individual investigation, laboratory practice, and clinical experience. Prerequisite: For Physical Therapy majors only.

PTS 626. Therapeutic Exercise  
3 credits  
Offered Spring Semester  
A holistic approach to the evaluation, treatment, and management of patients with various neuromuscular diseases and dysfunctions. Appropriate therapeutic exercises interrelated with modalities and self-help devices as well as individual investigation of respective neuromuscular diseases and dysfunctions. Classroom instruction and laboratory practice are included. Prerequisite: For Physical Therapy majors only.

PTS 627. Prosthetics and Orthotics  
3 credits  
Offered Fall Semester  
A holistic approach to the evaluation and management of patients with amputations and spinal cord injuries. Appropriate therapeutic exercises interrelated with self-help appliances as well as individual investigation of respective amputation and spinal cord problems are emphasized. Classroom instruction and laboratory practice are included. Prerequisite: For Physical Therapy majors only.

PTS 628. Orthopedic Assessment and Treatment  
3 credits  
Offered Spring Semester  
The evaluation and treatment of various extremity dysfunctions. Review and investigation of the literature relevant to the hip, knee, ankle, foot, shoulder, elbow, wrist, and hand. Clinical evaluation and treatment procedures are included. Course utilizes classroom instruction, laboratory practice, and clinical experience. Prerequisite: For Physical Therapy majors only.

PTS 629. Management of the Spine  
3 credits  
Offered First Summer Session  
The evaluation and treatment of various spinal dysfunctions. Review and investigation of the literature relevant to the sacro-iliac, lumbar, thoracic, cervical spines, and the head and neck. Clinical evaluation and treatment procedures is included. Course utilizes classroom instruction, laboratory practice, and clinical experience. Prerequisite: For Physical Therapy majors only.

PTS 630. Pediatric Physical Therapy  
2 credits  
Offered Spring Semester  
An overview of factors and issues related to examination and treatment of children by physical therapists. Prerequisite: Open to Physical Therapy majors only.
PTS 631. **Geriatric Physical Therapy**  
**2 credits** *Offered Spring Semester*  
An overview of factors and issues related to examination and treatment of older individuals by physical therapists. Prerequisite: Open to Physical Therapy majors only.

PTS 641. **Seminar in Geriatric Rehabilitation**  
**3 credits** *Offered Spring Semester*  
Geriatric rehabilitation offers many complex themes of inquiry. This seminar selects eight to ten topics to investigate such as: forms of long term care, communication with the confused and depressed, legal and ethical issues, sexuality, drugs and the elderly, nutrition, fitness and wellness, family issues, incontinence, falls, effects of exercise, motivation, and sociological and psychological aspects of aging. Prerequisite: Permission of the instructor.

PTS 644. **Integrated Sports and Leisure**  
**1- 3 credits** *Offered Fall Semester*  
Course promotes the integration of able-bodied students with the physically challenged by working together to learn common recreational activities. Sailing and camping activities are used as an educational tool for able-bodied students to learn the capabilities, physical resources, and assistance required by physically challenged individuals.

PTS 645. **Integumentary Disorders and Treatment**  
**2 credits** *Offered Fall and Spring Semesters*  
Basic and advanced principles regarding the integumentary system and related disorders, as well as principles of wound healing and wound care therapies. Prerequisite: Open to Physical Therapy majors only.

PTS 648. **Advanced Musculoskeletal Rehabilitation**  
**3 credits** *Offered Fall Semester*  
Advanced examination, evaluation, functional assessment and treatment of patients in selected specialty areas of orthopaedic physical therapy. Prerequisite: Open to Physical Therapy majors only.

PTS 650. **Seminar in Obstetrics and Gynecological Physical Therapy**  
**3 credits** *Offered Spring Semester*  
This course focuses on the expanding role of physical therapists in obstetrics and gynecology. Related research is critically analyzed. Prerequisite: Permission of the instructor.

PTS 655. **Neuromuscular Basis of Movement**  
**3 credits** *Offered Spring Semester*  
Concepts of neuromuscular production and regulation of movement with emphasis on neurophysiologic substrates and mechanisms underlying motor behavior. Prerequisite: Open to Physical Therapy majors only, others with permission of instructor.

PTS 660. **Theories of Movement Science**  
**3 credits** *Offered Fall Semester*  
An in-depth review of classical theories and recent research in the movement sciences, to include the study and analysis of system theory and neurobiological substrates. Prerequisite: Permission of the instructor.

PTS 661. **Motor Learning**  
**3 credits** *Offered Spring Semester*  
The factors relating to, and affecting, the acquisition and performance of motor skills. Qualification of skill acquisition and performance are explored. Prerequisite: Permission of the instructor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTS 662.</td>
<td>Advanced Topics in Neurodevelopment</td>
<td>3</td>
<td>Offered By Announcement only</td>
<td>Classical research and systems models of neurodevelopment is reviewed, analyzed, and related to current research on various areas of human development throughout the lifespan. Prerequisite: Permission of the instructor.</td>
</tr>
<tr>
<td>PTS 663.</td>
<td>Interdisciplinary Programming for the Individual with Developmental Disabilities</td>
<td>1-3</td>
<td>Offered Fall Semester</td>
<td>Overview of child development, service delivery models, with an emphasis on intra-disciplinary, multi-disciplinary, inter-disciplinary strategies, and community programming. Prerequisite: Open to physical therapists and graduate physical therapy students, or related health professional students only.</td>
</tr>
<tr>
<td>PTS 665.</td>
<td>Health Promotion and Disease Prevention</td>
<td>2</td>
<td>Offered Spring Semester</td>
<td>The role of physical therapists in health promotion and disease prevention. Prerequisite: Open to Physical Therapy majors only.</td>
</tr>
<tr>
<td>PTS 670.</td>
<td>Education, Delegation, and Supervision in Physical Therapy</td>
<td>2</td>
<td>Offered Spring Semester</td>
<td>Principles of education, delegation, and supervision as pertaining to physical therapy patient care management. Prerequisite: Open to Physical Therapy majors only.</td>
</tr>
<tr>
<td>PTS 671.</td>
<td>Complementary Therapies in Rehabilitation</td>
<td>2</td>
<td>Offered Fall Semester</td>
<td>Historical development and evidence-based approach to complementary therapies in rehabilitation. Prerequisite: Open to Physical Therapy majors only.</td>
</tr>
<tr>
<td>PTS 674.</td>
<td>Educational Administration in Physical Therapy</td>
<td>3</td>
<td>Offered Spring Semester</td>
<td>Review of history and current issues in educational administration of physical therapy programs at the entry-level and post-graduate level. Prerequisite: Permission of the instructor.</td>
</tr>
<tr>
<td>PTS 675.</td>
<td>Clinical Decision Making II</td>
<td>3</td>
<td>Offered Fall Semester</td>
<td>Integration of basic science and clinical science in developing a patient plan of care, with consideration of ethical, psychological, and economic factors. Prerequisite: Open to Physical Therapy majors only.</td>
</tr>
<tr>
<td>PTS 677.</td>
<td>Instructional Methods in Physical Therapy Education</td>
<td>3</td>
<td>Offered Fall Semester</td>
<td>Overview of research in the professional education field, with specific applications to physical therapy academic and clinical education. Emphasis is placed on curriculum development, competency-based instructional design, testing, and instructional evaluation methods. Prerequisite: Admission to the Ph.D. program.</td>
</tr>
<tr>
<td>PTS 678.</td>
<td>Teaching Practicum</td>
<td>1-3</td>
<td>Offered Fall and Spring Semesters and First and Second Summer Sessions</td>
<td>Supervised instructional design, teaching and evaluation of entry level physical therapy students. Students participate as course instructors in entry-level master's degree physical therapy curriculum. Prerequisite: Permission of the instructor.</td>
</tr>
<tr>
<td>PTS 685.</td>
<td>Medical Diagnostic Tests</td>
<td>2</td>
<td>Offered Fall Semester</td>
<td>Basic principles of medical diagnostic tests commonly encountered in physical therapy. Prerequisite: Open to Physical Therapy majors only.</td>
</tr>
</tbody>
</table>
PTS 690. **Physical Therapy Diagnosis**  
3 credits  
*Offered Spring Semester*

Study of the integration of didactic knowledge, clinical skills, and intuitive process into the formation of a clinical diagnosis which will direct treatment in physical therapy. Diagnosis as a process is compared to diagnosis in nursing, psychiatry, and medicine, and distinguished from assessment, examination, and screening. Prerequisite: Open only to practicing physical therapist.

PTS 695. **Clinical Research Methods I**  
3 credits  
*Offered Fall Semester*

An overview of measurement and sampling issues pertaining to clinical research in Physical Therapy. Prerequisite: Permission of instructor.

PTS 696. **Applied Statistics in Physical Therapy**  
3 credits  
*Offered Fall Semester*

Basic Statistics taught from an applied perspective which includes statistical computing using SAS in a mainframe environment and interpretation of SAS output. Prerequisite: Permission of the instructor.

PTS 697. **Clinical Research Methods II**  
3 credits  
*Offered Spring Semester*

A course focusing on issues in research design and analysis pertaining to clinical research in Physical Therapy. Prerequisite: PTS 695, 696, or permission of the instructor.

PTS 698. **Research Practicum**  
3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Practicum designed to familiarize the student with an area of research, to implement a pilot study in an area of interest, and to develop working relationship with a sponsoring faculty member. Prerequisite: Permission of the instructor.

PTS 699. **Independent Study in Physical Therapy**  
1-3 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Each course is designed to meet the needs of graduate students for in-depth study in a particular area of special interest. Prerequisite: Graduate student status; permission of the instructor.

PTS 701. **Role Seminar I**  
1 credit  
*Offered Spring Semester and First and Second Summer Sessions*

Introduction to faculty role in an institution of higher education, including academic career expectations, resource utilization, faculty development, and evaluation systems. Prerequisite: Open to Physical Therapy Ph.D. students only.

PTS 702. **Role Seminar II**  
1 credit  
*Offered Spring Semester and First and Second Summer Sessions*

Course covers leadership training, networking, time management, and coping strategies. Student advising, counseling, and referral strategies are included. Prerequisite: Open to Physical Therapy Ph.D. students only.

PTS 703. **Role Seminar III**  
1 credit  
*Offered Fall Semester*

Initiation of research career and dynamics of research role development within an institution. Grant writing, funding sources, and proposal considerations are also covered. Prerequisite: Open to Physical Therapy Ph.D. students only.
PTS 710. **Master’s Thesis**  
*1- 6 credits*  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  

Required of students working for the Master’s degree. While working on the thesis, students enroll for credit. Credit is awarded when thesis is accepted. Prerequisite: Core courses and electives.

PTS 711. **Evidence-based Project**  
*1 credit*  
*Offered By Announcement only*  

Capstone project for students enrolled in the post-professional Doctor of Physical Therapy Program. Prerequisite: Licensed physical therapists enrolled in the post-professional DPT Program.

PTS 712. **Clinical Internship IV**  
*3 credits*  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  

Supervised clinical education emphasizing clinical skills. Competence is expected in areas such as neurofacilitation techniques, and evaluation and treatment of amputees, central nervous system dysfunctions, and spinal cord dysfunction. Prerequisite: For Physical Therapy majors only.

PTS 713. **Clinical Internship V**  
*1- 3 credits*  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  

Supervised clinical education emphasizing skills previously taught in course sequences. Competence is expected in areas such as conservative management of spinal dysfunctions, growth and development neurofacilitation techniques, central nervous system dysfunctions, clinical administrative procedures, and clinical research techniques. Prerequisite: Must be in the P.T. Masters program.

PTS 720. **Research in Residence**  
*0 credits*  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  

Used to establish research in residence for the thesis for the Master’s Degree after the student has enrolled for the permissible cumulative total in PTS 710. Credit not granted. May be regarded as full time residency. Prerequisite: Core courses, electives, PTS 710.

PTS 725. **Continuous Registration—Master’s Study**  
*0 credits*  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  

To establish residence for non-thesis master’s students who are preparing for examinations or completing other projects. Credit not granted. Regarded as full time residence.

PTS 730. **Doctoral Dissertation**  
*1-12 credits*  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*  

Required of all candidates. The student will enroll for credits as determined by his/her advisor, but not for less than a total of 12. No more than six hours may be taken in a regular semester, nor more than three in a summer session. When a student has passed his/her qualifying exams and is engaged in an Assistantship, he/she may still take the maximum allowable credit stated above. Prerequisite: Permission of instructor.
PTS 743. **Measuring Health Outcomes**

*3 credits*  
Offered Fall and Spring Semesters and First and Second Summer Sessions

An in depth analysis of the use and construction of instruments designed to measure health outcomes. Topics covered include creating and selecting items, scaling responses, scale construction, response bias, reliability, validity, measuring change, and methods of administration. Prerequisite: Permission of instructor.

PTS 750. **Research in Residence**

*0 credits*  
Offered Fall and Spring Semesters and First and Second Summer Sessions

To establish residence for the PhD, or DPT, after the student has been enrolled for the permissible cumulative total in appropriate doctoral research or clinical practice. Credit not granted, may be regarded as full-time residence as determined by the Dean of the Graduate School. Prerequisite: Permission of the Director.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAN 550.</td>
<td><strong>Women in Theatrical Dance</strong></td>
<td>3</td>
<td>Offered By Announcement only</td>
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<td></td>
<td>Offered By Announcement only</td>
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<tr>
<td></td>
<td>Women in Dance; the most prominent dancers and choreographers from the 19th and 20th centuries who helped shape western theatrical dance art. Prerequisite: DAN 250 or 450 or graduate student.</td>
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<tr>
<td>DAN 585.</td>
<td><strong>Methods of Teaching Dance K-12 (Advanced)</strong></td>
<td>3</td>
<td>Offered By Announcement only</td>
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<td></td>
<td>Offered By Announcement only</td>
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<tr>
<td></td>
<td>An advanced study of the Dance curriculum content in a variety of settings including public schools, grades K-12. Prerequisite: DAN 411 or 450 and permission.</td>
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<tr>
<td>MED 540.</td>
<td><strong>Band Workshop</strong></td>
<td>2</td>
<td>Offered Spring Semester</td>
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<tr>
<td></td>
<td>A workshop designed specifically for instrumental conductors. Sessions are devoted to a survey of skills necessary for teacher effectiveness in ensembles, including diagnosing and correcting problems in instrumental performance. Conducting and score analysis is emphasized.</td>
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</tr>
<tr>
<td>MED 541.</td>
<td><strong>Musical Instrument Maintenance</strong></td>
<td>1</td>
<td>Offered Fall Semester and First Summer Session</td>
</tr>
<tr>
<td></td>
<td>Mechanical development, care, and maintenance of musical instruments. Separate sections for wind, percussion, string, and keyboard instruments. Prerequisite: Advanced standing in the department and permission of the instructor.</td>
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</tr>
<tr>
<td>MED 542.</td>
<td><strong>Teaching Elementary General Music (K-5)</strong></td>
<td>3</td>
<td>Offered Fall Semester</td>
</tr>
<tr>
<td></td>
<td>Curriculum, methods, and materials designed for elementary music, K-6. Observation, planning, and teaching experience are emphasized. Prerequisite: Junior standing in MED program.</td>
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</tr>
<tr>
<td>MED 543.</td>
<td><strong>Teaching Elementary and Secondary Instrumental Music</strong></td>
<td>3</td>
<td>Offered Spring Semester</td>
</tr>
<tr>
<td></td>
<td>A study of elementary and secondary instrumental music instruction including program organization, teaching techniques, materials, and field experiences of music instruction in schools. Prerequisite: Junior standing in MED Program.</td>
<td></td>
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</tr>
<tr>
<td>MED 544.</td>
<td><strong>Teaching Secondary General Music (7-12)</strong></td>
<td>2</td>
<td>Offered Spring Semester</td>
</tr>
<tr>
<td></td>
<td>Curriculum, methods, and materials designed for junior/senior high school general music programs. Prerequisite: Junior standing in MED Program.</td>
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<tr>
<td>MED 545.</td>
<td><strong>Music in Rehabilitation</strong></td>
<td>3</td>
<td>Offered Spring Semester</td>
</tr>
<tr>
<td></td>
<td>Review of development and functioning for neurologically-based sensorimotor behavior. Survey of disabilities and diseases that typically result in sensorimotor deficits is included. Demonstration and practice of therapeutic techniques for sensorimotor deficits are also covered. Prerequisite: Music Therapy majors only.</td>
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<tr>
<td>MED 546.</td>
<td><strong>Music Psychotherapy</strong></td>
<td>3</td>
<td>Offered Spring Semester</td>
</tr>
<tr>
<td></td>
<td>Survey and practical application of music as therapy in the treatment of psychiatric disorders and in promoting mental health. Prerequisite: Music Therapy majors only.</td>
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</tr>
</tbody>
</table>
MED 548. **Music for Special Learners**  
*2-3 credits*  
*Offered Fall Semester and First and Second Summer Sessions*
This course is designed for music educators who will be working in schools with children and youth who have various disabilities. The purpose of MED 548 is to acquaint students with the characteristics of children and youth with disabilities, and introduce adaptive strategies in music education, K-12, for instructing children and youth with disabilities.

MED 549. **Teaching Secondary Choral Music**  
*3 credits*  
*Offered Fall Semester*
Course covers curriculum, vocal/rehearsal techniques, and literature. Teaching music in secondary schools through the medium of choral performance. Prerequisite: Junior standing in MED Program.

MED 555. **Elementary Music Workshop**  
*3 credits*  
*Offered First Summer Session*
Course is designed for in-service elementary school classroom teachers and music supervisors. Survey and experience with contemporary methodology and materials in elementary school music education is emphasized.

MED 556. **Secondary General Music Workshop**  
*3 credits*  
*Offered First Summer Session*
Course is designed for teachers of general music classes in middle, junior high, and senior high schools. Practical experience with methods and materials designed for non-performance music classes, grades 7-12 is emphasized.

MED 557. **Choral Music Workshop**  
*2 credits*
Course is designed for teachers, and covers a wide variety of topics related to the choral music experience, such as choral tone, diction, vocal health, and new literature for all voicings helpful for various age levels, elementary through high school. Technical aspects of conducting and performance include the conducting gesture, musical style, and sightreading in the choral rehearsal, utilizing appropriate literature. Each summer, guest artists are featured with a specific focus for the week-long course.

MED 559. **Internship in Music Therapy**  
*3 credits*  
*Offered Fall and Spring Semesters*
Course provides students with a six month opportunity as a music therapy intern in an approved training facility. Prerequisite: Completion of all other coursework requirements for music therapy certification.

MED 560. **Internship in Music Therapy II**  
*0 credits*  
*Offered Fall and Spring Semesters*
Prerequisite: MED 559.

MED 562. **Psychology of Music I**  
*3 credits*  
*Offered Spring Semester and Second Summer Sessions*
Psychological foundations of music with an emphasis on problems of perception, experimental esthetics, functional music, and measurement and diagnosis of musical ability and achievement. Related literature of experimental investigation is reviewed.

MED 570. **Technology in Music Education**  
*3 credits*  
*Offered Fall Semester*
Overview of technology in music teaching. Topics include approaches to computer-aided instruction, the internet, business software uses for music teachers, music printing, sequencing and sampling in performance and teaching, authoring systems and webpage design, and the design of studio and lab environments. Students complete an original research-based or application-based music teaching technology project.
MED 571. Computer Applications in Music Education I
2 credits Offered First Summer Session
Introduction to music software for personal computers. Hands on experience with CAI software as well as other software for program and instructional management is included.

MED 572. Computer Applications in Music Education II
2 credits Offered Spring Semester
Incorporation of computer software into curricular management and instruction. Course is project oriented and may involve computer in development of administrative systems, instructional programs, grading, testing, and other aspects of music education. Prerequisite: MED 571 or permission of instructor.

MED 573. Teaching Music of World Cultures
2-3 credits Offered Spring Semester
The purpose of this course is to acquaint the student with the musical life and culture of the Middle East, India, China, Japan, Africa, and a few of the cultures in the Caribbean Islands; to emphasize the elements of music (melody, rhythm, texture, form, timbre, and dynamics), and familiarize the student with the musical instruments characteristic to the musical life of the countries under discussion; and to select materials and develop strategies appropriate for elementary and secondary school music programs. Prerequisite: Permission of instructor.

MED 575. Preschool Music Workshop
1-3 credits Offered First Summer Session
Workshop is designed to prepare class members to initiate, administer, and teach music programs for preschool children. Materials which address the teacher, the child, and the parent are used. The daily schedule includes demonstration classes with children, lectures, and active participation of and discussion with class members. Emphasis is placed on working with a planning guide for teachers which offers articles on the major areas of the curriculum and clear, succinct statements focusing on the central issues of each lesson. Prerequisite: Permission of instructor.

MED 576. Music and Development
3 credits Offered Fall Semester
Review of development in cognitive, communication, and musical domains. Survey of developmental disabilities most commonly found in child populations is included as well as demonstration and practice of therapeutic techniques for cognitive and communication deficits. Prerequisite: Music Therapy majors only.

MED 577. Music Therapy Workshop
2 credits Offered By Announcement only
Current issues and approaches in the clinical practice of music therapy, designed specifically to provide continuing education for professional music therapists.

MED 578. Suzuki Institute
2 credits Offered Spring Semester
Institute brings certified and master teachers from the tradition, philosophy, and teaching of the celebrated Japanese pedagogue, Shinichi Suzuki, to work with both children and teachers. Children may study violin, viola, cello, and piano. Teachers receive instruction in techniques of Suzuki pedagogy.

MED 581. Teaching Classroom Guitar I
2 credits Offered First Summer Session
This class is designed for students and teachers, guitarist or non-guitarist, who wish to initiate, enhance, and teach guitar in a multi-level classroom setting. The course includes demonstration classes with elementary and secondary students. Topics include organization and teaching performance materials in a hands-on setting. Prerequisite: By permission of the instructor.
MED 582. Teaching Classroom Guitar II
2 credits
Offered First Summer Session
This course is a continuation of MED 581. It prepares the student or teacher, guitarist or non-guitarist, to teach intermediate to advanced levels of guitar in a classroom situation. Topics include technique, musical affects, a survey of didactic works, and repertoire available for both ensemble and solo performance. Prerequisite: MED 581.

MED 593. Special Topics MED
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Music Education. Prerequisite: Permission of the Dean.

MED 599. Practicum in Music
0 credits
Practical professional experience. Prerequisite: Music majors only.

MED 600. Psychoacoustical Foundations of Music
2 credits
Offered Fall Semester
Production, transmission, and reception of simple and complex tones. Examination of physical properties and psychoacoustical response to tonal stimuli is also included.

MED 601. Recital Paper Preparation
1 credit
Offered Fall and Spring Semesters
Supervised preparation of the recital paper required for the Master of Music degree in classical performance. Prerequisite: Completion of two full-time semesters in the MM program in Performance.

MED 602. DMA Essay Proposal
1 credit
Offered Spring Semester
Supervised preparation of the DMA proposal for the Doctor of Musical Arts in Performance, Conducting, or Accompanying and Chamber Music. Prerequisite: Completion of 30 credits toward the DMA.

MED 610. Graduate Forum in Music Therapy
0 credits
Offered By Announcement only
Forum for graduate students to discuss topics relevant to advanced music therapy practice, engage in experiential therapeutic techniques, and to share student efforts of scholarship in the field. Prerequisite: Graduate standing.

MED 615. Graduate Forum
0 credits
Offered By Announcement only
Forum for masters and doctoral students to discuss various topics of relevance to music education practice and to share efforts of scholarship in the field. Prerequisite: Graduate standing.

MED 620. International Music Education
3 credits
Offered Spring Semester
Students study music instruction systems in other countries, including public and private school, community music programs, private music instruction, music conservatory instruction, informal instructional systems, and university work in music. Students compare music instruction systems in the United States and other countries through readings and presentations by native informants. An optional on-site field experience examining music education in another country may be arranged to coincide with this course.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MED 629</td>
<td>Advanced Music Therapy Practice I</td>
<td>3</td>
<td>Spring Semester</td>
<td>Review of research literature in clinical topic areas, such as music and cognition, or music and affective processing. Presentation of research findings through writing and discussion is emphasized as well as the application of research findings through practice and demonstration of therapeutic techniques.</td>
</tr>
<tr>
<td>MED 630</td>
<td>Advanced Music Therapy Practice II</td>
<td>3</td>
<td>Fall and Spring Semesters</td>
<td>Review of research literature in clinical topic areas, such as music and sensorimotor processing or music in biofeedback. Presentation of research findings through writing and discussion is emphasized as well as the application of research findings through practice and demonstration of therapeutic techniques. Prerequisite: MED 629.</td>
</tr>
<tr>
<td>MED 632</td>
<td>Vocal Methods and Materials in Music Education</td>
<td>2</td>
<td>Spring Semester</td>
<td>Survey of latest vocal methods and publications for use in public schools.</td>
</tr>
<tr>
<td>MED 640</td>
<td>Woodwind Techniques</td>
<td>1</td>
<td>Fall Semester and First and Second Summer Sessions</td>
<td>Group instruction in woodwind instruments with emphasis on basic skills of performance as well as the appropriate teaching techniques, methods, and materials necessary for public school pedagogy. Course may be repeated for credit. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>MED 641</td>
<td>Brass Techniques</td>
<td>1</td>
<td>By Announcement only</td>
<td>Group instruction in brass instruments with emphasis on basic skills of performance as well as the appropriate teaching techniques, methods, and materials necessary for public school pedagogy. Course may be repeated for credit. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>MED 642</td>
<td>Percussion Techniques</td>
<td>1</td>
<td>By Announcement only</td>
<td>Group instruction in percussion (snare drum, mallet-keyboard percussion, timpani, drumset, and small accessory instruments) with emphasis upon basic skills of performance as well as the appropriate teaching techniques, methods, and materials necessary for public school pedagogy. Course may be repeated for credit. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>MED 643</td>
<td>String Techniques</td>
<td>1</td>
<td>By Announcement only</td>
<td>The study of stringed instruments (violin, viola, cello, bass) in a heterogeneous class with emphasis on general principles of string playing and teaching methods for use in beginning and intermediate instruction in the schools. Course may be repeated for credit. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>MED 644</td>
<td>Vocal Techniques</td>
<td>1</td>
<td>By Announcement only</td>
<td>Class instruction in fundamentals of singing, breath control, tone production, and solo singing for music majors. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>MED 645</td>
<td>Functional Music Techniques</td>
<td>1</td>
<td>Fall Semester</td>
<td>Group instruction in the functional use of guitar, autoharp, and recorder for classroom or music therapy uses. Functional skill, teaching methods, and materials are emphasized. Prerequisite: Permission of instructor.</td>
</tr>
</tbody>
</table>

1271
MED 647. Seminar in Instrumental Music Education  
2 credits  
Practical study of the development of school band programs with special consideration given to the selection of training and concert materials, rehearsal techniques and administrative procedures.  

MED 659. Practicum in Music Therapy  
2 credits  
Practical application of music therapy in various clinical settings. Prerequisite: MED 629, 630.  

MED 660. History and Philosophy of Music Education  
3 credits  
The history of Western music education beginning with the ancient Greeks is surveyed to the present. Incorporated in the survey is the evolution of philosophical thought about music and its role in educational practice. From this grounding, current philosophical views of music education are presented.  

MED 662. Music Learning and Curriculum  
3 credits  
Survey of theories of music learning and their application to music instruction, curriculum development, and instructional design in music. Prerequisite: Graduate standing.  

MED 663. Music Research Methods  
3 credits  
An introduction to descriptive, experimental, philosophical, qualitative, and historical research in music education and music therapy, with particular reference to data collection, research design, and effective research procedures. Students prepare critiques of research material and are guided in designing original research projects related to their own area of interest. Prerequisite: Graduate standing.  

MED 664. Music Assessment  
3 credits  
Presentation of methods for assessing musical behavior in studios, classrooms, and concert halls. Strategies for the objectification of performance quality, musical learning, capacity, and potential uses of contemporary measurement techniques are provided. Prerequisite: Graduate standing.  

MED 665. Seminar in Music Education  
2 credits  
Survey of literature, bibliography, and contemporary trends in music education. Course may be repeated for credit by doctoral students with consent of instructor. Prerequisite: Graduate standing.  

MED 670. Seminar in Music Teacher Education  
1 credit  
Overview of current issues in music teacher education, teacher education research and scholarship, the study of intern supervision, music education methods course design, and undergraduate music education teaching strategies. Prerequisite: Doctoral standing or permission of instructor.  

MED 673. Music in Early Childhood  
2 credits  
Course provides theoretical foundations, curriculum, methods, and materials appropriate for the teaching of Early Childhood music.  

MED 674. Seminar in General Music  
2 credits  
Course provides curriculum, methods, and materials designed for instruction for the general music student, grades K-12.
MED 675. Practicum in Music Education
6 credits
Offered Fall and Spring Semesters
Students enrolled in the Master of Music with Certification Option Degree may complete the required internship with this course. Prerequisite: Must be employed full-time in a teaching position.

MED 680. Doctoral Seminar
1 credit
Offered By Announcement only
A seminar designed to generate ideas about contemporary theory and practice in music. Students engage in discussion of general research topics, but from the perspective of their particular discipline. Enrollment is intended for those doctoral students who have satisfactorily completed the qualifying examinations through and until receiving approval of the doctoral paper proposal. The course is open to all majors, but is required of all music education doctoral students. Prerequisite: Doctoral standing.

MED 690. Teaching Music in College
1 credit
Offered Fall Semester
An overview of college music curriculum, patterns of administrative organization, traditional and innovative content, styles and resources used in teaching at the college level, evaluation and grading techniques used in classes, lessons, and ensembles.

MED 693. Special Projects
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Projects in any phase of music education in which the student is interested and qualified to work. Prerequisite: Permission of instructor.

MED 694. Special Projects
1-3 credits
Offered Fall and Spring Semesters
Projects in any phase of music education in which the student is interested and qualified to work. Prerequisite: Permission of instructor.

MED 695. Doctoral Research Project
1 credit
Offered Fall and Spring Semesters
Small scale research project in music education or music therapy, suitable for publication. This project could serve as pilot work for the dissertation. Prerequisite: Ph.D. student in music education, MED 663, EPS 553.

MED 701. Internship in Music Therapy
3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Six months as a music therapy intern in an approved training facility. Prerequisite: Completion of all other coursework requirements for music therapy certification.

MED 702. Clinical Supervision
1 credit
Students will gain practical experience by providing clinical supervision to undergraduate music therapy students. Through review of literature and class discussions, students explore issues pertinent to supervision, such as student development, rates of skill acquisition, and supervisory styles. Prerequisite: Admission to doctoral program in music education, with music therapy emphasis.

MED 705. Master’s Project
1-3 credits
Offered Fall Semester
Culminating project for Master of Music in music education students not completing a thesis or recital. Prerequisite: MED 560, 564, 570, 665.
MED 710. Master’s Thesis
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted. Prerequisite: MED 629.

MED 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MED 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MED 725. Doctoral Research Project
1 credit
Offered Fall and Spring Semesters

Small scale research project in music education or music therapy, suitable for publication. This project could serve as pilot work for the dissertation. Prerequisite: Ph.D. student in music education, MED 663, EPS 553.

MED 730. Doctoral Dissertation
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MED 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MED 735. Research for Specialist Project
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

The student working on a research project for the Music Specialist degree enrolls for credit, not to exceed six, as determined by the student’s advisor. Credit is not awarded until the project is completed.

MED 750. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Used to establish research in residence for the Ph.D. and D.M.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

MED 771. Associate Teaching in Elementary School Music
6 credits
Offered Fall and Spring Semesters

A comprehensive program in observation and supervised teaching in elementary school music. The student spends full time for one half a semester in an elementary school, participating in all activities of the music teacher under the guidance of school and university personnel. Prerequisite: Admission to Teacher Candidacy and approval of the Committee on Field Experiences.

MED 773. Associate Teaching in Secondary School Music
6 credits
Offered Fall and Spring Semesters

A comprehensive program in observation and supervised teaching in secondary school music. The student spends full time for one half a semester in a secondary school, participating in all activities of the music teacher under the guidance of school and university personnel. Prerequisite: Admission to Teacher Candidacy and approval of the Committee on Field Experiences.
Music: Instrumental Performance

MIP 539. Brass Chamber Music Institute
2 credits
Institute offers opportunities for brass players to perform in all forms of chamber music—from trios to Brass Choir. Included are master classes on each instrument plus the availability of private instruction from an excellent faculty. The material covered spans the musical periods including recent brass publications.

MIP 541. Bassoon Repertoire and Pedagogy
1-2 credits
Solo and small ensemble literature of the bassoon since 1600. Prerequisite: Advanced standing in music and permission of instructor. May be repeated for credit.

MIP 542. Clarinet Repertoire and Pedagogy
1-2 credits
Solo and small ensemble literature of the clarinet since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 543. Flute Repertoire and Pedagogy
1-2 credits
Solo and small ensemble literature of the flute since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 544. Oboe Repertoire and Pedagogy
1-2 credits
Solo and small ensemble literature of the oboe since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 545. Brass Repertoire and Pedagogy
1-2 credits
Solo and small ensemble literature of brass instruments since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 546. Percussion Repertoire and Pedagogy
1-2 credits
Solo and small ensemble literature of percussion instruments since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 547. Saxophone Repertoire and Pedagogy
1-2 credits
Solo and small ensemble literature of the saxophone since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 548. Guitar Repertoire and Pedagogy
1-2 credits
Solo and small ensemble literature of the guitar since 1600. Prerequisite: Advanced standing in music and permission of instructor. Course may be repeated for credit.

MIP 549. String Repertoire and Pedagogy
1-2 credits
An exploration of teaching string playing. Areas covered include problem-solving and communication techniques, and practical considerations in establishing a teaching studio. Students participate in hands-on teaching opportunities. Prerequisite: Advanced standing in Music and permission of instructor.
MIP 550. Bach Cello Suites
1 credit
Offered Fall Semester
The study and performance of the six suites for unaccompanied cello of Johann Sebastian Bach.

MIP 580. Orchestral Literature
1 credit
Offered Fall and Spring Semesters
The study of the more difficult excerpts from the orchestral literature for violin, viola, violoncello, or double bass. Course may be repeated for credit.

MIP 593. Special Topics MIP
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Instrumental Performance. Prerequisite: Permission of the Dean.

MIP 599. Practicum in Music
0 credits
Practical professional experience. Prerequisite: Music majors only.

MIP 601. MM Recital Program Notes Preparation
1 credit
Offered Fall Semester
Students prepare extensive, original program notes, with bibliography. These notes will be made available to the audience of the second Masters recital. The notes may focus on the historical, analytical and performance aspects of the repertoire for this recital. Required in MM two-recital degree programs. Prerequisite: Enrollment in the Frost School of Music as a Masters candidate in Instrumental Performance in the "Two recital/program notes" track.

MIP 610. Graduate Conducting Seminar
1-2 credits
Offered Fall and Spring Semesters
The graduate conducting seminar is an advanced study of conducting and rehearsal techniques combined with score and ensemble topics. Specific topics vary each semester. May be repeated for credit.

MIP 630. Afro-Caribbean Hand Drumming, Level I
1 credit
Offered Fall and Spring Semesters
The study of hand drumming techniques used to perform the music of Africa and the new world African music that originated in the islands of the Caribbean and the countries of Central and Latin America. Class is taught as a workshop.

MIP 631. Afro-Caribbean Hand Drumming, Level II
1 credit
Offered Fall and Spring Semesters
The study of hand drumming techniques used to perform the music of Africa and the new world African music that originated in the islands of the Caribbean and the countries of Central and Latin America. Level II is a performance ensemble. Prerequisite: MIP 630 or Audition.

MIP 632. Brazilian Batteria
1 credit
Offered Fall and Spring Semesters
Brazilian Batteria workshop is a study of the rhythmic aspects of the popular music of Brazil and the percussion instruments which produce many of the unique sounds which characterize this music. Study is made of the performance techniques of the pure Batteria and the incorporation of these techniques into a contemporary rhythm section.

MIP 633. Cuban Conjunto
1 credit
Offered Fall and Spring Semesters
Cuban Conjunto workshop is a study of the Spanish and Afro traditions which meld together to form much of the Cuban folk repertory. Indigenous percussion instruments are studied together with the dance forms which make up much of this music.
MIP 634. Steel Band/Trinidad
1 credit
Offered By Announcement only
Steel Band/Trinidad reflects the broad musical heritage of the West Indies. Steel Drums (Pans) are combined with other indigenous instruments in the performance of both folk music and transcriptions of standard classical repertory in the tradition of the Trinidad carnival celebration. Level one of this class is taught as a workshop, level two as a performance ensemble. is taught as a performance ensemble.

MIP 635. Percussion Ensemble
1 credit
Offered Fall and Spring Semesters
A performance ensemble for percussion principals and majors. A wide variety of music is studied and performed in both the classical and popular idioms. Several sections of this ensemble are offered each semester to accommodate students of varying skill levels. Prerequisite: By Audition.

MIP 636. Marimba Ensemble
1 credit
Offered Fall and Spring Semesters
Marimba ensemble is a performance ensemble for percussionists with a medium to high level of mallet-keyboard skills. Transcriptions and original music in both classical and popular idioms are performed. Prerequisite: By Audition.

MIP 637. Mallet Ensemble
1 credit
Offered Fall and Spring Semesters
Mallet ensemble is a workshop ensemble for students with beginning mallet/keyboard skills. It serves as a prerequisite for PEC. Areas covered include mallet manipulation and performance of scales, chords, sight reading, and prepared etudes. Prerequisite: By Audition.

MIP 638. Trombone Choir
1 credit
Offered Fall and Spring Semesters
The study and performance of literature for small and large trombone ensembles. Prerequisite: By audition.

MIP 639. Brass Chamber Music
1 credit
Offered Fall and Spring Semesters
The study and performance of literature for small ensembles of similar or mixed brass instruments. Prerequisite: By Audition.

MIP 640. Flute Choir
1 credit
Offered Fall and Spring Semesters
Reading, rehearsing, and performing the flute choir repertoire (duets, trios, quartets, quintets). Prerequisite: By Audition.

MIP 641. Saxophone Ensemble
1 credit
Offered Fall and Spring Semesters
The study and performance of classical and jazz literature for small saxophone ensembles. Prerequisite: By Audition.

MIP 643. Woodwind Chamber Music
1 credit
Offered Fall and Spring Semesters
Exploring the woodwind chamber music repertoire as represented by various combinations of instruments. Prerequisite: By Audition.

MIP 644. Woodwind Chamber Ensemble
1 credit
Offered Fall and Spring Semesters
Woodwind chamber ensemble is designed to give students knowledge of the most important literature for woodwinds through practice, rehearsal, and performance of major works for woodwind chamber ensemble. Prerequisite: By Audition.
MIP 645. String-Keyboard Chamber Music
1 credit
Offered Fall and Spring Semesters
The study and performance of literature from the Baroque Period through the 20th Century for two or more players for string instrumentalists and strings with keyboard. Prerequisite: By Audition.

MIP 650. Seminar in Developing and Sustaining a Career in Music
1 credit
Offered Fall Semester
An overview of key career issues in music performance including the business of music, legal issues, marketing, teaching studios, audience development and grant writing will be presented. Prerequisite: Permission of the instructor.

MIP 655. Seminar in Baroque Performance
1 credit
Offered Fall Semester
Students will present research on compositions representative of the Baroque period. Presentations will include interpretation, style, and historical context of both the composer and the work. Prerequisite: Doctoral standing and permission of the instructor.

MIP 656. Seminar in Classical Performance
1 credit
Offered Spring Semester
Students will present research on compositions representative of the classical period. Presentations will include interpretation, style, and historical context of both the composer and the work. Prerequisite: Doctoral standing and permission of the instructor.

MIP 657. Seminar in Romantic Performance
1 credit
Offered Fall Semester
Students will present research on compositions representative of the Romantic period. Presentations will include interpretation, style, and historical context of both the composer and the work. Prerequisite: Doctoral standing and permission of the instructor.

MIP 658. Seminar in Contemporary Performance
1 credit
Offered Spring Semester
Students will present research on compositions representative of the Contemporary music. Presentations will include interpretation, style, and historical context of both the composer and the work. Prerequisite: Doctoral standing and permission of the instructor.

MIP 670. Marching Band
1 credit
Offered Fall Semester
The “Band of the Hour” Marching Band is open to all qualified undergraduate and graduate students, regardless of major. The band performs at all home Miami Hurricane football games and selected away games. Prerequisite: Audition.

MIP 671. Symphonic Winds
1 credit
Offered Spring Semester
Symphonic Band is a large wind band that performs significant repertoire for wind and percussion instruments. It is open to all qualified undergraduate and graduate students, regardless of major. Prerequisite: Audition.

MIP 674. Brass Choir
1 credit
Offered Fall and Spring Semesters
Major works for Brass Choir are studied. Special emphasis is given to orchestral repertoire. Prerequisite: By audition.

MIP 676. Wind Ensemble
1 credit
Offered Fall and Spring Semesters
This course offers performance opportunities for qualified wind and percussion players. Repertoire includes significant literature written for the small and large wind band. Prerequisite: Audition.
MIP 680. **Symphony Orchestra**  
1 credit  
Offered Fall and Spring Semesters  
The Symphony Orchestra performs significant repertoire for large orchestra. It is open to all qualified graduate students by audition. Prerequisite: By audition.

MIP 681. **Instrumental Conducting Workshop**  
1 credit  
Offered Fall and Spring Semesters  
This course provides practical procedures and materials for beginning and advancing conducting students. Students enrolled in the four-semester sequence demonstrate basic conducting techniques, demonstration of instruments and instrumentation of the wind band and orchestra, and analyze scores for conception, interpretations, rehearsal, and performance. Prerequisite: MTC 112 and 122.

MIP 683. **Greater Miami Symphonic Band**  
1 credit  
Offered Fall and Spring Semesters  
The Greater Miami Symphonic Band is a community wind band that rehearses on the campus of the School of Music. Ensemble members are expected to participate in scheduled rehearsals and concerts which are posted at the beginning of each semester. Enrolled students are expected to pay the GMSB a $25 membership fee and to meet dress requirements. See the instructor for additional information. Prerequisite: By audition.

MIP 691. **Tuba Ensemble**  
1 credit  
Offered Fall and Spring Semesters  
The study and performance of compositions and/or transcriptions written for an ensemble of tubas and/or euphoniums. Prerequisite: By audition.

MIP 692. **Classical Guitar Ensemble**  
1 credit  
Offered Fall and Spring Semesters  
This course focuses on sightreading, rhythm recognition, and ensemble performance through the study of exercise, scales, and diverse repertoire. Prerequisite: By Audition.

MIP 693. **Special Projects**  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Projects in any phase of instrumental performance in which the student is interested and qualified to work. Prerequisite: Permission of instructor.

MIP 694. **Special Projects**  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Projects in any phase of instrumental performance in which the student is interested and qualified to work. Prerequisite: Permission of instructor.

MIP 699. **Contemporary Music Ensemble**  
1 credit  
Offered Fall and Spring Semesters  
An in-depth study and performance of new and standard classical music of the 20th century.

MIP 711. **Master’s Recital Paper**  
1- 3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s recital paper enrolls for credit as determined by his/her advisor. Credit is not awarded until the paper has been accepted.

MIP 712. **Master’s Recital**  
1 credit  
Offered Fall and Spring Semesters  
The student enrolls for recital credit during the semester in which he/she presents the master’s recital.
MIP 713. **Master’s Advanced Recital**
2 credits  
Offered Fall and Spring Semesters
The second recital for those taking the two-recital option in the Master of Music in Instrumental Performance degree. Prerequisite: MIP 712.

MIP 720. **Research in Residence**
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MIP 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MIP 731. **Doctoral Essay**
1-12 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the D.M.A. The student will enroll for credit as determined by his/her advisor, but not for less than a total of 12. Not more than 12 hours of MIP 731 may be taken in a regular semester, nor more than six in a summer session.

MIP 732. **Doctoral Recital**
1-2 credits  
Offered Fall and Spring Semesters
Required of all candidates for the D.M.A.

MIP 750. **Research in Residence**
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D. and D.M.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

MIP BAI. **Bassoon**
1-4 credits  
Prerequisite: Master’s level.  
Offered Fall and Spring Semesters

MIP BAJ. **Bassoon**
1-4 credits  
Prerequisite: Master’s level.  
Offered Fall and Spring Semesters

MIP BAK. **Bassoon**
1-4 credits  
Prerequisite: Master’s level.  
Offered Fall and Spring Semesters and First and Second Summer Sessions

MIP BAL. **Bassoon**
1-4 credits  
Prerequisite: Master’s level.  
Offered Fall and Spring Semesters

MIP BAM. **Bassoon**
1-4 credits  
Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters

MIP BAN. **Bassoon**
1-4 credits  
Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters

MIP BAO. **Bassoon**
1-4 credits  
Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters
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MIP CDK. Conducting 1-4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master's level.

MIP CDL. Conducting 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP CDM. Conducting 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP CDN. Conducting 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP CDO. Conducting 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP CDP. Conducting 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP CDQ. Conducting 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP CDR. Conducting 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP CLI. Clarinet 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP CLJ. Clarinet 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP CLK. Clarinet 1-4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master's level.

MIP CLL. Clarinet 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP CLM. Clarinet 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP CLN. Clarinet 1-4 credits
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MIP CLO. Clarinet 1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.
### MIP CLP. Clarinet

1-4 credits  
Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters

### MIP CLQ. Clarinet

1-4 credits  
Prerequisite: Doctoral level.  
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### MIP CLR. Clarinet

1-4 credits  
Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters

### MIP DBI. Double Bass

1-4 credits  
Prerequisite: Master’s level.  
Offered Fall and Spring Semesters

### MIP DBJ. Double Bass

1-4 credits  
Prerequisite: Master’s level.  
Offered Fall and Spring Semesters

### MIP DBK. Double Bass

1-4 credits  
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Prerequisite: Master’s level.

### MIP DBL. Double Bass

1-4 credits  
Prerequisite: Master’s level.  
Offered Fall and Spring Semesters

### MIP DBM. Double Bass

1-4 credits  
Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters

### MIP DBN. Double Bass

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Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters

### MIP DBO. Double Bass

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Offered Fall and Spring Semesters

### MIP DBP. Double Bass

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Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters

### MIP DBQ. Double Bass

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Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters

### MIP DBR. Double Bass

1-4 credits  
Prerequisite: Doctoral level.  
Offered Fall and Spring Semesters

### MIP FHI. French Horn

1-4 credits  
Prerequisite: Master’s level.  
Offered Fall and Spring Semesters

### MIP FHJ. French Horn

1-4 credits  
Prerequisite: Master’s level.  
Offered Fall and Spring Semesters
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<th>Credits</th>
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MIP HAK. Harp
1-4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master's level.

MIP HAL. Harp
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP HAM. Harp
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP HAN. Harp
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP HAO. Harp
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP HAP. Harp
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP HAQ. Harp
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP HAR. Harp
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP OBI. Oboe
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP OBJ. Oboe
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP OBK. Oboe
1-4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master's level.

MIP OBL. Oboe
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP OBM. Oboe
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP OBN. Oboe
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP OBO. Oboe
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.
MIP OBP. Oboe
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP OBQ. Oboe
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP OBR. Oboe
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP PEI. Percussion
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters

MIP PEJ. Percussion
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters

MIP PEK. Percussion
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters and First and Second Summer Sessions

MIP PEL. Percussion
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters

MIP PEM. Percussion
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP PEN. Percussion
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP PEO. Percussion
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP PEP. Percussion
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP PEQ. Percussion
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP PER. Percussion
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP SAI. Saxophone
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters

MIP SAJ. Saxophone
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters
MIP SAK. Saxophone 1-4 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master's level.

MIP SAL. Saxophone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP SAM. Saxophone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP SAN. Saxophone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP SAO. Saxophone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP SAP. Saxophone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP SAQ. Saxophone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP SAR. Saxophone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP TBI. Trombone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP TBJ. Trombone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP TBK. Trombone 1-4 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master's level.

MIP TBL. Trombone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP TBM. Trombone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP TBN. Trombone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP TBO. Trombone 1-4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.
MIP TBP. Trombone
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP TBQ. Trombone
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP TBR. Trombone
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP TPI. Trumpet
1-4 credits
Prerequisite: Master's level.
Offered Fall and Spring Semesters

MIP TPJ. Trumpet
1-4 credits
Prerequisite: Master's level.
Offered Fall and Spring Semesters

MIP TPK. Trumpet
1-4 credits
Prerequisite: Master's level.
Offered Fall and Spring Semesters and First and Second Summer Sessions

MIP TPL. Trumpet
1-4 credits
Prerequisite: Master's level.
Offered Fall and Spring Semesters

MIP TPM. Trumpet
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP TPN. Trumpet
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP TPO. Trumpet
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP TPP. Trumpet
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP TPQ. Trumpet
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP TPR. Trumpet
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP TUI. Tuba
1-4 credits
Prerequisite: Master's level.
Offered Fall and Spring Semesters

MIP TUJ. Tuba
1-4 credits
Prerequisite: Master's level.
Offered Fall and Spring Semesters
MIP TUK. Tuba
1- 4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master’s level.

MIP TUL. Tuba
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MIP TUM. Tuba
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP TUN. Tuba
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP TUO. Tuba
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP TUP. Tuba
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP TUQ. Tuba
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP TUR. Tuba
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP VAI. Viola
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MIP VAJ. Viola
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MIP VAK. Viola
1- 4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master’s level.

MIP VAL. Viola
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MIP VAM. Viola
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP VAN. Viola
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP VAO. Viola
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.
MIP VAP. Viola
1- 4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP VAQ. Viola
1- 4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP VAR. Viola
1- 4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP VCI. Violoncello
1- 4 credits
Prerequisite: Master's level.
Offered Fall and Spring Semesters

MIP VCJ. Violoncello
1- 4 credits
Prerequisite: Master's level.
Offered Fall and Spring Semesters

MIP VCK. Violoncello
1- 4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master's level.

MIP VCL. Violoncello
1- 4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters

MIP VCM. Violoncello
1- 4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP VCN. Violoncello
1- 4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP VCO. Violoncello
1- 4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP VCP. Violoncello
1- 4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP VCQ. Violoncello
1- 4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP VCR. Violoncello
1- 4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MIP VNI. Violin
1- 4 credits
Graduate Level.
Offered Fall and Spring Semesters

MIP VNJ. Violin
1- 4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters
MIP VNK. Violin
1- 4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master's level.

MIP VNL. Violin
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Master's level.

MIP VNM. Violin
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP VNN. Violin
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP VNO. Violin
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP VNP. Violin
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP VNQ. Violin
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MIP VNR. Violin
1- 4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

Music: Keyboard Performance

MKP 547. Keyboard Pedagogy
1- 2 credits
Offered Fall Semester
Methods and materials for teaching keyboard instruments with a focus on private lesson instruction. Topics include teacher profile, general teaching considerations, the business of teaching, the beginning student, second- and third-year students, teaching materials, and an introduction to new technology in piano teaching. Prerequisite: Permission of instructor.

MKP 589. Keyboard Accompanying Program in Salzburg, Austria
2- 4 credits
Offered Spring Semester
Course is conducted at Salzburg College, Austria. Students receive comprehensive and intensive coaching in piano and accompanying from Dr. Posnak and other internationally acclaimed guest artists. Piano students study piano (2 cr.) and accompanying (1 cr.). Prerequisite: By audition only.

MKP 593. Special Topics MKP
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Keyboard Performance. Prerequisite: Permission of the Dean.

MKP 599. Practicum in Music
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical professional experience. Prerequisite: Music majors only.
MKP 610. Seminar in Baroque Performance  
1 credit  
Offered Fall Semester  
This course is designed as a performance class for graduate DMA piano majors. Class members will be responsible for presentation of major compositions representative of the period. Research will be required for each presentation concentrating on interpretation, stylistic requirements of the period and the historical context of the composers and work. Prerequisite: Permission of the instructor.

MKP 611. Seminar in Classical Performance  
1 credit  
Offered Spring Semester  
This course is designed as a performance class for graduate piano majors. Class members will be responsible for presentation of major compositions representative of the period. Research will be required for each presentation concentrating on interpretation, stylistic requirements of the period and the historical context of the composers and work. Prerequisite: Permission of the instructor.

MKP 612. Seminar in Romantic Performance  
1 credit  
Offered Fall Semester  
This course is designed as a performance class for graduate piano majors. Class members will be responsible for presentation of major compositions representative of the period. Research will be required for each presentation concentrating on interpretation, stylistic requirements of the period and the historical context of the composers and work. Prerequisite: Permission of the instructor.

MKP 613. Seminar in Contemporary Music  
1 credit  
Offered Spring Semester  
This course is designed as a performance class for graduate piano majors. Class members will be responsible for presentation of major compositions representative of the period. Research will be required for each presentation concentrating on interpretation, stylistic requirements of the period and the historical context of the composers and work. Prerequisite: Permission of the instructor.

MKP 647. Seminar in Keyboard Pedagogy  
2 credits  
Offered Fall Semester  
Methods and materials used in the teaching of keyboard instruments with a focus on group instruction. Topics include group lessons, preschool music, college piano classes, teaching literature, learning theories and applications, and the use of educational computer software in piano teaching. Prerequisite: Permission of instructor.

MKP 650. Keyboard Pedagogy Workshop  
1 credit  
Offered Fall and Spring Semesters  
Important topics of current interest within the field of keyboard pedagogy. Course may be repeated for credit. Prerequisite: Permission of instructor.

MKP 680. Keyboard Pedagogy Internship  
2 credits  
Offered Fall and Spring Semesters  
The student team-teaches a piano class or a private student with the instructor. The instructor observes and critiques the student, and the student videotapes themselves and offers critiques of their own teaching. Prerequisite: Permission of instructor.

MKP 685. Musical Theatre Accompanying  
1 credit  
Offered Fall and Spring Semesters  
A class designed to improve the skills of pianists with a particular interest in musical theatre piano accompaniment. Students will study in a classroom setting. Prerequisite: Permission of instructor.
MKP 686. Vocal Accompanying I  
1 credit  
Pianists attend seminars where the principles of accompanying classical and musical theatre singers are addressed. Students are assigned to accompany applied voice lessons and ensembles. Prerequisite: Permission of instructor.

MKP 687. Vocal Accompanying II  
1 credit  
Offered Fall and Spring Semesters  
Pianists attend seminars where the principles of accompanying classical and musical theatre singers are addressed. Students are assigned to accompany applied voice lessons and ensembles. Prerequisite: Permission of instructor.

MKP 688. Graduate Seminar in Accompanying  
1 credit  
Offered Fall and Spring Semesters  
Study and performance of major vocal and chamber music literature as related to the accompanist and chamber musician. Course may be repeated for credit. Prerequisite: Permission of instructor.

MKP 689. Accompanying, Level I  
1 credit  
Offered Fall and Spring Semesters  
Development of sightreading skills and score preparation. Prerequisite: Audition/permission of instructor.

MKP 690. Accompanying, Level II  
1 credit  
Offered Fall and Spring Semesters  
Progressive development of individual vocal/instrumental and ensemble accompanying, sightreading, score reading, and improvising from a lead sheet. Prerequisite: MKP 689 or permission of instructor.

MKP 691. Accompanying, Level III  
1 credit  
Offered Fall and Spring Semesters  
Progressive development of all types of accompaniment skills including clef and score reading, transposition, possible recital, opera theater, choral ensemble, and/or orchestral accompanying. Prerequisite: MKP 190/690 or permission of instructor.

MKP 693. Special Projects  
1-3 credits  
Offered Fall and Spring Semesters  
Projects in any phase of keyboard performance in which the student is interested and qualified to work. Prerequisite: Permission of instructor.

MKP 694. Special Projects  
1-3 credits  
Offered Fall and Spring Semesters  
Projects in any phase of keyboard performance in which the student is interested and qualified to work. Prerequisite: Permission of instructor.

MKP 711. Master’s Recital Paper  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s recital paper enrolls for credit as determined by his/her advisor. Credit is not awarded until the paper has been accepted.

MKP 712. Master’s Recital  
1 credit  
Offered Fall and Spring Semesters  
The student enrolls for recital credit during the semester in which he/she presents the master’s recital.
MKP 713. Master’s Pedagogy Project
1-3 credits
Offered Fall and Spring Semesters
The student working on his/her master’s pedagogy project enrolls for credit as determined by his/her advisor. Credit is not awarded until the project paper is accepted.

MKP 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master's degree after the student has enrolled for the permissible cumulative total in MKP 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MKP 731. Doctoral Essay
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the D.M.A. The student will enroll for credit as determined by his/her advisor, but not for less than a total of 12. Not more than 12 hours of MKP 731 may be taken in a regular semester, nor more than six in a summer session.

MKP 732. Doctoral Recital
1-2 credits
Offered Fall and Spring Semesters
Required of all candidates for the D.M.A.

MKP 750. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D. and D.M.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

MKP HCH. Harpsichord
1-4 credits
Offered Fall and Spring Semesters
1-hour lesson for students enrolled for 2-4 credits. 1/2-hour lesson for students enrolled for 1 credit. Prerequisite: Successful completion of previous level of study.

MKP HCI. Harpsichord
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MKP HCJ. Harpsichord
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MKP HCK. Harpsichord
1-4 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master’s level.

MKP HCL. Harpsichord
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MKP HCM. Harpsichord
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MKP HCN. Harpsichord
1-4 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.
MKP HCO. Harpsichord
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP HCP. Harpsichord
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP HCQ. Harpsichord
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP HCR. Harpsichord
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP ORI. Organ
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters

MKP ORJ. Organ
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters

MKP ORK. Organ
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters and First and Second Summer Sessions

MKP ORL. Organ
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters

MKP ORM. Organ
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP ORN. Organ
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP ORO. Organ
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP ORP. Organ
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP ORQ. Organ
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP ORR. Organ
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MKP PII. Piano
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters
Music Media and Industry

**MMI 501. Transducer Theory**
3 credits
*Offered Spring Semester*
Course covers the fundamentals of electromagnetism and audio transducer theory including loudspeaker and microphone systems. Classical electro-acoustical analysis of transducers including acoustic suspension, bass-reflex, transmission line, electrostatic and horn loudspeakers, dynamic, ribbon and condenser pressure, and pressure-gradient microphones. Students use computer-aided design programs and Thiele-Small parameterization to model loudspeakers and measure loudspeaker responses. Open to MUE and EAN Majors only. Prerequisite: EEN 201, PHY 102 or 205.

**MMI 502. Digital Audio I**
3 credits
*Offered Fall Semester*
A study of the theory and practice of digital audio topics including discrete time sampling, quantization, dithering, PCM, A/D and D/A conversion, digital filtering, oversampling, modulation codes, timebase, error correction codes, magnetic storage, DAT, and optical storage. Prerequisite: MMI 501.
MMI 503. Digital Audio II
3 credits
Offered Spring Semester
A study of the theory and practice of digital audio topics including fiber optics and networks, compact disc, interconnection, psychoacoustics, low bit-rate perceptual coding, MPEG, digital audio broadcasting, sigma-delta conversion, noise shaping, digital video, and emerging technologies. Open to MUE and EAN Majors only. Prerequisite: MMI 502.

MMI 504. Audio Analysis and Synthesis
3 credits
Offered Fall Semester
Theory, design, and development of computer audio synthesizers and analyzers. Students implement software synthesizers including analog and physical modeling, wave-table, wave-shaping, and FM designs. Classical and modern theories of timbre and time-frequency analysis are included. Prerequisite: MMI 503. Open to MUE and MEC Majors only.

MMI 505. Advanced Audio Signal Processing
3 credits
Offered Spring Semester
Theory, design and development of audio signal processing techniques. Topics include DSP architectures, systems design, algorithm development, and applications. DSP development tools used to write, debug, and test programs including time-domain based effects such as reverb, chorus, flanging, and digital delay as well as frequency-domain projects such as FIR, IIR, and FFT filters and vocoders. Prerequisite: MMI 504, Open to MUE Majors only.

MMI 507. Introduction to the Internet
2 credits
Offered Spring Semester
A hands-on introduction to the history, structure, and applications of the Internet. Topics include electronic mail, file transfer (FTP), remote computer access (telnet) file, database retrieval (Archie, WAIS, WWW, Gopher), and discussion groups (USENET, BITNET).

MMI 520. Audio Technology for Musicians
2- 3 credits
Introduction and overview of audio technology with emphasis on music recording, production equipment, and techniques. Topics include microphones, loudspeakers, mixing consoles, interconnection, amplifiers, digital processing, time code, and surround sound. Open to non-MUE majors. Prerequisite: Junior standing and permission of instructor.

MMI 530. Entrepreneurship for Musicians
3 credits
Offered By Announcement only
Course explores a wide range of options for musicians who want to pursue music business careers in their regional music markets. Students examine opportunities in performance, recording, composition, education, and more. Emphasis is placed on the packaging of musical skills in the marketplace and on the financial management of a small proprietary music business. As a result, the student musician will be prepared to make career decisions with foresight and planning.

MMI 573. International Music Publishing
2 credits
Offered Fall Semester
An in-depth study of the international publishing industry with an emphasis on catalog development and exploitation. Prerequisite: MMI 173; MBEI majors and minors only.
MMI 574. A & R Administration and Music Licensing
3 credits  
Offered Spring Semester
An in-depth study of the budgeting and administrative procedures employed in the music industry. Topics include artist and repertoire administration, session budgeting, compilation albums, release schedules, master license agreement, business affairs, and industry ethics. Preproduction, production, and postproduction responsibilities are also included and special consideration is given to the artist recording contract. Prerequisite: MMI 173; junior standing; MBEI majors and minors only.

MMI 575. Entertainment Industry Contract Basics
3 credits  
Offered Fall Semester
Business relations between the record company, artist, producer and licensees, both domestic and foreign. Analysis of actual contracts between parties, implication of newer technology on the industry. Prerequisite: MMI 173; senior standing; MBEI majors and minors only.

MMI 578. Royalties in the Recorded Music Industry
1 credit  
Offered Spring Semester
A practical study of royalty payment formulas and procedures used in the recorded music industry. Prerequisite: MBEI majors only.

MMI 593. Special Topics MMI
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Music Media and Industry. Prerequisite: Permission of the Dean.

MMI 599. Practicum in Music
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical professional experience. Prerequisite: Music majors only.

MMI 601. Advanced Digital Audio Electronics
3 credits  
Offered Fall Semester
Topics in digital audio including discrete time signals, digital filters, error digital audio processors, FFT, CIRC, and digital recorders are discussed. Prerequisite: MMI 401, graduate standing.

MMI 602. Audio-Video Systems
3 credits  
Offered Spring Semester
Compatibility and interface requirements for video, analog, and digital audio systems. Integration of disparate components for optimum systems performance is discussed.

MMI 606. Current Topics in Audio Analysis and Signal Processing
3 credits  
Offered Spring Semester
MMI 606 surveys recent topics related to audio analysis, synthesis, and signal processing with an emphasis in software programming and practical applications. Course material is drawn from several topics: current audio APIs and plug-in architectures, computational theories of musical timbre, machine listening, spatial audio, digital audio effects, new digital audio synthesis techniques, and machine-musician interaction modalities. Prerequisite: MMI 601

MMI 650. Music Industry Agreements
3 credits  
Offered Fall Semester
A study of various music industry agreements and how they affect the artist and songwriter. Recording, music publishing, and personal management agreements are analyzed and discussed. Topics include negotiation considerations, deal oints, record company economics, and profitability. Prerequisite: Graduate MBEI Majors only or permission of instructor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMI 651</td>
<td><strong>Recording Studio Workshop</strong></td>
<td>1</td>
<td>Fall Semester</td>
<td>Introduction to the multi track recording studio environment. Hands-on lectures and labs including tracking, overdub and mixdown session management, techniques, and philosophies are included. Topics also include audio routing, equalization, effects, and microphone technique. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>MMI 652</td>
<td><strong>International Music Licensing</strong></td>
<td>3</td>
<td>Spring Semester</td>
<td>Advanced music industry concepts and problems in music licensing. Personal rights and most varieties of music licenses and international licensing concepts are covered. Students acquire practical experience utilizing licensing parameters. Prerequisite: Open to graduate MBEI majors only or permission of instructor.</td>
</tr>
<tr>
<td>MMI 653</td>
<td><strong>Transducer Workshop</strong></td>
<td>1</td>
<td>Spring Semester</td>
<td>Fundamentals of electromagnetism and audio transducer theory including loudspeaker and microphone systems. Classical electro-acoustical analysis of transducers including acoustic suspensions, bass-reflex, transmission line, electrostatic and horn loudspeakers, dynamic, ribbon and condenser pressure, and pressure-gradient microphones. Students use computer-aided design programs and Thiele-Small parameterization to model loudspeakers and measure loudspeaker responses. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>MMI 660</td>
<td><strong>Ensemble Recording Workshop I</strong></td>
<td>1</td>
<td>By Announcement only</td>
<td>Assisting recording and sound reinforcement engineers in the assigned performance ensemble in both rehearsal and performance. Students also perform in a studio ensemble where they act as both recording engineer and musician. Open to MUE majors only. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>MMI 661</td>
<td><strong>Ensemble Recording Workshop II</strong></td>
<td>1</td>
<td>By Announcement only</td>
<td>Students are responsible for the audio needs of an assigned ensemble in both rehearsal and performance. Lectures cover audio equipment and practices. Students also perform in a studio ensemble where they act as the recording engineer and musician. Open to MUE majors only. Prerequisite: MMI 660. Permission of instructor.</td>
</tr>
<tr>
<td>MMI 662</td>
<td><strong>Ensemble Recording Workshop III</strong></td>
<td>1</td>
<td>By Announcement only</td>
<td>Students work in the recording studio, engineering digital multi-track recordings, and mix-downs of advanced jazz and composition ensembles. Open to MUE majors only. Prerequisite: MMI 661. Permission of instructor.</td>
</tr>
<tr>
<td>MMI 670</td>
<td><strong>Audio Design Workshop I</strong></td>
<td>1</td>
<td>By Announcement only</td>
<td>Course covers the fundamentals of audio system design and architecture including equipment specifications and studio installation techniques. Students design and troubleshoot audio projects. Open to MUE majors only. Prerequisite: Permission of instructor.</td>
</tr>
<tr>
<td>MMI 671</td>
<td><strong>Audio Design Workshop II</strong></td>
<td>1</td>
<td>By Announcement only</td>
<td>Analog audio system design and architecture including dynamics processing, amplifier and filter theory, balanced and single-ended systems, circuits, and advanced equipment specifications. Students design and troubleshoot audio projects including microphone pre-amps, equalizers, noise gates, and power amplifiers. Open to MUE Majors only. Prerequisite: PHY 205, EEN 305. Permission of instructor.</td>
</tr>
</tbody>
</table>
**MMI 672. Audio Design Workshop III**  
1 credit  
Offered By Announcement only  
Digital audio system design and architecture including analog-digital conversion, digital I/O hardware specifications, audio effects processors and digital audio re-order alignment techniques. Students design and troubleshoot audio projects including A/D converters, S/PDIF I/O, and DAT recorders. Open to MUE Majors only. Prerequisite: MMI 671.

**MMI 673. Music Publishing Practicum**  
1 credit  
The course focuses on practical techniques and procedures employed by music publishers in acquiring, exploiting and administering music copyrights. Prerequisite: MBEI graduate students only.

**MMI 674. Music Copyright Law**  
2 credits  
A study of the essential provisions of the 1976 Copyright Act and subsequent amendments and revisions. Students examine the unique complexities of copyright law as it relates to the music industry. Prerequisite: None. Permission of instructor required for non-MBEI graduate students.

**MMI 678. Publishing and Record Industry Royalties**  
1 credit  
An in depth study of royalty payment procedures used in the music industry. Prerequisite: MBEI graduate students only.

**MMI 693. Special Projects**  
1-3 credits  
Offered Fall and Spring Semesters  
Projects in any phase of music media and industry in which the student is interested and qualified to work. Prerequisite: Graduate Music students only. Dean’s approval and signature required.

**MMI 694. Special Projects**  
1-3 credits  
Offered Fall and Spring Semesters  
Projects in any phase of music media and industry in which the student is interested and qualified to work. Prerequisite: Permission of instructor.

**MMI 702. Internship in Music Industry**  
2-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Practical experience in different areas of the music industry under supervision of professional firms. Open only to Music Industry majors. Prerequisite: Graduate MBEI Majors only.

**MMI 713. Master’s Research Project**  
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
The student working on his/her master’s research project enrolls for credit as determined by his/her advisor. Credit is not awarded until the project paper is accepted.

**MMI 720. Research in Residence**  
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MMI 710 (usually six credits). Credit not granted. May be regarded as full time residence.
Musicology

MCY 520. History and Literature of the Wind Band
3 credits  
Offered Spring Semester
An historical survey of wind band literature, the evolution of the military band, the wind band, and the wind orchestra. Prerequisite: Advanced standing.

MCY 521. Symphonic Literature
3 credits  
Offered Fall Semester
A survey of orchestral music from the end of the seventeenth century to the present.

MCY 522. Operatic Literature
3 credits  
Offered Spring Semester
The history and literature of opera from the end of the sixteenth century to the present.

MCY 524. Contemporary Music
3 credits  
Offered Fall Semester
Music of the 20th century, with emphasis on developments since 1945. Prerequisite: Permission of instructor.

MCY 525. Art Song Literature
3 credits  
Offered Fall Semester
A survey of the solo vocal literature from the 16th century to the present, with particular emphasis on the 19th-century French and German repertoire. Prerequisite: Permission of instructor.

MCY 526. Keyboard Literature I
3 credits  
Offered Fall Semester
A survey of keyboard literature from its beginning to approximately 1750 emphasizing changes in styles of writing and expression, development of techniques suited to the primary instruments in use (including the early organ, clavichord, harpsichord and fortepiano), ornamentation both specified and improvised, forms, and ideas for interpretation based on historical sources. Prerequisite: Permission of instructor.

MCY 527. Keyboard Literature II
3 credits  
Offered Spring Semester
A survey of solo keyboard literature from approximately 1750 to the present emphasizing changes in styles of writing and expression, development of technique suited to the primary instruments in use (including the clavichord, harpsichord, fortepiano and modern piano), embellishment both specified and improvised, forms, and ideas for interpretation based on historical sources (including facsimiles, printed scores, written records and sound recordings, particularly those by the composers themselves). Prerequisite: Permission of instructor.

MCY 528. Music Bibliography
3 credits  
Offered Fall Semester
Course presents research materials, including dictionaries, encyclopedias, historical collections, scholarly editions, complete works, books, articles, and lists dealing with specialized areas of music history and literature. Prerequisite: Graduate standing, or permission of instructor.

MCY 529. Music of the Baroque Period
3 credits  
Offered Spring Semester
Literature and history of music from the end of the sixteenth to the middle of the eighteenth centuries. Prerequisite: Six credits of undergraduate music history.
MCY 530. Music of the Classical Period  
3 credits  
Offered Fall and Spring Semesters and Second Summer Session  
The musical styles which developed between the mid-eighteenth century and the nineteenth century. Prerequisite: Permission of instructor.

MCY 532. History of Chamber Music  
3 credits  
Offered Spring Semester  
Styles and forms in chamber music literature from the seventeenth century to the present. Prerequisite: Permission of instructor.

MCY 533. Music of the Romantic Period  
3 credits  
Offered Fall Semester  
The musical styles which developed during the nineteenth century. Prerequisite: Senior standing or permission of instructor.

MCY 535. Choral Literature I  
2 credits  
Offered Fall Semester  
Choral music of the sixteenth through the eighteenth centuries. A combination of lecture-discussion and class performance. Prerequisite: Permission of instructor.

MCY 536. Choral Literature II  
2 credits  
Offered Fall Semester  
Choral music of the nineteenth and twentieth centuries. A combination of lecture-discussion and class performance. Prerequisite: Permission of instructor.

MCY 537. Music in the United States  
3 credits  
Offered Spring Semester  
A survey of music in the United States from colonial times to the present, with emphasis on the social, economic, and political conditions which affected it. Art music (sacred and secular), popular music in all idioms, the music industry as it evolved in the U.S., and the influence of American music on the music of other countries. Prerequisite: Permission of instructor.

MCY 539. Special Topics in Musicology  
2 credits  
Offered Fall Semester  
Subject matter offerings based upon student demand and availability of faculty. The topic to be announced in the class schedule. May be repeated if the course may be repeated if the content is different.

MCY 541. Music of the Mediaeval, Renaissance, and Baroque Periods  
3 credits  
Offered Fall Semester and First Summer Session  
A comprehensive, in-depth study of the musical styles and genres of the Mediaeval, Renaissance, and Baroque Eras. Important musical figures of these periods and analytical studies of important pieces of music from these periods are addressed. Prerequisite: Music major or permission of instructor.

MCY 542. Music of the Classical, Romantic, and Modern Periods  
3 credits  
Offered Spring Semester and Second Summer Sessions  
A comprehensive, in-depth study of the musical styles and genres of the Classical, Romantic, and Modern Eras of important musical figures of these periods, and analytical studies of important pieces of music from these periods. Prerequisite: Music major, or permission of instructor.

MCY 553. Miami’s Musical Heritage  
3 credits  
Offered Spring Semester and First Summer Session  
A study of the musical traditions and practices of the various cultures that are part of Miami’s unique multi-ethnic society.
MCY 554. Music Cultures of the World
3 credits
Offered Spring Semester
A study of music culture, ranging from the music of non-literate and folk societies through Asian art music. Open to non-majors. Prerequisite: Permission of instructor.

MCY 583. History of the American Musical Theatre
3 credits
Offered Fall and Spring Semesters
An examination of the development of musical theatre from its European opera and operetta background to an indigenous American art form. The areas to be explored include the rise and fall of various genre of musical shows, integration of story, song and dance, important producers, directors, lyricists, composers, and new fields such as director-choreographer. The development of an American cultural consciousness and political and socio-economic trends of various decades that greatly influenced the content and form of musical shows is also examined.

MCY 593. Special Topics MCY
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Musicology. Prerequisite: Permission of the Dean.

MCY 599. Practicum in Music
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical professional experience. Prerequisite: Music majors only.

MCY 693. Special Projects
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Projects in any phase of music literature and history in which the student is interested and qualified to work. Prerequisite: Graduate Music student only. Dean’s approval and signature required.

MCY 694. Special Projects
1-3 credits
Offered Fall and Spring Semesters
Projects in any phase of music literature and history in which the student is interested and qualified to work. Prerequisite: Graduate Music students only. Dean’s approval and signature required.

MCY 710. Master’s Thesis
1-6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MCY 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MCY 710 (usually six credits). Credit not granted. May be regarded as full time residence.
MCY 730. **Doctoral Dissertation**  
1-12 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MCY 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.

MCY 750. **Research in Residence**  
0 credits  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Used to establish research in residence for the Ph.D. and D.M.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Studio Music and Jazz**

MSJ 509. **Jazz Composition I**  
2 credits  
*Offered Fall Semester*

Application of advanced composition techniques to various contemporary Jazz styles making extensive use of analysis of established compositions. Emphasis is placed on small group performance. Prerequisite: MTC 211 and MSJ JPD or permission of instructor.

MSJ 510. **Jazz Composition II**  
2 credits  
*Offered Spring Semester*

This course is a continuation of MSJ 500 with an emphasis on melody writing, reharmonization techniques, pentatonic/blues composition, and an introduction to advanced harmonic materials. Prerequisite: MSJ 509.

MSJ 516. **Jazz Vocal Arranging**  
2 credits  
*Offered Fall Semester*

Analysis and techniques of jazz vocal writing. Prerequisite: MSJ 519.

MSJ 519. **Advanced Modern Arranging I**  
3 credits  
*Offered Fall Semester*

Advanced arranging and composition for the Jazz and studio ensemble. Prerequisite: Permission of instructor.

MSJ 520. **Advanced Modern Arranging II**  
3 credits  
*Offered Spring Semester*

Advanced arranging and composition for the Jazz and studio ensemble. Prerequisite: Permission of instructor.

MSJ 521. **Advanced Modern Arranging III**  
3 credits  
*Offered Spring Semester*

Course addresses scoring for large jazz ensemble, utilizing chord scale voicings and line writing techniques. Emphasis is placed on orchestration styles such as Duke Ellington, Gil Evans, and Thad Jones. Prerequisite: Permission of instructor.

MSJ 522. **Introduction to Midi Sequencing and Digital Workstations**  
2 credits  
*Offered Fall and Spring Semesters*

An introduction to Midi Sequencing with hands-on experience working with a computer sequencing workstation. Topics include sequencing, quantizing, editing, mixing, and effects processing. Prerequisite: MSJ 519/520 or permission of instructor.
MSJ 544. **Jazz Pedagogy and Administration**
3 credits  
Offered Spring Semester
The philosophy, methods, and materials of instruction pertinent to the teaching and management of a jazz and commercial curriculum at the high school and college level. Includes preparation of model curricula and supervised instruction. Prerequisite: MSJ 565 and 620 or permission of instructor.

MSJ 560. **Advanced Jazz Improvisation Theory**
3 credits  
Offered Fall and Spring Semesters
Review of fundamentals and introduction of advanced topics in jazz harmony and scale resources for improvisation. Prerequisite: Placement audition and permission of instructor.

MSJ 565. **Advanced Improvisation I**
3 credits  
Offered Fall Semester
Use of stylistic nuance with emphasis on melodic development, complex harmonies, time-feel, and phrasing. Open only to senior or graduate majors in Studio Music and Jazz. Prerequisite: MSJ 372 and JPD or permission of instructor.

MSJ 566. **Advanced Improvisation II**
3 credits  
Offered Spring Semester
Refinement of improvisation concepts leading towards the establishment of a personal style of playing. Open only to senior or graduate majors in Studio Music and Jazz. Prerequisite: MSJ 565 or permission of instructor.

MSJ 589. **Jazz Accompanying**
2 credits  
Offered By Announcement only
A comprehensive study in accompaniment concepts for pianists/guitarists reflecting contemporary and traditional jazz styles. Prerequisite: Permission of instructor.

MSJ 593. **Special Topics MSJ**
1-3 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Studio Music and Jazz. Prerequisite: Permission of the Dean.

MSJ 599. **Practicum in Music**
0 credits  
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical professional experience. Prerequisite: Music majors only.

MSJ 603. **Jazz Piano Class I**
1 credit  
Offered Fall and Spring Semesters
Prerequisite: Placement Audition.

MSJ 604. **Jazz Piano Class II**
1 credit  
Offered Fall and Spring Semesters
Prerequisite: MSJ 603 or placement audition.

MSJ 605. **Jazz Piano Class III**
1 credit  
Offered Fall and Spring Semesters
Prerequisite: MSJ 604 or placement audition.

MSJ 606. **Jazz Piano Class IV**
1 credit  
Offered Fall and Spring Semesters
Prerequisite: MSJ 605 or placement audition.

MSJ 614. **Advanced Orchestration**
3 credits  
Offered Fall Semester
Techniques for scoring for the modern symphony orchestra. Prerequisite: MSJ 519, 520, MTC 416 or by permission of instructor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSJ 615.</td>
<td>Jazz Composition Seminar I</td>
<td>2</td>
<td>Fall Semester</td>
</tr>
<tr>
<td>MSJ 616.</td>
<td>Jazz Composition II</td>
<td>2</td>
<td>Spring Semester</td>
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<tr>
<td>MSJ 620.</td>
<td>Analysis of Jazz Styles</td>
<td>3</td>
<td>Fall Semester</td>
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<tr>
<td>MSJ 626.</td>
<td>Jazz Piano Trio Class</td>
<td>1</td>
<td>Fall Semester</td>
</tr>
<tr>
<td>MSJ 627.</td>
<td>Jazz Rhythm Section Techniques</td>
<td>1</td>
<td>By Announcement only</td>
</tr>
<tr>
<td>MSJ 633.</td>
<td>Jazz Keyboard Ensemble</td>
<td>1</td>
<td>By Announcement only</td>
</tr>
<tr>
<td>MSJ 634.</td>
<td>E.C.M. Ensemble</td>
<td>1</td>
<td>Fall and Spring Semesters</td>
</tr>
<tr>
<td>MSJ 638.</td>
<td>Vocal Recording Ensemble</td>
<td>1</td>
<td>Fall and Spring Semesters</td>
</tr>
<tr>
<td>MSJ 639.</td>
<td>Small Jazz Vocal Ensemble</td>
<td>1</td>
<td>Fall and Spring Semesters</td>
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<tr>
<td>MSJ 640.</td>
<td>Small Jazz Ensemble</td>
<td>1</td>
<td>Fall and Spring Semesters</td>
</tr>
<tr>
<td>MSJ 641.</td>
<td>Small Jazz Ensemble I</td>
<td>1</td>
<td>Fall and Spring Semesters</td>
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<tr>
<td>MSJ 642.</td>
<td>Small Jazz Ensemble II</td>
<td>1</td>
<td>Fall and Spring Semesters</td>
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<tr>
<td>MSJ 643.</td>
<td>Small Jazz Ensemble III</td>
<td>1</td>
<td>Fall and Spring Semesters</td>
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<tr>
<td>MSJ 644.</td>
<td>Small Jazz Ensemble IV</td>
<td>1</td>
<td>Fall and Spring Semesters</td>
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<tr>
<td>MSJ 645.</td>
<td>Small Jazz Ensemble V</td>
<td>1</td>
<td>Fall and Spring Semesters</td>
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</table>
MSJ 646. Small Jazz Ensemble VI  
1 credit  
Offered Fall and Spring Semesters

MSJ 647. Small Jazz Ensemble VII  
1 credit  
Offered Fall and Spring Semesters

MSJ 648. Studio Rhythm Section  
1 credit  
Offered Fall and Spring Semesters

MSJ 650. Studio Jazz Band  
1 credit  
Prerequisite: By Audition.  
Offered Fall and Spring Semesters

MSJ 651. Concert Jazz Band  
1 credit  
Prerequisite: By Audition.  
Offered Fall and Spring Semesters

MSJ 652. Jazz Band II  
1 credit  
Prerequisite: By Audition.  
Offered Fall and Spring Semesters

MSJ 653. Jazz Band III  
1 credit  
Prerequisite: By Audition.  
Offered Fall and Spring Semesters

MSJ 655. Monk/Mingus Ensemble  
1 credit  
Offered Fall Semester  
This ensemble is dedicated to the study and performance of the music of the influential jazz composers Charles Mingus and Thelonious Monk. Prerequisite: By audition.

MSJ 656. Funk/Fusion Ensemble  
1 credit  
Offered Fall and Spring Semesters  
Small jazz ensemble focusing on contemporary electric jazz/rock/fusion/Latin styles. Emphasis is placed on original compositions by the members of the ensemble. The most common instrumentation is bass, drums, piano/synthesizer, guitar, and saxophone. Prerequisite: Audition.

MSJ 657. Horace Silver Ensemble  
1 credit  
Offered Spring Semester  
This ensemble is dedicated to the study and performance of the music of Horace Silver. Prerequisite: Audition.

MSJ 658. Bebop Ensemble  
1 credit  
Prerequisite: By Audition.  
Offered Fall and Spring Semesters

MSJ 659. Rock Ensemble  
1 credit  
Prerequisite: By Audition.  
Offered Fall and Spring Semesters

MSJ 660. Avant Garde Ensemble  
1 credit  
Offered Fall and Spring Semesters  
This ensemble offers students the opportunity to develop the “free form” improvisation in either the bebop based style of Ornette Coleman or the fusion oriented style as typified by Bill Laswell. Prerequisite: Audition.

MSJ 661. Electric Bass Ensemble  
1 credit  
Prerequisite: By Audition.  
Offered Fall and Spring Semesters
MSJ 662. Jazz Saxophone Ensemble
1 credit
Offered Fall and Spring Semesters
Prerequisite: By Audition.

MSJ 664. Contemporary Rhythm Section Techniques I
1 credit
Offered Fall and Spring Semesters

MSJ 665. Contemporary Rhythm Section Techniques II
1 credit
Offered Fall and Spring Semesters
Fundamentals of rhythm section playing for guitarists, pianists, bassists, and drummers. It covers a variety of contemporary styles within the rock, jazz, Latin, and pop idioms. Students are grouped into ensembles which perform in class weekly. Prerequisite: By audition.

MSJ 666. Small Jazz Ensemble Lab
0 credits
Offered Fall and Spring Semesters
Prerequisite: By Audition.

MSJ 667. Salsa Ensemble
1 credit
Offered Spring Semester

MSJ 669. Jazz Guitar Ensemble I
1 credit
Offered Fall and Spring Semesters
A small instrumental ensemble comprised of five electric guitars which perform with bass and drums in a wide variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 670. Jazz Guitar Ensemble II
1 credit
Offered Fall and Spring Semesters
A small instrumental ensemble comprised of five electric guitars which perform with bass and drums in a wide variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 671. Jazz Guitar Ensemble III
1 credit
Offered Fall and Spring Semesters
A small instrumental ensemble comprised of five electric guitars which perform with bass and drums in a wide variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 672. Jazz Guitar Ensemble (Workshop I)
1 credit
Offered Fall and Spring Semesters
A small instrumental reading ensemble, comprised of four to eight electric guitars, which studies a variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 673. Jazz Guitar Ensemble (Workshop II)
1 credit
Offered By Announcement only
A small instrumental reading ensemble, comprised of four to eight electric guitars, which studies a variety of contemporary jazz styles. Prerequisite: By audition.

MSJ 675. Jazz Writing Ensemble
1 credit
Offered By Announcement only
Prerequisite: Permission of instructor.

MSJ 693. Special Projects
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Projects in any phase of studio music and jazz in which the student is interested and qualified to work. Prerequisite: Permission of instructor.
MSJ 694. Special Projects
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Projects in any phase of studio music and jazz in which the student is interested and qualified to work. Prerequisite: Permission of instructor.

MSJ 695. Jazz Vocal Ensemble I
1 credit
Offered Fall and Spring Semesters
A choir of 12 to 16 voices, with rhythm section, which perform a wide variety of jazz and pop styles. Prerequisite: Permission of conductor.

MSJ 696. Jazz Vocal Ensemble II
1 credit
Offered Fall and Spring Semesters
A choir of 12 to 16 voices, with rhythm section, which perform a wide variety of jazz and pop styles. Prerequisite: Permission of conductor.

MSJ 697. Jazz Vocal Ensemble III
1 credit
Offered Fall and Spring Semesters
A choir of 12 to 16 voices, with rhythm section, which perform a wide variety of jazz and pop styles. Prerequisite: Permission of instructor.

MSJ 698. Synthesizer Ensemble
1 credit
Offered Fall and Spring Semesters

MSJ 711. Master’s Recital Paper
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her recital paper enrolls for credit as determined by his/her advisor. Credit is not awarded until the paper has been accepted.

MSJ 712. Master’s Recital
1 credit
Offered Fall and Spring Semesters
The student enrolls for recital credit during the semester in which he/she presents the master’s recital.

MSJ 713. Master’s Jazz Writing Project
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her master’s jazz writing project enrolls for credit as determined by his/her advisor. Credit is not awarded until the project paper is accepted.

MSJ 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MSJ 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MSJ 731. Doctoral Essay
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates of the D.M.A. The student will enroll for credit as determined by his/her advisor, but not for less than a total of 12. Not more than 12 hours of MSJ 731 may be taken in a regular semester, nor more than six in a summer session.

MSJ 732. Doctoral Recital
1 credit
Offered Fall and Spring Semesters
Required of all candidates for the D.M.A.
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<th>Prerequisite</th>
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<tr>
<td>MSJ 750.</td>
<td>Research in Residence</td>
<td>0</td>
<td>Fall and Spring Semesters and</td>
<td>Master's level</td>
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<td>First and Second Summer Sessions</td>
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<tr>
<td>MSJ JBI.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Master's level</td>
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<td>MSJ JBJ.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Master's level</td>
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<tr>
<td>MSJ JBK.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Master's level</td>
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<tr>
<td>MSJ JBL.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Master's level</td>
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<tr>
<td>MSJ JBM.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Doctoral level</td>
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<tr>
<td>MSJ JBN.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Doctoral level</td>
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<tr>
<td>MSJ JBO.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Doctoral level</td>
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<tr>
<td>MSJ JBP.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Doctoral level</td>
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<td>MSJ JBQ.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Doctoral level</td>
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<tr>
<td>MSJ JBR.</td>
<td>Jazz Bass</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Doctoral level</td>
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<td>MSJ JDI.</td>
<td>Jazz Drumset</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Master's level</td>
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<td>MSJ JDJ.</td>
<td>Jazz Drumset</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Master's level</td>
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<tr>
<td>MSJ JDK.</td>
<td>Jazz Drumset</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Master's level</td>
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<td>Credits</td>
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<tr>
<td>MSJ JDL</td>
<td>Jazz Drumset</td>
<td>1-3</td>
<td>Fall and Spring Semesters</td>
<td>Master's level</td>
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<tr>
<td>MSJ JDM</td>
<td>Jazz Drumset</td>
<td>1-3</td>
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<td>MSJ JDN</td>
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<td>MSJ JGN</td>
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MSJ JGQ. Jazz Guitar
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MSJ JGR. Jazz Guitar
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MSJ JPI. Jazz Piano
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MSJ JPK. Jazz Piano
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master’s level.

MSJ JPL. Jazz Piano
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MSJ JPM. Jazz Piano
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MSJ JPN. Jazz Piano
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MSJ JPO. Jazz Piano
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MSJ JPP. Jazz Piano
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MSJ JPQ. Jazz Piano
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MSJ JPR. Jazz Piano
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MSJ JSI. Jazz Saxophone
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MSJ JSJ. Jazz Saxophone
1-3 credits
Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MSJ JSK. Jazz Saxophone
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master’s level.
<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<th>Prerequisite</th>
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<td>MSJ TPJ.</td>
<td>Jazz Trumpet</td>
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<td>MSJ TPK.</td>
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<td>MSJ TPR.</td>
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<td>Jazz Voice</td>
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<td>Fall and Spring Semesters</td>
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<td>MSJ VOJ.</td>
<td>Jazz Voice</td>
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<td>MSJ VOK.</td>
<td>Jazz Voice</td>
<td>1- 3</td>
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MSJ VOL. Jazz Voice
1-3 credits
Prerequisite: Master’s level.

MSJ VOM. Jazz Voice
1-3 credits
Prerequisite: Doctoral level.

MSJ VON. Jazz Voice
1-3 credits
Prerequisite: Doctoral level.

MSJ VOO. Jazz Voice
1-3 credits
Graduate Level.

MSJ VOP. Jazz Voice
1-3 credits
Prerequisite: Doctoral level.

MSJ VOQ. Jazz Voice
1-3 credits
Prerequisite: Doctoral level.

MSJ VOR. Jazz Voice
1-3 credits
Prerequisite: Doctoral level.

Music Theory and Composition

MTC 501. The Aesthetics of Music
3 credits
Offered By Announcement only
Survey of thought and discourse about the nature, roles, values, experiences, and meanings of music. Variety of perspectives, including those of the listener, performer, and composer are addressed. Application to musical interpretation and criticism is included. Prerequisite: MTC 311 or 312 or graduate standing.

MTC 505. Electronic Music Studio
2 credits
Offered Fall and Spring Semesters
Introduction to electroacoustic music and the digital electronic music studio. Computer and MIDI based applications in performance and composition including sequencing, music notation, and electronic orchestration are addressed. Theoretical and aesthetic issues relating to music technology, study of important figures and works. Lectures, reading, listening, and studio assignments leading to individual projects are also included. Prerequisite: MTC 211 or permission of instructor.

MTC 506. MIDI and Control Processing
2 credits
Offered Fall Semester
Computers as control devices for music synthesis. Topics include interfacing microcomputers and synthesizers, programming of controllers, sequencers, patch librarians, sound editors, and other applications. Computer assisted composition and performance techniques, lectures, reading, listening, and studio assignments leading to individual projects are also included. Prerequisite: MTC 505 or permission of instructor.
MTC 507. Digital Sound Synthesis and Processing  
2 credits  
Offered Spring Semester  
Software-based techniques of digital audio recording and editing, sound synthesis/design, audio signal processing, and sound analysis. Lectures, reading, listening, and studio assignments leading to individual projects in synthesis, composition, performance, or programming are included. Prerequisite: MTC 506 or permission of instructor.

MTC 511. Film Scoring I  
2 credits  
Offered Fall Semester  
Seminar in the aesthetics and psychology of mood music, sound-film synchronization, timing techniques, and scoring procedures. Analysis and performance of student projects is included. Prerequisite: MTC 302 or permission of instructor.

MTC 512. Film Scoring II  
2 credits  
Offered Spring Semester  
Adaptation of previous semester’s techniques to television scripts and performed music. Pre-recording, direct recording, and dubbing procedures are included as well as preparation and performance of complete film cues. Each student is required to conduct his/her project. Prerequisite: MTC 511.

MTC 513. 16th Century Counterpoint  
3 credits  
Offered Fall Semester  
Two- and three-voice vocal counterpoint based on Palestrina’s style, beginning with studies of strict species and including composition of two- and three-voice motets. Prerequisite: MTC 211.

MTC 515. Choral Arranging  
3 credits  
Offered Spring Semester  
Arranging for choir and vocal groups with and without instrumental accompaniment in all styles. Prerequisite: MTC 212.

MTC 516. Advanced Orchestration  
3 credits  
Offered Spring Semester  
Scoring for the symphonic orchestra with an emphasis on recent techniques. Prerequisite: MTC 416 or permission of instructor.

MTC 517. Analysis of Popular Music Since 1950  
3 credits  
Course examines popular music in the second half of the Twentieth Century from a music analytical perspective. Critical skills needed for this analysis are identified and developed. Analytical techniques for understanding the determination and utilization of musical elements and structures in contemporary popular music are applied. Various contemporary genres and some precursors are examined and particular stylistic determinants of their compositional and performance models are discussed. Prerequisite: Graduate standing or MTC 311 or 312, or permission of the instructor.

MTC 518. Advanced Counterpoint  
3 credits  
Offered Fall Semester  
Three-voice fugal writing in Bach’s style, followed by compositional projects in a variety of twentieth-century contrapuntal styles. Prerequisite: MTC 313 or permission of the instructor.
### MTC 521. Multimedia for Musicians  
**3 credits**  
*Offered By Announcement only*

Presents an overview and introduction to the creation of multimedia projects for presentation on the Web. Focus is placed on building websites and the creation of multimedia content for online delivery. Software tools for the manipulation of digital media, including audio and video, are utilized in the realization of course projects. Prerequisite: MTC 212 and MKP 220, or Graduate standing or permission of the instructor.

### MTC 567. Electronic and Computer Music Seminar  
**1- 3 credits**  
*Offered Fall and Spring Semesters*

Advanced techniques and applications in electronic and computer music. Topics may include electronic projects in composition, performance, research, programming, or other as approved by instructor. Prerequisite: MTC 505, 506, 507, or consent of the instructor.

### MTC 593. Special Topics MTC  
**1- 3 credits**  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Supervised topics and other activities in specific areas of Music Theory-Composition. Prerequisite: Permission of the Dean.

### MTC 599. Practicum in Music  
**0 credits**  
*Offered Fall and Spring Semesters and First and Second Summer Sessions*

Practical professional experience. Prerequisite: Music majors only.

### MTC 605. Electronic Music Circuit Design  
**2 credits**  
*Offered Fall Semester*

Basic concepts of circuits for electronic and computer music equipment, electronic music studio design, and maintenance. Prerequisite: MTC 505 or consent of instructor.

### MTC 611. Theory Pedagogy  
**3 credits**  
*Offered Fall Semester*

Seminar in methods and materials pertinent to the teaching of theory in high school and college. Prerequisite: Permission of instructor.

### MTC 612. Advanced Comprehensive Theory  
**3 credits**  
*Offered Fall Semester*

Melodic, harmonic, and contrapuntal devices as revealed through analysis and applied in composition. Prerequisite: Permission of instructor.

### MTC 613. Twentieth Century Idioms  
**3 credits**  
*Offered Spring Semester*

Relevant modes of perception, influences, and technical devices in 20th century music.

### MTC 615. Composition Seminar I  
**2 credits**  
*Offered Fall Semester*

Creative work in composition requiring a multi-movement work scored for full orchestra, symphonic band, or chorus with orchestra or band.

### MTC 616. Composition Seminar II  
**2 credits**  
*Offered Spring Semester*

Continuation of MTC 615. Prerequisite: MTC 615.

### MTC 617. Analytical Techniques  
**3 credits**  
*Offered Fall and Spring Semesters and Second Summer Session*

Examination and practice of various techniques used in the analysis of music.
MTC 619. Introduction to Schenkerian Analysis
3 credits
Offered Fall Semester
A first course in the theory and analytical practice of Heinrich Schenker. Students will learn the principles and techniques of Schenkerian analysis and will apply them to the study of works in smaller sectional forms. Prerequisite: MTC 617 or permission of the instructor.

MTC 646. Studio Production
1 credit
Offered By Announcement only
Recording studio production procedures. Topics include artist and material selection, session planning, and analysis of the producer's role. Course may be repeated for credit. Prerequisite: Permission of instructor.

MTC 648. Electronic Music Ensemble
1 credit
Offered By Announcement only
Prerequisite: By Audition.

MTC 652. Research Seminar II
2 credits
Offered By Announcement only

MTC 667. Advanced Electronic and Computer Music Seminar
1-3 credits
Offered Fall and Spring Semesters
Advanced techniques and applications in electronic and computer music. Topics may include electronic projects in composition, performance, research, programming, or other as approved by instructor. Prerequisite: MTC 505, 506, 507, or consent of instructor.

MTC 668. Projects in Media Writing and Production
1-3 credits
Offered By Announcement only
Supervised projects in specific areas of Media Writing and Production. Prerequisite: Permission of instructor.

MTC 682. Composition Workshop
1 credit
Offered Fall and Spring Semesters

MTC 693. Special Projects
1-3 credits
Offered Fall and Spring Semesters
Projects in any phase of theory-composition in which the student is interested and qualified to work. Prerequisite: Graduate Music students only. Dean's approval and signature required.

MTC 694. Special Projects
1-3 credits
Offered Fall and Spring Semesters
Projects in any phase of theory-composition in which the student is interested and qualified to work. Prerequisite: Graduate Music students only. Dean's approval and signature required.

MTC 696. Studio Production Ensemble
1 credit
Offered By Announcement only
Prerequisite: By Audition.

MTC 697. Studio Rhythm Section
1 credit
Offered Fall and Spring Semesters
Prerequisite: By Audition.

MTC 699. The Other Music Ensemble
1 credit
Offered Fall and Spring Semesters
An in-depth study and performance of 20th century music. Prerequisite: By audition.
MTC 710. Master’s Thesis
1- 6 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

MTC 713. Master’s Media Writing Project
1- 3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

The student working on his/her master’s media writing project enrolls for credit as determined by his/her advisor. Credit is not awarded until the project paper is accepted.

MTC 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MTC 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MTC 731. Doctoral Essay
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Required of all candidates for the D.M.A. The student will enroll for credit as determined by his/her advisor, but not for less than a total of 12. Not more than 12 hours of MTC 731 may be taken in a regular semester, nor more than six in a summer session.

MTC 750. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions

Used to establish research in residence for the Ph.D. and D.M.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

Music: Vocal Performance

MVP 508. Choral Score Study
2 credits
Offered Fall Semester

In depth study of selected choral or choral/orchestral works related to literature being performed by university ensembles during the academic year. Prerequisite: Permission of instructor.

MVP 538. Vocal Pedagogy
2- 3 credits
Offered By Announcement only

Course covers methods and concepts in the teaching of singing. Emphasis is placed on psychological, physiological, and acoustical principles involved in voice production with practical application, observing and teaching individual and class voice in a supervised environment. Prerequisite: Senior standing in music or permission of instructor.

MVP 552. Vocal Performance Preparation
1 credit
Offered Fall and Spring Semesters

Musical preparation of a wide range of assigned vocal literature from all periods for performance in forums, juries, and recitals. Special emphasis is on musical values, styles, translations of texts, diction, pronunciation of Italian, German, French, and English, and memorization. Prerequisite: MVP major, junior status.
MVP 557. Choral Music Workshop
2 credits
Offered First Summer Session
Survey and practice through performance and discussion of choral music, recommended for inclusion in public school and church choral music curricula.

MVP 588. Voice Performance in Salzburg, Austria
2-4 credits
Offered Spring Semester
Course is conducted at Salzburg College, Austria. Students receive comprehensive and intensive vocal training from University of Miami faculty as well as distinguished guest artists. A class in vocal repertoire is also included. Prerequisite: By audition only.

MVP 593. Special Topics MVP
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Supervised topics and other activities in specific areas of Vocal Performance. Prerequisite: Permission of the Dean.

MVP 599. Practicum in Music
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Practical professional experience. Prerequisite: Music majors only.

MVP 610. Vocal Literature for Teaching: English
1 credit
Offered Fall Semester
Study of the historical body of English language vocal repertoire as it relates to voice classification, age, and technical development of a singer. Prerequisite: MVP 251/252 or equivalent.

MVP 611. Vocal Literature for Teaching: Italian
1 credit
Offered Spring Semester
Study of the historical body of Italian vocal repertoire as it relates to voice classification, age, and technical development of a singer. Prerequisite: MVP 251/252 or equivalent.

MVP 612. Vocal Literature for Teaching: German
1 credit
Offered Fall Semester
Study of the historical body of German vocal repertoire as it relates to voice classification, age, and technical development of a singer. Prerequisite: MVP 251/252 or equivalent.

MVP 613. Vocal Literature for Teaching: French
1 credit
Offered Spring Semester
Study of the historical body of French vocal repertoire as it relates to voice classification, age, and technical development of a singer. Prerequisite: MVP 251/252 or equivalent.

MVP 630. Studio Teaching Techniques
1 credit
Offered Fall Semester
Application of the principles studied in MVP 638. Candidates will be assigned students for applied voice study, under supervision of the instructor. Prerequisite: MVP 638 or keyboard proficiency.

MVP 632. Teaching the Singer Actor
2 credits
Offered Spring Semester
Exploring teaching techniques for developing the skills of the singer. Prerequisite: MVP 638.
MVP 636. Voice Disorders
2 credits
Offered Fall Semester
Assessment and treatment of the human voice. Course promotes an understanding of the terminology, clinical assessment, and therapy protocols used in treating the dysfunctional or damaged voice. Prerequisite: MVP 638 or permission of instructor.

MVP 638. Advanced Vocal Pedagogy
2 credits
Offered Fall Semester
Course addresses advanced methods and concepts in the teaching of singing. Emphasis is placed on psychological, physiological, and acoustical principles involved in voice production, historical perspectives, and comparative pedagogical publications. Includes practical application, observation and teaching individual and class voice in a supervised environment. Prerequisite: Undergraduate credit in MVP 438, transferable equivalent, or permission of the instructor.

MVP 639. Vocal Pedagogy Internship
2 credits
Offered Fall Semester
Observation in the field of choice, including, but not limited to studio work, medical setting or speech pathology setting. Prerequisite: MVP 638 or permission of instructor.

MVP 641. Seminar in Choral Music
2 credits
Offered Spring Semester
Performance practice for the advanced student of choral literature. Emphasis is given to the best of representative choral literature or various periods and styles utilizing the students in the role of conductor, teacher, and performer.

MVP 647. Men’s Chorale
1 credit
Offered Fall and Spring Semesters
This ensemble is open to the entire university community. Students will work on all aspects of choral singing, including skills in basic musicianship. This ensemble presents two or three concerts per semester. Prerequisite: By audition.

MVP 648. Women’s Chorale
1 credit
Offered Fall and Spring Semesters
This ensemble is open to the entire university community. Students will work on all aspects of choral singing, including skills in basic musicianship. This ensemble presents two or three concerts per semester. Prerequisite: By Audition.

MVP 650. English Diction for Singers
1 credit
Offered Fall Semester
Class designed for voice majors and principals, with a focus on the development of pronunciation skills for teaching and singing in English. International Phonetic Alphabet is presented as a learning tool.

MVP 651. Italian Diction for Singers
1 credit
Offered Spring Semester
Class designed for voice majors and principals, with a focus on the development of pronunciation skills for teaching in Italian and Latin. International Phonetic Alphabet is presented as a learning tool. Prerequisite: MVP 650.

MVP 652. German Diction for Singers
1 credit
Offered Fall Semester
Class designed for voice majors and principals, with a focus on the development of pronunciation skills for teaching and singing in German. International Phonetic Alphabet is used as a learning tool. Prerequisite: MVP 650.
MVP 653. French Diction for Singers
1 credit
Offered Spring Semester
Class designed for voice majors and principals, with a focus on the development of pronunciation skills for teaching and singing in French. International Phonetic Alphabet is used as a learning tool. Prerequisite: MVP 650.

MVP 667. Musical Theatre Workshop
1 credit
Offered Fall and Spring Semesters
Participation in a fully-staged production or supervised classwork and projects which integrate the skills of the musical theatre singer/actor. Prerequisite: By audition.

MVP 668. Musical Theatre Instrumental Ensemble
1 credit
Offered Fall and Spring Semesters
An instrumental ensemble for musical theatre productions. Prerequisite: Permission of instructor.

MVP 670. Choral Conducting: Conducting Pedagogy
1 credit
Study and practice of various styles and methods of teaching undergraduate conducting. Discussions deal with musical training vs. gestural approach and the combination of the two when teaching undergraduate students. Prerequisite: Acceptance into the DMA/MM Choral Conducting or by permission.

MVP 672. Choral Conducting: Major Work Emphasis
1 credit
Course focus is placed on major choral-orchestral works with particular emphasis on two or three major works. In addition, conductors preparation for choral-orchestral works, including instrument transportation, score preparation, musical line, historical context, and score marking. are included. Prerequisite: DMA/MM in Choral Conducting student or by permission of the instructor.

MVP 673. Choral Conducting Workshop: Smaller Choral Works
1 credit
Study of smaller choral works by Poulenc, Hindemith, Ravel, Debussy, Brahms, Mendelssohn, Schubert, Schumann, etc., with emphasis on style, interpretation, and gesture.

MVP 683. Civic Chorale
1 credit
Offered Fall and Spring Semesters
Open to the university community students, faculty, and community members to perform two to three concerts each semester, including one concert each semester with instrumentalists. Students work on all aspects of choral singing. Prerequisite: By audition.

MVP 684. Chamber Singers
1 credit
Offered Fall and Spring Semesters
An ensemble of eighteen to twenty undergraduate and graduate students. The ensemble performs challenging chamber choir repertoire from the Renaissance through the Twentieth Century. Prerequisite: By audition.

MVP 685. UM Chorale
1 credit
Offered Fall and Spring Semesters
This ensemble performs significant choral literature with an emphasis on music of the Twentieth-Century and on choral/orchestral works including opera. Open to all qualified graduate students, regardless of major. Prerequisite: By audition.
MVP 688. Opera Theater
1 credit
Offered Fall and Spring Semesters
The preparation and public performance of staged operatic scenes and complete operas with supplemental classes in basic acting skills, stage movement, and characterization. Three to four productions, including one with orchestra, are scheduled each academic year. Course is required for all voice majors; admission by audition for voice principals. Prerequisite: By audition.

MVP 690. Collegium Musicum
1 credit
Offered Fall and Spring Semesters
A forty voice ensemble specializing in the study and performance of Baroque and Renaissance music, the Collegium Musicum is the chorus for the Miami Bach Society. Open to graduate students and community singers. Prerequisite: By audition.

MVP 693. Special Projects
1-3 credits
Offered Fall and Spring Semesters
Projects in any phase of vocal performance in which the student is interested and qualified to work. Prerequisite: Graduate Music students only. Dean’s approval and signature required.

MVP 694. Special Projects
1-3 credits
Offered Fall and Spring Semesters
Projects in any phase of vocal performance in which the student is interested and qualified to work. Prerequisite: Graduate Music students only. Dean’s approval and signature required.

MVP 711. Master’s Recital Paper
1-3 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
The student working on his/her recital paper enrolls for credit as determined by his/her advisor. Credit is not awarded until the paper has been accepted.

MVP 712. Master’s Recital
1 credit
Offered Fall and Spring Semesters
The student enrolls for recital credit during the semester in which he/she presents the master’s recital.

MVP 714. Artist Diploma Recital
1 credit
Offered Fall and Spring Semesters
The student enrolls for recital credit during the semester in which he/she presents the Artist Diploma Recital.

MVP 720. Research in Residence
0 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in MVP 710 (usually six credits). Credit not granted. May be regarded as full time residence.

MVP 731. Doctoral Essay
1-12 credits
Offered Fall and Spring Semesters and First and Second Summer Sessions
Required of all candidates for the D.M.A. The student will enroll for credit as determined by his/her advisor, but not for less than a total of 12. Not more than 12 hours of MVP 731 may be taken in a regular semester, nor more than six in a summer session.

MVP 732. Doctoral Recital
1-2 credits
Offered Fall and Spring Semesters
Required of all candidates for the D.M.A.
MVP 750. Research in Residence
0 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Used to establish research in residence for the Ph.D. and D.M.A., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

MVP CDI. Conducting
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MVP CDJ. Conducting
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MVP CDK. Conducting
1- 4 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master’s level.

MVP CDL. Conducting
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MVP CDM. Conducting
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MVP CDN. Conducting
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MVP CDO. Conducting
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MVP CDP. Conducting
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MVP CDQ. Conducting
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MVP CDR. Conducting
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Doctoral level.

MVP VOI. Voice
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MVP VOJ. Voice
1- 4 credits Offered Fall and Spring Semesters
Prerequisite: Master’s level.

MVP VOK. Voice
1- 4 credits Offered Fall and Spring Semesters and First and Second Summer Sessions
Prerequisite: Master’s level.
MVP VOL. Voice
1-4 credits
Prerequisite: Master’s level.
Offered Fall and Spring Semesters

MVP VOM. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VON. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VOO. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VOP. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VOQ. Voice
1-4 credits
Prerequisite: Doctoral level.
Offered Fall and Spring Semesters

MVP VOR. Voice
1-4 credits
Prerequisite: Doctoral level.
Nursing and Health Studies

Healthcare Sciences

HCS 583. Folk and Alternative Healing
3 credits
Critical discussion and evaluation of alternative and complementary healing. Theoretical and scientific bases of ethnomedical systems, traditional medical systems, and contemporary alternative therapies are explored. (3) Writing Credit. Prerequisite: Permission of faculty.

Health Studies

3 credits
Offered Spring Semester
This course will explore key health policy issues within the U.S., along with the politics and interest groups which shape them. Fundamental concerns within the health care system such as: cost, quality and access to care will be analyzed. Major topics of discussion will include: Medicare, Medicaid, private insurance, the nursing shortage, and prescription drugs. The politics and policies surrounding issues such as bioethics, globalization, and infectious disease will also be considered.

HST 545. Research Project Management
3 credits
Offered Fall Semester
The course focuses on preparing the student for coordination of all aspects of a research project including recruitment, consenting, testing, executing intervention, reliability checks, data base management and data entry. Management of project staff, maintaining the integrity of the research design will be presented. Examination of ethical issues and IRB procedures will be included. Prerequisite: All previous courses in research certificate program.

HST 564. Communicating Research Findings
3 credits
Offered Fall Semester
The course focuses on preparing individuals to present research findings related to research projects. Discussion of data interpretation, results and presentation of research for publication will be presented. Prerequisite: All previous courses in the research certificate program or equivalent research experience.

Nursing

NUR 502. Nursing in the International Context
2-3 credits
Offered Fall Semester
The concept and process of international nursing in the context of world health are discussed. Analysis of the role of nursing in relation to various national health care systems, theories of national development, and global strategies for international health are also included. Emphasis is placed on nursing education and service in various nations with a focus on less developed countries. (2-3)

NUR 504. Topics in Oncology Nursing
2-3 credits
Offered Fall and Spring Semesters
Course emphasizes the impact of cancer upon the individual and family. Course integrates concepts and theories related to nursing practice and cancer research. (2-3) Prerequisite: Senior standing in undergraduate program; graduate standing; or permission of instructor.

NUR 507. Clinical Nutrition in Nursing Practice
2 credits
Offered Spring Semester
Application of clinical nutrition in the assessment, diagnosis, planning, implementation, and evaluation of nursing care of multicultural clients in primary and secondary care settings. (2) Prerequisite: NUR 306, Junior level status.
NUR 508. Dying, Death and Bereavement
2-3 credits
Offered Spring Semester
Issues of providing care and comfort to dying persons and loved ones during illness and support to survivors after death are addressed. The development of nursing practice based on theory and research from nursing and other disciplines is also included. Emphasis is placed on the physical, emotional, and spiritual components in dying and bereavement. (2-3)

NUR 523. Nursing Concepts of Health Promotion and Wellness
7 credits
Offered First and Second Summer Sessions
Assimilation and integration of theoretical foundations and clinical data applicable to the care of clients across the life span with a focus on health promotion, disease prevention, and health maintenance. Emphasis is placed on assessment and analysis of clinical data to formulate nursing care in multicultural setting. (3:12)
Prerequisite: Admission to Accelerated or Graduate Entry Options. Corequisites: NUR 314, 315, a course in Growth and Development and Nutrition.

NUR 524. Community-Based Multicultural Psychiatric/Mental Health Nursing
6 credits
Offered Fall Semester
Assessment and analysis of clinical data applicable to the care of clients across the lifespan with multidimensional psychosocial or mental health alterations. Emphasis is on development of inter-personal and intra and interdisciplinary collaborative skills as a means of assisting individuals, groups, and families in active problem solving in community based settings. The formulation of nursing diagnoses and management strategies in multicultural settings is a focus. Developmental, sociological, and environmental aspects of nursing management are integrated throughout. Prerequisite: NUR 314, 315, 523.

NUR 530. Research in Nursing
3 credits
Offered Fall Semester
Focus on the nature of scientific inquiry, the research process and the role of the advanced practice nurse in conducting, critiquing, and synthesizing nursing research. Course consists of two modules. Module 1 focuses on the research process, research methodologies and the analysis of data using quantitative and qualitative approaches. Module 2 focuses on the synthesis of research findings for implementing changes in nursing practice or the development of a nursing research proposal, depending on the student’s area of interest. (3) Prerequisite: Basic Statistics Course.

NUR 531. The Older Adult in Health and Illness
2-3 credits
Offered By Announcement only
Course explores factors relating to aging in health including demographic changes, theories of aging, culture and ageism, the sandwich generation, developmental tasks and psychosocial issues in late life, sexual health, sleep pattern changes, and cognitive changes. Selected topics related to threats to health in later life are also discussed including depression, substance abuse, elder abuse and neglect, and failure to thrive. Current psychosocial intervention strategies such as reality orientation, re-motivation, reminiscence, life review and validation are examined. (2-3)

3 credits
Offered Spring Semester
This course will explore key health policy issues within the U.S., along with the politics and interest groups which shape them. Fundamental concerns within the health care system such as: cost, quality and access to care will be analyzed. Major topics of discussion will include: Medicare, Medicaid, private insurance, the nursing shortage, and prescription drugs. The politics and policies surrounding issues such as bioethics, globalization, and infectious disease will also be considered.
NUR 545. Research Project Management
3 credits
Offered Fall Semester
The course focuses on preparing the student for coordination of all aspects of a research project including recruitment, consenting, testing, executing intervention, reliability checks, data base management and data entry. Management of project staff, maintaining the integrity of the research design will be presented. Examination of ethical issues and IRB procedures will be included. Prerequisite: All previous courses in research certificate program.

NUR 550. Sociopolitical Dynamics of Health Issues
2-3 credits
Offered By Announcement only
The evaluation of public controversies surrounding community-based health issues are examined from sociopolitical, economic, and cultural perspectives. The focus of the course is on ethical and political dilemmas confronting health care professionals when health issues are politicized. (2-3)

NUR 551. Teaching and Learning Theory in Clinical Nursing Education
3 credits
Offered Spring Semester
The focus of this course is the exploration of principles and practice of teaching and learning integral to clinical nursing education. Identification of the role of the faculty in teaching students with diverse learning styles and needs within a variety of clinical settings. Prerequisite: RN/BSN; MSN, and/or Masters Student; RN License and permission of instructor.

NUR 552. From Childhood to Womanhood: Being Female in America
3 credits
Offered By Announcement only
Cultural perspective on emotional health issues related to growth and development of females in the United States of America. Multidisciplinary theoretical issues surrounding particular problems of sex roles from birth to death are examined. Emphasis is placed on mental health issues. Gender identity, critical events, eating disorders, abuse syndromes, reproductive sequelae, and aging are addressed. Emotional health, preventive, and treatment strategies are also analyzed. Graduate level course open to nursing students and students from related disciplines; education, psychology, sociology, and anthropology. (3)

NUR 553. Methods for Clinical Nursing Education
3 credits
Offered Spring Semester
The focus of this course is the organization and management of instruction for clinical nursing education. Emphasis is on effective strategies for development of learning opportunities in diverse clinical settings. Prerequisite: NUR 551, RN; permission of instructor.

NUR 555. Evaluation in Clinical Nursing Education
3 credits
Offered Spring Semester
The focus of this course is the exploration of principles and practices of evaluation integral to clinical nursing education. Prerequisite: NUR 551, 553 and/or permission of instructor.

NUR 558. Practicum in Clinical Nursing Education
6 credits
Offered Spring Semester
The focus of this course is laboratory and clinical application of principles of teaching and learning. Emphasis is on the operationalization of the clinical faculty role. Prerequisite: NUR 551, 553, 555, and/or permission of instructor.

NUR 564. Communicating Research Findings
3 credits
Offered Fall Semester
The course focuses on preparing individuals to present research findings related to research projects. Discussion of data interpretation, results and presentation of research for publication will be presented. Prerequisite: All previous courses in the research certificate program or equivalent research experience.
NUR 570. Psychobiology for Advanced Practice Nursing
3 credits
Offered Fall Semester
Focuses on basic neuroanatomy, neurophysiology, and neurochemistry followed by an introduction to the physiological bases of sensation, motor systems, motivation, emotion, learning and memory. (3) Prerequisite: Acceptance in the Graduate Nursing Program. NUR 612, 613.

NUR 575. Interdisciplinary Healthcare Improvement
2-3 credits
Offered By Announcement only
Analyses of the theories and principles of quality improvement and interdisciplinary teamwork. Application of improvement methods and tools used in solving client-focused, system-level problems through participation in an interdisciplinary team in a selected clinical setting. (2:3-6) Prerequisite: Undergraduate senior standing or permission of instructor.

NUR 583. Folk and Alternative Healing
3 credits
Offered Spring Semester
Critical discussion and evaluation of alternative and complementary healing. Theoretical and scientific bases of ethnomedical systems, traditional medical systems, and contemporary alternative therapies are explored. Writing Credit. (3) Prerequisite: Upper division or permission of faculty.

NUR 587. Sleep and Dreams
2-3 credits
Offered By Announcement only
Multidisciplinary theory and research on sleep and dreams. Circadian rhythm, sleep wake cycle, sleep disorders, function, and meaning of dreams. Graduate level course open to nursing students and students from related disciplines; education, psychology, sociology, and anthropology. (2-3) Prerequisite: Senior or graduate standing, NUR 418 or equivalent.

NUR 590. Health Policy, Structure and Ethics
3 credits
Offered Fall Semester
Issues, problems, and motivation for change and policy development in the current health care system. Implications for advanced practice nursing are discussed. Examination of organizational, behavioral, ethical aspects, and interactions of various sectors in the U.S. health care system. The relationship between ethics, culture and public are emphasized. (3) Prerequisite: Admission to Graduate Program or permission of instructor.

NUR 594. Selected Topics
2-3 credits
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Selected Topics”. Also open to continuing education students. (2-3) Prerequisite: Permission of instructor.

NUR 595. Selected Topics
2-3 credits
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Selected Topics”. Also open to continuing education students. (2-3) Prerequisite: Permission of instructor.

NUR 596. Selected Topics
2-3 credits
Offered By Announcement only
Sub-titles describing the topics to be offered will be shown in parentheses in the printed class schedule, following the title “Selected Topics”. Also open to continuing education students. (2-3) Prerequisite: Permission of instructor.

NUR 601. Advanced Pharmacology
3 credits
Offered Spring Semester
Advanced practice nursing application of pharmacological and pharmacokinetics for the purpose of selecting appropriate drug therapies for diverse populations. (3) Prerequisite: Graduate status.
NUR 602. Cultural Basis of Community Health Care
3 credits  Offered Fall Semester
Cultural assessment of the structure, function, and sociopolitical processes of agencies, institutions, and communities and population groups. Community development theories from variety of disciplines, rapid assessment techniques, and methods of investigating the cultural dimension of health care delivery in diverse populations. Strategies for developing culture-competent nursing actions for the implementation and management of population-based health care programs. (2:3) Prerequisite or corequisite: NUR 610.

NUR 603. Community Health Systems Administration
3 credits  Offered Spring Semester
Organization theories, health care and nursing models providing a basis for nursing leadership and management in community health systems. Key areas included are program development, case and disease management, strategic and financial planning, operations and budgeting, human resource management, quality control methods, information systems, program evaluation, and community relations. Cultural and ethical issues related to community health systems administration for communities and populations. (3) Prerequisite: Graduate status.

NUR 604. Community Health Nursing I
3 credits  Offered Spring Semester
Emphasis on population-based models and frameworks. Strategies for collaborative and partnering with community members in assessment, analysis, interpretation, and prioritization of identified needs. Cultural and ethical dimensions of the community assessment process with vulnerable, minority, and other population groups. Roles of community health nurses in population-based and disease management assessments. Field based practicum with community, public health, and disease management experts in a selected population. (2:3) Prerequisite: NUR 602. Prerequisite or corequisite: NUR 603 and 633.

NUR 605. Field Experience in Community Health Nursing
3 credits  Offered First and Second Summer Sessions
Structured and supervised field practicum under the guidance of a School of Nursing faculty mentor. Extension of beginning community and disease management assessment and problem identification from NUR 604. Further clarification of community or disease management problem, literature and secondary data searches, and primary data gathering. (0:9) Prerequisite: NUR 604.

NUR 606. Community Health Nursing II
5 credits  Offered Fall Semester
Planning and development of population focused health care programs based on the community assessment conducted in Community Health Nursing I and NUR 605: Field Experience. Theories of change, program planning, and development applied to population groups. Leadership responsibilities of community health nurses in policy development and the change process. Ethical dimensions of planned change with culturally diverse, minority, and vulnerable populations. Field-based practicum with community, public health, or disease management experts in selected populations. (2:9) Prerequisite: NUR 605. Prerequisite or corequisite: NUR 630.
NUR 607. Community Health Nursing III  
6 credits  
Offered Spring Semester  
Implementation, management, and evaluation of population-based and disease management programs developed in NUR 606: Community Health Nursing II. Theories and strategies of program implementation, evaluation, and process monitoring. Cultural and ethical issues related to personnel and program evaluation. Field based practicum with community, public health, and disease management experts in a selected population or organization. (2:12) Prerequisite: NUR 606.

NUR 608. Concepts in Advanced Practice Nursing  
3 credits  
Offered Fall Semester  
Major concepts necessary for advanced practice nursing. Included are: major scientific theories, health and health promotion, health policy, ethical issues, epidemiology, technology in health care, and advanced practice role competencies. Specific emphasis is placed on understanding culture and cultural diversity in health care. (3:0) Prerequisite: Admission to the nursing graduate program or permission of instructor.

NUR 609. Professionalism in Advanced Practice Nursing  
2 credits  
Offered First and Second Summer Sessions  
Focuses on the synthesis of concepts and principles necessary to develop leaders in advanced practice nursing specialties. Emphasis is placed on the role of the advanced practice nurse for optimal delivery of health care to clients across the life span. (2:0) Prerequisite: NUR 608, 613, 628 or 614.

NUR 612. Physiology/Pathophysiology for Advanced Practice Nursing  
3 credits  
Offered Fall Semester  
Analysis of physiologic and pathophysiologic mechanisms of health and illness. (3) Prerequisite: Graduate status.

NUR 613. Advanced Health Assessment and Diagnostic Reasoning  
3 credits  
Offered Fall Semester  
Emphasis on culturally sensitive comprehensive health assessment and diagnostic reasoning related to advanced nursing practice. Special emphasis is placed on advanced health assessment; including age appropriate health screenings; prenatal, pediatric, and geriatric assessment; and interpretation of basic laboratory tests and diagnostic studies utilized in advanced nursing practice. Specialty specific seminars address issues for individual tracks within advanced practice nursing. (2:2) Prerequisite: Undergraduate Health Assessment course and successful demonstration of assessment for cardiovascular, respiratory, abdominal, and neurologic systems.

NUR 614. Basic Concepts in Anesthesia Nursing  
3 credits  
Offered Spring Semester  
Fundamental knowledge and skills for entry into advanced practice anesthesia nursing. Concepts include essential techniques, monitoring and equipment, chemical and physical properties of anesthetic agents, and pharmacologic interventions for common problems and conditions requiring routine surgical procedures in a highly structured and guided clinical learning environment. Cultural competence and interdisciplinary anesthesia care across the lifespan is emphasized. Prerequisite: NUR 612 and 613. Corequisite: NUR 601.

NUR 615. Professional Aspects of Anesthesia Nursing  
2 credits  
Offered Spring Semester  
Focuses on the development and current trends in nurse anesthesia practice, education, and research. Concepts include the historical, legal, legislative, and professional role issues associated with advanced practice anesthesia nursing. Professional responsibilities, ethical issues, diversity, cultural competency, quality assurance, continuing education, and professional involvement are emphasized. Prerequisite: NUR 614. Corequisite: NUR 616 and 619.
NUR 616. Pharmacology for Acute Care and Anesthesia Nursing  
3 credits  
Offered Spring Semester  
Focuses on foundational pharmacologic principles and associated application to clinical practice in anesthesia and acute care nursing. Integration of pharmacological concepts and interventions in safe, culturally competent, and interdisciplinary anesthesia and acute care advanced nursing practice are emphasized. Prerequisite: NUR 601.

NUR 618. Applied Nursing Informatics  
2 credits  
Offered By Announcement only  
Concepts of nursing informatics. Course is designed to enhance the attainment of knowledge, skills, and attitudes essential for an expert practitioner in a computerized health care environment. Emphasis is placed on nursing applications of information technology. Social, ethical, and legal issues associated with computerized health care delivery systems are also analyzed. (2) Prerequisite: Graduate standing.

NUR 619. Advanced Concepts of Anesthesia Nursing I  
3 credits  
Offered Spring Semester  
In-depth knowledge and skills of anesthesia nursing care for a variety of common problems and conditions across anesthesia specializations. Concepts include assessment, techniques, planning and pharmacologic interventions for specialty surgical procedures in a highly structured and guided clinical learning environment. Cultural competence and interdisciplinary anesthesia care across the lifespan is emphasized. Prerequisite: NUR 614. Corequisite: NUR 615 and 616.

NUR 620. Advanced Concepts of Anesthesia Nursing II  
3 credits  
Offered Spring Semester  
In-depth knowledge and skills of highly specialized problems and conditions requiring anesthesia or surgical interventions. Concepts include assessment, techniques, planning and pharmacologic interventions for regional anesthesia, pain management, care of obstetrical patients and patients with catastrophic conditions in a highly structured and guided clinical learning environment. Cultural competence and interdisciplinary anesthesia care across the lifespan is emphasized. Prerequisite: NUR 619.

NUR 621. Diagnostics and Nursing Interventions for Acute Care Nursing  
3 credits  
Offered Spring Semester  
Selected diagnostic tests and intervention techniques essential to acute care nursing. Critical thinking and decision making related to interdisciplinary assessment of acute care patients. Cultural issues related to diagnostics and intervention. Prerequisite: NUR 601, 628.

NUR 622. Acute Care Nursing of Adults I  
5 credits  
Offered Spring Semester  
The first of two sequential clinical practicums designed for the development of scientific knowledge and advanced practice skills in the area of acute care nursing. Involves synthesis of concepts, knowledge and skills gained in previous courses applied to the care of the acutely ill patient. Focuses on the advanced practice of acute care nursing via the nurse practitioner/clinical nurse specialist. Prerequisite: NUR 616, 621. Prerequisite or corequisite: NUR 630.

NUR 623. Primary Health Care of Infants and Children  
3 credits  
Offered Spring Semester  
NUR 624. Health Care of the Aging Adult
5 credits  Offered Fall Semester
Development of the role of the advanced practice nurse in the health care management of the aging adult in settings ranging from primary care clinics to residential and rehabilitation including assisted living, long-term, and home care. (3:6) Prerequisite: NUR 601, 613, 626, 628.

NUR 626. Primary Health Care of Women I
2 credits  Offered Spring Semester
Theoretical and clinical bases for advanced practice nursing and management of infants and children. Emphasis is on strategies for health maintenance and prevention of health problems, and management of alteration. (1:3) Prerequisite: NUR 613. Prerequisite or corequisite: NUR 601, 623 for Family Nurse Practitioner Only.

NUR 627. Primary Health Care of Women II
2 credits  Offered Spring Semester
Theoretical and clinical bases for providing primary prenatal care of women. Emphasis is on management strategies for promotion of transcultural health care needs according to the advanced practice role. (1:3) Prerequisite: NUR 613. Prerequisite or corequisite: NUR 601, 626.

NUR 628. Advanced Practice Nursing of Adults
5 credits  Offered Spring Semester
Theoretical and clinical bases for health care management of common health alterations in the adult population. Emphasis is placed on strategies for health maintenance and prevention of health problems, management of alterations, discharge planning, and rehabilitation of individuals and aggregate population. (2:12) Prerequisite: NUR 613. Prerequisite or corequisite: NUR 601, Family Nurse Practitioner Specialty-NUR 623, 626, 627, Adult Health Nurse Practitioner Specialty-NUR 626, 627, Psychiatric Model Health Nursing-NUR 635, 636.

NUR 629. Nursing Management of Common Health Conditions of Women
3 credits  Offered Spring Semester
Theoretical and clinical bases for health care management across the lifespan. This includes adolescence, childbearing, mid-life, and post menopausal adaptation to disease processes such as endocrinological, pulmonary, circulatory disorders, minor trauma, and infectious processes. (2:3) Prerequisite: NUR 613. Prerequisite or corequisite: NUR 601, 626, 627.

NUR 630. Research and Evidence-Based Advanced Practice Nursing
3 credits  Offered First and Second Summer Sessions
Research process, research methods, and the analysis of data using quantitative and qualitative approaches. Focuses on understanding levels of evidence for implementing evidence-based practice and performance improvement in nursing practice and health care. (3:0) Prerequisite: Admission to graduate program or permission of instructor.

NUR 632. Women’s Health Care for Special Populations
5 credits  Offered Fall Semester
Psycho-social, cultural, physiologic, and economic parameters of health care for special populations of women. Theoretically based clinical focus on the health care management of the female adolescent, reproductive age woman, including fertility and infertility, and the mature woman, in a framework of homelessness, violence, substance abuse, HIV/AIDS, and oncology. Outreach clinical sites in a variety of settings will be utilized. (2:12) Prerequisite: NUR 626, 627, 629.
NUR 633. Principles of Epidemiology for Advanced Practice Nursing  
3 credits  
Offered Spring Semester  
Principles and methods of epidemiology applied to advanced practice nursing in multicultural community settings. Exploration of the role of epidemiology in areas such as health care management, primary health care, prevention and control of illness, environmental and occupational health, and public health policy. (3) Prerequisite: Graduate Status; Basic Statistics Course.

NUR 634. Perinatal Health Care  
5 credits  
Offered Fall Semester  
Continuation of the application of physiologic, psychosocial, and cultural concepts to perinatal health care management. Emphasis is placed on nurse-midwifery management of intrapartum, postpartum, and neonatal clients. (2:12) Prerequisite: NUR 626, 627, 629.

NUR 635. Psychiatric and Mental Health Nursing of Family and Groups  
2 credits  
Offered Fall Semester  
Examination and development of the Advanced Practice Nursing role in the psychiatric/mental health care of families and groups in a variety of settings. (2) Prerequisite: NUR 613.

NUR 636. Psychiatric and Mental Health Nursing of Adults  
5 credits  
Offered Spring Semester  
Examination and development of the advanced Practice Nursing role in the care of the individual adult client with common mental health problems in secondary care settings. (3:6) Prerequisite: NUR 613.

NUR 639. Acute Care Nursing of Adults II  
6 credits  
Offered Spring Semester  
The second of two clinical practicums designed to guide the development of scientific knowledge and advanced practice skills in the area of acute care nursing. Designed to assist the student to assume the role of the Acute Care Nurse Practitioner/Clinical Nurse Specialist. Prerequisite: NUR 622.

NUR 640. Teaching and Learning: The Art and Science of Nursing Education  
3 credits  
Course discuss the development of the principles and practice of teaching and learning integral to nursing education. Emphasis is placed on the art and science of teaching and learning. Analysis of teaching styles, methods, and strategies is discussed as well as the development of faculty role in the teaching of students with a variety of learning styles and needs in a dynamic setting of higher nursing education. (3) Prerequisite: Graduate Students: MSN, Post-Masters, Doctoral and Post Doctoral.

NUR 641. Curriculum Development in Nursing Education  
3 credits  
The exploration of curriculum development in higher education, more specifically in nursing education. Emphasis is placed on the foundations of curriculum design and the application of these foundations to the development of courses, groups of courses, and programs. Integration of nursing philosophy, conceptual framework, objectives for program, and competencies/standards is also included. (3) Prerequisite: Graduate Students: MSN, Post-Masters, Doctoral and Post-Doctorate.
NUR 642. Evaluation in Nursing: Theories and Practice  
3 credits  
Course discusses the exploration of the principles and practices involving evaluation methods integral to nursing education. Concepts related to assessment, measurement, and evaluation in nursing are developed and analyzed. Analysis of these concepts takes place in the context of models of evaluation and applicability for evaluation for students, faculty, curricula, and programs. (3) Prerequisite: Graduate Students: MSN, Post-Masters, PhD and Post-Doctorate.

NUR 643. Practicum in Nursing Education  
6 credits  
The application of the art and science of teaching, learning, evaluation, and curriculum developments for both the classroom and clinical setting. Focus is on the operationalization of a variety of aspects of the nurse educator role. Preceptors provide guidance in an academic setting for a semester where the student takes on the responsibility of a nurse educator. (2:12) Prerequisite: NUR 640, 641, 642.

NUR 645. Interdisciplinary Anesthesia Nursing I  
3 credits  
Offered Spring Semester  
Initial integration and synthesis course of advanced knowledge and skills for interdisciplinary anesthesia nursing care. Selected topics and clinical case studies include collaborative-decision-making, effective communication, planning and evaluation for patients with complex problems and conditions across the lifespan. With continual guidance, students assume greater responsibility for culturally competent and interdisciplinary anesthesia care. Prerequisite: NUR 620.

NUR 646. Interdisciplinary Anesthesia Nursing II  
3 credits  
Offered Spring Semester  
Second integration and synthesis course of advanced knowledge and skills for interdisciplinary anesthesia nursing care for complex problems and conditions across the lifespan. With moderate guidance students assume greater responsibility for culturally competent and interdisciplinary anesthesia care. Prerequisite: NUR 645.

NUR 647. Advanced Practice Nursing Integration  
7 credits  
Offered First and Second Summer Sessions  
Integration of the components of the Advanced Practice Nursing role to analyze advanced practice issues. (2:15) Prerequisite: Completion of all clinical courses in specialty.

NUR 648. Advanced Practice Nursing Integration  
6 credits  
Offered Spring Semester  
Nursing role as developed in preceding courses with further development of relevant advanced practice issues and complex health problems. Prerequisite: All clinical specialty courses for the Primary Care Major should be completed before taking NUR 648. These are: NUR 632-Women’s Health Nurse Practitioner; NUR 628-Family Nurse Practitioner; NUR 624-Adult Health Nurse Practitioner; NUR 634-Nurse-Midwifery; NUR 635, 636-Psychiatric Mental Health Nurse Practitioner. Prerequisite or corequisite: NUR 633.

NUR 650. Interdisciplinary Anesthesia Nursing III  
3 credits  
Offered Spring Semester  
Third and final integration and synthesis course of advanced knowledge and skills of interdisciplinary anesthesia nursing care for complex problems and conditions across the lifespan. With minimal guidance students assume greater responsibility for culturally competent and interdisciplinary anesthesia care. Prerequisite: NUR 646.
NUR 651. Philosophical and Theoretical Bases for Nursing Science  
**3 credits** Offered Fall Semester
Course focuses on historical and philosophical perspectives in the development of knowledge, with in-depth examination of the evolution of nursing science. Contemporary nursing theories are also compared and contrasted. Prerequisite: NUR 611 or equivalent.

NUR 655. Clinical Inquiry  
**3 credits** Offered Fall Semester
Analysis and development of concepts relevant to clinical nursing phenomena. Seminars include the evaluation of major concepts and review of individual clinical inquiries. Prerequisite: Admission to Ph.D. in Nursing program.

NUR 661. Development of Nursing Science  
**3 credits** Offered Spring Semester
Approaches to scientific development in nursing with emphasis on theory building and theory generation. An analysis of contemporary nursing theory is included. Prerequisite: NUR 651.

NUR 665. Methods and Design for Nursing Research  
**3 credits** Offered Fall Semester
Research methods and design for clinical nursing research. Emphasis is placed on linkages among theory, clinical concepts, research design, measurement, and issues in current practice. Prerequisite: NUR 655.

NUR 667. Research Practicum  
**2-3 credits** Offered Fall and Spring Semesters
Participation in clinical nursing research with School of Nursing faculty. Prerequisite: NUR 665.

NUR 670. Qualitative Methods in Qualitative Research  
**3 credits** Offered Spring Semester
Exploration of inductive approaches to research and the use of qualitative methods including phenomenology, ethnography, and grounded theory. The techniques include focus groups, unstructured and structured interviews, and ethnoscience. Discussion of techniques, analysis, and the ethical and political implications of special problems in qualitative research is also included. Prerequisite or corequisite: NUR 665.

NUR 675. Field Project in Qualitative Research  
**4 credits** Offered Fall Semester
Students conduct a field project using qualitative research methodology and techniques. Seminars related to analysis and interpretation of data are also included. Prerequisite: NUR 670.

NUR 680. Measurement of Nursing Phenomena  
**3 credits** Offered Fall Semester
Development of instruments to measure a phenomenon of concern within the domain of nursing. Prerequisite: NUR 670.

NUR 690. Independent Study  
**1-6 credits** Offered Fall and Spring Semesters
A in-depth study of a specified area in advanced nursing of special interest to the student, under faculty guidance. Prerequisite: Permission of the professor required before enrollment.

NUR 695. Dissertation Seminar  
**2 credits** Offered Fall and Spring Semesters
Discussion and analysis of proposed student dissertations consisting of trends in areas of research in nursing. Course is required of all students admitted to advanced graduate standing. Course may be repeated to a total of six credits. Prerequisite: Admission to Doctoral Program.
NUR 697. Selected Topics  
2-3 credits  
Offered By Announcement only  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing topics will be shown in class schedule in parentheses after selected topic notation. Prerequisite: Permission of instructor.

NUR 698. Selected Topics  
2-3 credits  
Offered By Announcement only  
Subject matter offerings based upon student demand and availability of faculty. Subtitles describing topics will be shown in class schedule in parentheses after selected topic notation. Prerequisite: Permission of instructor.

NUR 699. Special Topics in Nursing Research  
1-3 credits  
Offered Fall and Spring Semesters  
Directed or independent research in collaboration with a faculty member providing opportunity for participation in ongoing nursing research. Specific requirements and credit allocation determined by contractual arrangement between student and faculty member.

NUR 710. Master’s Thesis  
1-6 credits  
Offered Fall and Spring Semesters  
The student working on his/her master’s thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor. Credit is not awarded until the thesis has been accepted.

NUR 720. Research in Residence  
0 credits  
Offered Fall and Spring Semesters  
Used to establish research in residence for the thesis for the master’s degree after the student has enrolled for the permissible cumulative total in NUR 710 (usually six credits). Credit not granted. May be regarded as full time residence.

NUR 725. Continuous Registration—Master’s Study  
0 credits  
Offered By Announcement only  
To establish residence for non-thesis master’s students who are preparing for major examinations. Credit not granted. Regarded as full time residence.

NUR 730. Doctoral Dissertation  
1-12 credits  
Offered Fall and Spring Semesters  
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 18 credits. Not more than 12 hours of NUR 730 may be taken in a regular semester, nor more than six in a summer session. A student who has passed (a) qualifying examinations, and (b) is engaged in an assistantship, may still take the maximum allowable credit stated above.

NUR 735. Pre-Dissertation Research in Residence  
0 credits  
Offered Fall and Spring Semesters  
To establish residence for doctoral students who are preparing for major examinations prior to enrolling in dissertation credit. Credit not granted. Regarded as full time residence. Prerequisite: Completion of all course work for Ph.D. except NUR 695.

NUR 750. Research in Residence  
0 credits  
Offered Fall and Spring Semesters  
Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.
**INTERNATIONAL EXCHANGE AND LANGUAGE PROGRAMS**

**Study Abroad Program**

**SAP 572. Study Abroad-France-Universite d’Orleans**
1-12 credits
*Offered By Announcement only*

**SAP 582. Study Abroad-Germany-University of Tubingen**
1-12 credits
*Offered Fall and Spring Semesters*

**SAP 599. Study Abroad**
1-12 credits
*Offered By Announcement only*

In some departments it is possible to earn graduate credits for study taken abroad. Curriculum must be worked out by the student in conjunction with an advisor.

**SAP 631. Study Abroad-Japan-Sophia University**
1-12 credits
*Offered By Announcement only*

**SAP 683. Study Abroad-Germany-University of Leipzig**
1-12 credits
*Offered By Announcement only*

**SAP 695. Study Abroad-Switzerland-University of Lausanne**
1-12 credits
*Offered By Announcement only*

**SAP 699. Study Abroad**
1-12 credits
*Offered Fall and Spring Semesters*

In some departments it is possible to earn graduate credits for study taken abroad. Curriculum must be worked out by the student in conjunction with an advisor.