

MARINE, ATMOSPHERIC, AND EARTH SCIENCE

<https://undergraduate.earth.miami.edu/index.html>

Introduction

The Rosenstiel School of Marine, Atmospheric, and Earth 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 and atmospheric 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. In 1977, the Rosenstiel School and College of Arts and Sciences joined together to establish an undergraduate Marine, Atmospheric, and Earth Science program based on the Coral Gables campus. The degree granting authority for this program was formally transferred to the Rosenstiel School in 2008.

Today the Rosenstiel School has a faculty of over 80 who conduct sponsored research while offering studies leading to the Bachelor of Science, Bachelor of Arts, Master of Arts, Master of Science, Master of Professional Science and Doctor of Philosophy degrees.

Government agencies and private organizations support basic and applied research at the Rosenstiel School. Graduate and undergraduate 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 modern laboratory facilities and a state-of-the-art catamaran, named the F. G. WALTON SMITH, in honor of the founder of the Rosenstiel School.

Mission

The Rosenstiel School strives to be in the forefront of basic and applied research as it applies to the ocean, atmosphere, and global environment, with particular emphasis on subjects of societal significance. Our goal is to provide excellence in graduate and undergraduate education and research training and to be a strong force towards improved environmental understanding and management.

Academic Policies

Admission

Applications for incoming freshmen are processed and reviewed by the Office of Admission. Enrollment in the Rosenstiel School Undergraduate Program is selective and highly competitive. Admission decisions are based on the secondary school record, SAT/ACT score, counselor's evaluation and the applicant's essay.

Student Responsibilities

Students of the Rosenstiel School 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.

Academic Progress

The Rosenstiel School will review each student's record at the end of each semester. All students in the Rosenstiel School Undergraduate Program must maintain a cumulative grade point average of 2.5 or better in order to remain in the program. Only those courses passed with a grade of C- or better may be applied to the major or minor.

Honors

Honors may be earned by students who have an overall 3.6 GPA, have successfully completed MSC/MBE/GSC/ATM 412 with a written senior thesis, and have presented a poster or oral presentation of their research at a public forum such as the Rosenstiel School Undergraduate Research Forum. MSC/MBE/GSC/ATM 412 requires completion of a minimum of 3 credits in MSC/MBE/GSC/ATM 411 or equivalent research experience approved by the program director.

Degree Programs

The Rosenstiel School of Marine, Atmospheric, and Earth Science offers degree programs at both the undergraduate and graduate levels for students interested in atmospheric science, geological science, and marine science or policy as a career.

Undergraduate Degree Programs

The Rosenstiel School of Marine, Atmospheric, and Earth Science offers both Bachelor of Science/Bachelor of Science in Marine and Atmospheric Science and Bachelor of Arts/Bachelor of Arts in Marine Affairs undergraduate degree options. Bachelor of Science options include Geological Sciences, Marine Biology and Ecology, Marine Science (double major), Meteorology, and Oceanography. Bachelor of Arts options include Geological Sciences and Marine Affairs.

The Bachelor of Science degree programs are meant for students planning to continue with graduate and professional studies or for those who will pursue a technical career in government, research, or private industry. The Bachelor of Arts degree programs are designed for students planning either non-technical careers with government agencies or private industries or graduate studies in such areas as business, law, economics, political science, education, or communication.

In cooperation with the graduate program, courses of study culminating in a Master of Science or Master of Professional Science are also available.

Graduate Degree Programs

Graduate courses in the marine and atmospheric sciences are offered through the Graduate School and the Rosenstiel School of Marine, Atmospheric, and Earth Science and are listed under the Rosenstiel School graduate program entries in the Bulletin.

Courses at the 500-level may be taken for undergraduate credit with junior standing and departmental consent. These courses are listed in the course section of the undergraduate bulletin.

Requirements for Graduation

In addition to satisfying the course requirements for the different undergraduate majors, students are expected to satisfy the School's General Education Requirements. General Education Requirements stress breadth of knowledge and the cultivation of intellectual abilities essential for the acquisition of knowledge. Courses taken for the major and minor may also be used to satisfy the General Education Requirements.

Areas of Proficiency

A) *Written Communication Skills*

Effective writing skills advance ideas efficiently and persuasively, so the expectation is that students become adept at using writing as an effective communication tool. Students fulfill this requirement by satisfactorily completing WRS 105 together with ENG 106 or WRS 106 or WRS 107, or the equivalent. Appropriate Advanced Placement (AP) or International Baccalaureate (IB) scores in Written Communication Skills may be used to satisfy this requirement. An appropriate score on the SAT or ACT examination may earn a student exemption from, but not credit for, WRS 105.

Students will be able to:

- Demonstrate effective written communication skills in relation to specific rhetorical tasks.
- Construct original, well-reasoned arguments using a range of materials.
- Integrate and synthesize appropriate and relevant primary and secondary sources in their writing.

EFFECTIVE FALL 2017, NEW STUDENTS WITHOUT PRIOR COLLEGE CREDIT IN Written Communication skills WILL BE PLACED AS FOLLOWS:

- WRS 103: ACT English score below 18 or SAT Evidence-Based Reading and Writing or Critical Reading score below 430, or TOEFL iBT Writing score below 18.
- WRS 105: ACT English score 18-31 or SAT Evidence-Based Reading and Writing or Critical Reading score 430-690, or TOEFL iBT Writing score 18 or above.
- ENG 106 or WRS 106 or WRS 107: ACT English score 32 or above or SAT Evidence-Based Reading and Writing or Critical Reading score 700 or above.

Written Communication Skills General Education Requirements must be completed prior to attaining junior year classification.

B) *Advanced Writing and Communication Skills*

Students in the Rosenstiel School will, as part of their major curriculum, take courses designed to provide students with the skills required for effective communication, both written and oral, within the discipline. Minimum writing credit requirements for all Rosenstiel School undergraduate degrees are listed below. Students may take more of the courses listed than the required minimum.

Geological Sciences

Candidates for Geological Sciences majors must complete a minimum of two of the following four courses with a grade of C- or better GSC 110, GSC 260, GSC 380, and GSC 561.

Marine Affairs

Candidates for the Marine Affairs major must complete a minimum of two of the following courses with a grade of C- or better MSC 112, MSC 339, MSC 340, and MSC 460.

Marine Biology and Ecology

Candidates for the Marine Biology and Ecology major must complete a minimum of two of the following courses with a grade of C- or better: MSC 112, MBE 232, MBE 310, MBE 323, MBE 329, MBE 330, MBE 404, MSC 421, MSC 422, MBE 410, and MBE 412.

Marine Science

Candidates for the Marine Science majors must complete three of the following courses with a grade of C- or better: MSC 112 and two chosen among MSC 216, MBE 232, and MSC 302.

Meteorology

Candidates for Meteorology majors must complete at least two writing courses with a grade of C- or better, and at least one writing course must be a designated writing course in the major. Students may satisfy this requirement for Meteorology discipline with ATM 103, ATM 306, ATM 307, and ATM 409.

Oceanography

Candidates for the Oceanography major must complete three of the following courses with a grade of C- or better: MSC 112 and two chosen among MSC 216, MBE 232, and MSC 302.

C) Mathematics

In a world increasingly influenced by science and technology, it is important for students to acquire the capacity to understand and use essential quantitative skills. The Quantitative Skills Proficiency Requirement helps students learn to use quantitative skills and tools to solve problems, including the interpretation, manipulation, and application of quantitative data. Students fulfill this requirement by completing either a Department of Mathematics course numbered MTH 108 (<https://bulletin.miami.edu/search/?P=MTH%20108>) Precalculus Mathematics II or higher for a Bachelor of Arts or MTH 162 Calculus II for a Bachelor of Science.

After satisfactory completion of the QSP courses, students will be able to:

- Select and use appropriate quantitative methods and tools to solve problems; and
- Interpret, manipulate, and apply quantitative data to solve problems.

Bachelor of Arts:

Code	Title	Credit Hours
Select one of the following: ¹		3-4
MTH 108	Precalculus Mathematics II	
MTH 113	Finite Mathematics	
MTH 130	Introductory Calculus	
MTH 140	Calculus Concepts with Foundations A	
MTH 141	Calculus Concepts with Foundations B	
MTH 161	Calculus I	
MTH 171	Calculus I	
Select an approved course in statistics or computer science of the following or an approved alternative: ²		3-4
MSC 204	Environmental Statistics	
MTH 224	Introduction to Probability and Statistics	
CSC 120	Computer Programming I	
MSC 203	Foundations of Computational Marine Science	

¹ Fulfills the Quantitative Skills Requirement.

² For specific Statistics and Computer Science requirements review each major.

Bachelor of Science:

Code	Title	Credit Hours
Complete two semesters of Calculus: ^{1,2}		8
MTH 161 or MTH 171	Calculus I Calculus I	
MTH 162 or MTH 172	Calculus II Calculus II	
Select an approved course in statistics or computer science of the following or an approved alternative: ³		3-4
MSC 204	Environmental Statistics	
MTH 224	Introduction to Probability and Statistics	

CSC 120	Computer Programming I
MSC 203	Foundations of Computational Marine Science

- ¹ Students must earn a letter grade of C- or higher in Calculus I for all B.S. and B.S.M.A.S majors excluding RSML, RSMP, and RSMX+MATH which require a letter grade of C- or higher in Calculus I and II. Meteorology majors must earn a letter grade of C or higher in both Calculus I and Calculus II.
- ² Calculus II fulfills the Quantitative Skills Requirement.
- ³ For specific Statistics and Computer Science requirements review each major.

Areas of Knowledge

As described under the section General Education Requirements under *General University Information*, students must complete one cognate in each of three Areas of Knowledge:

1. Arts and Humanities,
2. People and Society (Social Sciences) and
3. Science, Technology, Engineering and Mathematics (STEM).

All undergraduate students in the Rosenstiel School will fulfill their STEM cognate requirement through their major requirements. Students in Marine Affairs will fulfill their People and Society cognate requirement through their minor. Students in Marine Science may elect to fulfill the People and Society cognate requirement with a Marine Policy cognate. Students in Meteorology may elect to fulfill the People and Society cognate requirement with a Broadcast Meteorology cognate. Cognates integrating Study Abroad courses are also available. See program advisors for details.

Foote Fellow Requirements

Cognates

Foote Fellows are exempt from cognate requirements.

English

Foote Fellows with (ACT English score 18-31; or SAT Evidence-Based Reading and Writing or Critical Reading score 430-690; or TOEFL iBT Writing score 18 or above) will be required to take First-Year Writing I and II (WRS 105) and (ENG 106 or WRS 106 or WRS 107). Foote Fellows with (ACT English score 32 or above; or SAT Evidence-Based Reading and Writing or Critical Reading score 700 or above) will be required to take First-Year Writing II: STEM (WRS 107). Only those Foote Fellows with sufficient scores on AP/IB examinations are exempt from the Written Communication Skills requirement.

Mathematics

All Foote Fellows must complete math requirements as specified by their program.

Note: Exempt courses must be replaced by courses at the 200-level or higher.