B.A. IN GEOLOGICAL SCIENCES

Overview

This major program prepares students for the study of the Earth and its ocean, and the ongoing processes of geophysical and geochemical change. Research at UM focuses on carbonate sedimentology and coral reefs, geochemistry, paleoclimatology, tectonic processes (volcanoes and earthquakes), and the impact of rising sea level on coastal systems. This major is designed for careers in education, business, law, or science journalism.

Curriculum Requirements

Code	Title	Credit Hours
Geological Sciences Requirements		
GSC 110	The Earth System [1]	3-4
or GSC 103	Evolution of the Modern Earth's Environment	
GSC 111	Earth System History [1]	3-4
or GSC 102	Evolution of the Biosphere	
GSC 260	Earth Materials	4
GSC 360	Depositional and Diagenetic Systems	4
GSC 482	Field Methods	2
GSC 561	Communicating Geoscience	2
Select 9 credit hours of approved electives in Geological Sciences [2]		9
Mathematics Requirement		
Select one of the following: (MTH108 or higher fulfills the Rosenstiel BA quantitative skills requirement)		3-4
MTH 108	Precalculus Mathematics II	
MTH 113	Finite Mathematics	
MTH 130	Introductory Calculus	
MTH 140	Calculus Concepts with Foundations A	
MTH 161	Calculus I	
or MTH 171	Calculus I	
Statistics or Computational Science Requirement		
Select one of the following:		3-4
MSC 204	Environmental Statistics	
MGS 528	Analyze and Visualize Geoscience Data	
MSC 203	Foundations of Computational Marine Science	
MTH 224	Introduction to Probability and Statistics	
CSC 120	Computer Programming I	
Minor Requirement		
Courses in approved minor		15
General Education Requirements		
Written Communication Skills:		
WRS 105	First-Year Writing I	3
WRS 107	First-Year Writing II: STEM	3
or WRS 106	First-Year Writing II	
or ENG 106	Writing About Literature and Culture	
Quantitative Skills:		
MTH 108 or higher (fulfilled through the major)		
Areas of Knowledge:		
Arts and Humanities Cognate		9
People and Society Cognate		9
STEM Cognate (9 credits) (fulfilled through the major)		
Electives		**48**

Additional Electives	
Total Credit Hours	**120-124**

1 GSC 111 and GSC 110 are recommended.
2 Which must be at the 300-level* or higher. Students are encouraged to take GSC 231* and GSC 580.

Suggested Plan of Study

This is only a sample. There are numerous ways students can create plans of study for the B.A. in Geological Sciences major. Students should feel empowered to use the information listed in the Academic Bulletin to take charge of their education, pursue their own academic interests, and create their own, unique plans of study.

Freshman Year		
Fall		**Credit Hours**
GSC 110	The Earth System	4
WRS 105	First-Year Writing I	3
MTH 108	Precalculus Mathematics II	3
A&H Cognate Course #1		3
Elective #1		3
	Credit Hours	**16**
Spring		
GSC 111	Earth System History	4
WRS 107	First-Year Writing II: STEM	3
MSC 204	Environmental Statistics	3
A&H Cognate Course #2		3
Minor Course #1		3
	Credit Hours	**16**
Sophomore Year		
Fall		
GSC 260	Earth Materials	4
GSC 360	Depositional and Diagenetic Systems	4
Minor Course #2		3
Elective #2		3
	Credit Hours	**14**
Spring		
GSC 482	Field Methods	2
P&S Cognate Course #1		3
Elective #3		3
Elective #4		3
Elective #5		4
	Credit Hours	**15**
Summer		
GSC 580	Summer Field Geology [1]	4
	Credit Hours	**4**
Junior Year		
Fall		
A&H Cognate Course #3		3
Minor Course #3		3
Elective #6		3
Elective #7		3
Elective #8		3
	Credit Hours	**15**

Spring		
P&S Cognate Course #2		3
Minor Course #4		3
Elective #9		3
Elective #10		3
Elective #11		3
	Credit Hours	**15**
Senior Year		
Fall		
GSC Course		3
GSC Course		2
P&S Cognate Course #3		3
Minor Course #5		3
Elective #12		4
	Credit Hours	**15**
Spring		
GSC 561	Communicating Geoscience	2
Elective #13		3
Elective #14		3
Elective #15		3
Elective #16		3
	Credit Hours	**14**
	Total Credit Hours	**124**

[1] Recommended elective to take for the Geological Science B.A. major.

Mission

The mission of the Rosenstiel School of Marine and Atmospheric Science is to deepen our collective knowledge of our planet through cutting-edge scientific research on the oceans, atmosphere, geology, biota, and the human dimension, while training the next generation of scientists. We transfer the knowledge gained to our students, the national and international scientific community, and to policymakers and the public.

The educational mission of the BS degree in Geological Sciences at the University of Miami is to graduate students with the ability and desire to integrate knowledge of geological science into their future careers.

Goals

In a time of increasing stress on Earth's resources, land, oceans and environment, we strive to train our students in both the fundamentals of the Geological Sciences and natural systems and also the global environmental stresses facing Earth and society. In addition to the basic classroom and hands-on education in the various aspects of the Geological Sciences, we focus on preparing our undergraduate students in three critical areas: extensive field training and research to give students competence in dealing with the complexities of the real world; training in written and oral communication to give them competence in sharing their accumulating knowledge with their peers and also with the public; and an understanding of how increased human population and resource use is affecting Earth's climate, environment and future character.

Student Learning Outcomes

- Students will demonstrate a strong knowledge base in the basics of geological sciences materials, history and processes (as provided in our GSC 110, 111, and 260 courses).
- Students will demonstrate a competent knowledge base in the following advanced sub-disciplines of geological sciences: sedimentology, stratigraphy, structural geology, paleontology/paleoecology, geochemistry, geophysics, and petrology.
- Students will demonstrate research competence in supervised research projects through course, employment, and/or a Senior Thesis.
- Students will demonstrate a competence in application of their geological sciences knowledge to field research applications, including mapping, sequence analysis, paleo-environmental reconstruction, structural/tectonic history, and process reconstruction.
- Students will demonstrate the ability to communicate their scientific knowledge and findings orally and in writing both at the professional scientific level and in lay terms.