

M.P.S. IN MARINE GEOSCIENCES

Overview

The Master of Professional Science (M.P.S) Degree in Marine Geosciences with a track in Environmental Geology offers students a specialized degree that combines knowledge in theoretical areas of geology with technical expertise in geochemistry, geophysics, and hydrogeology to address, study and mitigate naturally and anthropogenically-derived geologic hazards and topical issues of concern to society such as climate change and sea level rise. The degree requires a total of 30 credit hours and an internship and is typically completed in 12 – 18 months.

Admission Requirements

Prerequisites:

- Bachelor of Science degree (B.S.) or Bachelor of Arts degree (B.A.), preferably in geology, geochemistry, or geography.

All application requirements are available here (<https://mps.earth.miami.edu/prospective-students/admissions/>).

Curriculum Requirements

Three core courses are required in each semester plus one additional elective course, totaling 24 course credits. An internship counting for six credits recommended but can be partly offset by taking additional courses.

| Code | Title | Credit Hours |
|--|--|--------------|
| Core Courses | | |
| MGS 611 | Earth Surface Processes | 3 |
| MGS 624 | Seismic Interpretation of Carbonate Systems | 3 |
| MGS 628 | Analyze and Visualize Geoscience Data | 3 |
| MGS 634 | Hydrological Hazards | 3 |
| MGS 637 | Environmental Site Assessment | 3 |
| MGS 638 | Saltwater Intrusion in South Florida | 3 |
| Electives | | 6 |
| The remaining courses may be selected from the following list or other courses approved by the academic advisor. | | |
| EVR 660 & EVR 661 | Introduction to Marine Geographic Information Systems and Introduction to Marine Geographic Information Systems - Laboratory | |
| MGS 613 | Introductory Geochemistry | |
| MGS 614 | Geophysics | |
| MGS 627 | Analysis of Carbonate Cores and Logs | |
| MGS 635 | Geological Hazards | |
| MGS 636 | Using Drones in Geoscience | |
| MGS 639 | Preparation for Professional Geologist Licensure | |
| MGS 750 | Stable Isotopes in Biogeochemical Processes | |
| MGS 768 | Radiogenic Isotope Geochemistry | |
| Internship ¹ | | 2-6 |
| MGS 795 | (MPS Internship) | |
| Additional Requirements | | |
| RSM 700 | Research Ethics | 0 |
| Total Credit Hours | | 30 |

¹ Enrollment in 2 - 6 internship credits is required during a student's time in the M.P.S. degree program. Completion of less than 2 internship credits must be approved by M.P.S. Director. Students may enroll in more than 6 internship credits with the approval of the Program Director. Typically, two semesters are needed to complete all aspects of the internship phase of M.P.S.

Sample Plan of Study

| Year One | | Credit Hours |
|---------------------------|---|--------------|
| Fall | | |
| MGS 611 | Earth Surface Processes | 3 |
| MGS 628 | Analyze and Visualize Geoscience Data | 3 |
| MGS 637 | Environmental Site Assessment | 3 |
| Approved Elective | | 3 |
| RSM 700 | Research Ethics | 0 |
| Credit Hours | | 12 |
| Spring | | |
| MGS 624 | Seismic Interpretation of Carbonate Systems | 3 |
| MGS 634 | Hydrological Hazards | 3 |
| MGS 638 | Saltwater Intrusion in South Florida | 3 |
| Approved Elective | | 3 |
| Credit Hours | | 12 |
| Summer | | |
| MGS 795 | MPS Internship ¹ | 2-6 |
| Credit Hours | | 6 |
| Total Credit Hours | | 30 |

¹ Enrollment in 2 - 6 internship credits is required during a student's time in the M.P.S. degree program. Completion of less than 2 internship credits must be approved by M.P.S. Director. Students may enroll in more than 6 internship credits with the approval of the Program Director. Typically, two semesters are needed to complete all aspects of the internship phase of M.P.S.

Mission

The mission of Marine Geosciences: Environmental Geology program is to provide an education for students who want to translate their passion for the environment into a fulfilling career.

Program Goals

The goal of the Environmental Geology track is to give the students a rigorous academic grounding in environmental geology and training in field and laboratory techniques for providing sound advice for 1) responsibly development of coastal and urban areas, and 2) mitigating naturally and anthropogenically-derived geologic hazards at the local and national levels.

Student Learning Outcomes

The offered interdisciplinary courses aim to provide the students with an applied understanding of how to utilize geophysical, geochemical and hydrogeological techniques to evaluate, remediate, and monitor the impact or potential impact of environmental changes.

- Students will learn to integrate the geological context of a study site with the observations and analyses from hydrogeology, geochemistry and geophysics.
- Students will be able to document the composition and stratigraphy of a study site using outcrop and core information together with (near) surface geophysical techniques such as reflection seismic and ground penetrating radar techniques.
- Students will be familiarized with various aspects of hydrological and geological hazards.
- Students will learn the techniques of an environmental site assessment including geochemical and hydrological analyses and write a report for clients or government.
- Students will learn the most up-to-date geochemical techniques for assessing hazards such a groundwater contamination and spills.
- Students can elect to be prepared for the Professional Geology License in the State of Florida.
- Students will learn the skills to analyze and break down the interconnections between different types of data, both visually and analytically using different plotting and statistical methods.
- Students will learn how to acquire and process drone images for site evaluation and mapping purposes.