Engineering

http://www.miami.edu/engineering

Degree Programs
The College of Engineering offers courses of graduate study leading to the degrees of:

- Master of Science (Environmental Health and Safety),
- Master of Science (Occupational Ergonomics and Safety),
- Master of Science (Management of Technology),
- Master of Science in Architectural Engineering,
- Master of Science in Biomedical Engineering,
- Master of Science in Biomedical Engineering (Medical Physics),
- Master of Science in Civil Engineering,
- Master of Science in Electrical and Computer Engineering,
- Master of Science in Industrial Engineering,
- Master of Science in Industrial Engineering/Master of Business Administration, and
- Master of Science in Mechanical Engineering.

Ph.D. degrees are offered in the areas of:

1. Biomedical Engineering,
2. Biomedical Engineering (Medical Physics),
3. Civil Engineering,
4. Electrical and Computer Engineering,
5. Ergonomics and Human Factors
6. Industrial Engineering, and
7. Mechanical Engineering.

Admission Requirements
Students with an appropriate B.S. degree may seek direct entry to either the M.S. track or Ph.D. track. Admission guidelines for the various tracks are as follows. Please refer to program specific sections of the bulletin for more information with respect to admission and degree requirements.

B.S. to M.S.
In engineering, the master’s – not the bachelor’s – degree is the first professional degree, so all engineers should seek to obtain an M.S. degree. In order to facilitate the obtainment of an M.S. degree, the University of Miami (UM) College of Engineering (CoE) offers the M.S. degree through a number of possible venues or entry points, as summarized below. Every one of our M.S. degree programs requires 10 courses or 30 credit hours to complete; this can be typically undertaken in one, 9-month academic year (i.e., by enrolling in 15 credit hours per semester).

General Admission Requirements
1. A B.S. degree from an accredited program.
2. Typically a cumulative grade point average of 3.0 on a 4.0 scale.
3. Typically a GRE score of 300 or higher (verbal + quantitative).
4. Typically for international students a TOEFL PBT score of 550 or higher, or a TOEFL iBT score of 80 or higher, or an IELTS score of 6.5 or higher.

Some students may be required to take additional pre-requisite coursework, depending on the nature and content of their B.S. degree. A maximum of 6 credit hours above and beyond those required for a B.S. degree can be transferred into our 30 credit hour M.S. program. Additionally, qualified students may apply for a partial tuition scholarship (which at present is averaging about 25% of the cost). More detailed information can be found in the Prospective Graduate Students section of our website at www.miami.edu/coe (http://www.miami.edu/coe).

<table>
<thead>
<tr>
<th>UM Entry Point</th>
<th>Typical Duration</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Freshman Year</td>
<td>4 + 1 years</td>
<td>Students enter UM CoE as a freshman and apply by their junior year to obtain a joint B.S./M.S. degree after 5 years.</td>
</tr>
<tr>
<td>2. Transfer Year</td>
<td>2 + 2 + 1 years</td>
<td>Students enter UM CoE as a transfer from another accredited program after 2 years and apply by their junior year to obtain a joint B.S./M.S. degree after 3 years.</td>
</tr>
<tr>
<td>3. Summer Semester</td>
<td>4 + 1 year</td>
<td>International students complete their B.S. capstone project at UM CoE as exchange students, then receive their B.S. from their home institution and transition – without leaving U.S. – into the M.S. program, beginning in the Fall semester.</td>
</tr>
<tr>
<td>4. First M.S. Semester</td>
<td>1 year</td>
<td>Students enter M.S. program either after receiving a B.S. or after being in the workforce following their B.S. degree.</td>
</tr>
<tr>
<td>5. First M.S. Semester</td>
<td>1.5 to 3 years</td>
<td>Working professionals enter a specially customized M.S. degree program at an off-campus location.</td>
</tr>
</tbody>
</table>
6. First Semester of An Intensive English Program (IEP)  
IEP + 1.5 years  
International students with a B.S. in engineering who are unable to meet TOEFL/IELTS requirements and have a minimum 146 or higher score on the quantitative section of the GRE may enter into the IEP and, assuming a minimum score of 450 on TOEFL, must take one required M.S. course per IEP semester; if they graduate from IEP and their M.S. course grades average 3.0 or better, they will not be required to retake the GRE before continuing – as a full-time student – in their chosen M.S. program.

B.S. to Ph.D.
Direct admission to the Ph.D. track by students holding B.S. degrees is limited to students with exceptional credentials. These credentials typically include a minimum GPA of 3.5 on a 4.0 scale and a minimum GRE of 308 (verbal plus quantitative). After completion of the Departmental M.S. requirements, students enrolled in the direct B.S. to Ph.D. track may apply for an M.S. degree.

M.S. to Ph.D.
Criteria for admission into the Ph.D. program for students with an appropriate M.S. degree include a minimum GPA of 3.5 on a 4.0 scale within their M.S. degree program and a minimum GRE of 302 (verbal plus quantitative).

The College offers graduate programs leading to degrees in both traditional and interdisciplinary areas of study. The primary focus of the College lies in those areas and problems that cross traditional lines. Given the interdisciplinary nature of programs, flexibility is provided in course selection which allows each student to pursue a program especially tailored to the goals of the individual. Given the strengths of the University, graduate programs are offered in conjunction with other schools or units. These programs 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 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.

Accepted M.S. applicants can apply and be considered on a competitive basis for partial tuition scholarships. Need based aid also can be awarded, as determined through the financial aid process. A minimum graduate GPA of 3.0 must be maintained in order to maintain satisfactory progress.

Accepted Ph.D. applicants 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. A minimum graduate GPA of 3.3 must be maintained in order to maintain satisfactory progress.

Financial support is provided predominantly to students pursuing Ph.D. degrees.

For further information, contact David T. Poole, Director of Admission, College of Engineering at dtpoole@miami.edu or 305-284-4773.

Degree Requirements

Requirements for the Master of Science Degree (Thesis Option)

- An approved integrated program with a minimum of 30 credit hours with an average grade of B or better and no grade below C.
- At least 6 course credit hours must be at the 700-level.
- 6 credit hours 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 30 credit hours with an average grade of B or better and no grade below C.
- At least 12 of the course credit hours must be at the 700 level.
- In most departments a 3 credit hour graduating project is required.
Requirements for the Doctor of Philosophy Degree

- 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.
- 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.
- At least 18 credit hours in courses must be taken beyond the requirements for the M.S. degree of which 6 credit hours must be at the 700 level.
- All candidates for the doctorate are expected to complete an appropriate integrated program of studies in preparation for the comprehensive Qualifying Examination.
- Students are expected to take their qualifying exams during the first year of enrollment. Admission to candidacy across College of Engineering Departments includes passing the qualifying exam and successful defense of a proposal for research.
- Minimum of one year beyond admission to candidacy is usually necessary for the completion of an acceptable dissertation (12 credit hours or more), whereupon the student is then expected to defend their Ph.D. thesis during the Final Oral Examination.
- Departments may have requirements in addition to the above general requirements for their own graduate programs.

For further information, contact Office of Admission, College of Engineering (David Poole, dtpoole@miami.edu or 305-284-4773).

Postgraduate Certificate Program

- A Postgraduate Certificate Program is available requiring the completion of a minimum of 15 credit 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 credit hours will be accepted. International students requiring a student visa must be in a degree engineering 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 Master’s Degree, and may apply up to 6 credit hours toward the M.S. degree.

Customized Engineering Master’s Program

The College of Engineering at the University of Miami has a unique graduate admission option for students wishing to be accepted into graduate studies to pursue a Master of Science degree in Engineering, but who are unable to demonstrate acceptable levels of English proficiency at the time of their application for admission. The IEP+ 1.5 Year Program is focused on helping non-native English applicants to obtain a Master of Science degree in Engineering.

Prospective students must complete and submit an application for graduate admission into the College of Engineering, providing all supporting documents as outlined in our graduate admission application and meet the following criteria:

1. Applicants must be academically admissible into graduate studies with appropriate academic credentials. They must have a Bachelor of Science degree in Engineering, or its equivalent, or be a candidate for one at the time of application.
2. Applicants must score a 146 or higher on the quantitative portion of the GRE.
3. Applicants must score a 450 or higher on TOEFL PBT (paper based test), or a 133 on TOEFL CBT (computer based test), or 45 on TOEFL iBT (internet based test) or 4.5 on ILETS (International English Language Testing System).

Students who are accepted under these criteria will enroll in our Intensive English Program (IEP) for a designated time, typically a year. The actual length of time a student will spend in IEP will be determined through a placement exam given once the student has arrived on the University of Miami Coral Gables campus. Students will also be required to enroll in a minimum of one graduate engineering course each semester while enrolled in IEP. Selection of these courses will be done after academic advising has taken place with our Associate Dean for Academics for students in this program.

Full-time enrollment in the M.S. portion of the IEP/M.S. Program will commence when the student has successfully completed Level Five of IEP and has completed two or more approved engineering courses, with a cumulative GPA of 3.0 or higher. Depending on the student’s background, the M.S. degree will require the taking of 30 or more credit hours – corresponding to 10 or more 3 credit hour courses – and the achievement of a cumulative GPA of 3.0 or higher in the taken courses. Assuming a 30 credit hour M.S. program, it is anticipated that the IEP and 6 credit hours will be completed in the first year, 18 credit hours the second year (9 credit hours in the Fall and 9 credit hours in the Spring) and a minimum of 6 credit hours in Fall of the third year; thus, the duration is expected to be IEP+1.5 years.

If you have any questions about the CEM Program including cost of the program, please contact David T. Poole, Director of Admission, College of Engineering at dtpoole@miami.edu or 305-284-4773 or Associate Dean for Academics, Dr. Shihab Asfour at sasfour@miami.edu.

Ph.D. Course Exchange with Florida International University

University of Miami Ph.D. students are eligible to enroll in courses at Florida International University for a maximum of 6 credit hours. Enrollment in FIU courses requires approval through the student’s program of study committee. See FIU/UM Ph.D. exchange section of the Graduate School section of the bulletin for more details.