

MARINE BIOLOGY AND COASTAL SCIENCES MAJOR (B.S.)

Marine Biology and Coastal Sciences represent the wide variety of ecosystems that are linked through water. The study of Marine Biology and Coastal Sciences encompasses freshwater lakes and streams, estuaries, and coastal marine habitats. These habitats are critical for numerous plants and animals, but they can be compromised by human activities. Students who pursue this major are interested in understanding the relationships among plants, animals and humans and how to protect and restore these valuable ecosystems.

This major is an interdisciplinary program of study emphasizing the four core sciences of biology, geology, chemistry, and physics. Students completing this program will be well prepared to enter the work force in research, environmental consulting, education and regulatory agencies (e.g., EPA), as well as in non-profit organizations. Additionally, students will be prepared to undertake further graduate work.

The curriculum was designed for students who have had high school biology, chemistry, and physics, and three years of college preparatory mathematics.

120 credits of coursework is required for the baccalaureate degree with a minimum 2.0 overall GPA, and a minimum 2.0 major GPA.

Program Requirements Overview

Code	Title	Credits
	General Education Requirements	35
	World Languages and Cultures Requirements	3-9
	Major Requirements	70-74
	Free Electives ¹	12-2
Total Credits		120

¹ Graduate Swing courses will count toward Free Electives for students in combined degree programs.

Major Requirements

Code	Title	Credits
Major Requirements		
AQUA 351	Aquatic Biological Processes	4
BIMS 220	Introduction to Marine Biology	4
BIOL 113	Principles of Biology II	4
BIOL 213	Introduction to Ecology	4
EAES 105	Physical Geology	4
EAES 230	Hydrology	3
EAES 322	Environmental Geochemistry	3
	Select one of the following:	4
AQUA 495	Research in Aquatic and Coastal Sciences	
BIMS 490	Field Methods in the Marine Sciences	
BIOL 418	Biology Independent Research	
EAES 494	Independent Study in Geoscience	
Major Electives		

Select three courses from the list below. ² 8-12

Collateral Requirements		
<i>Chemistry Collateral</i>		
CHEM 120	General Chemistry I	4
CHEM 121	General Chemistry II	4
CHEM 230	Organic Chemistry I	3
CHEM 232	Experimental Organic Chemistry I	2
<i>Physics Collateral</i>		
	Select one of the following sequences:	8
PHYS 191 & PHYS 192	University Physics I and University Physics II	
PHYS 193 & PHYS 194	College Physics I and College Physics II	
<i>Mathematics Collateral</i>		
	Select one of the following sequences:	8
MATH 111 & AMAT 120	Applied Precalculus and Applied Calculus A	
MATH 122 & MATH 221	Calculus I and Calculus II	
<i>Statistics Collateral</i>		
STAT 230	Data Science and Statistics	3
Total Credits		70-74

² Students in the combined Marine Biology and Coastal Science Major (B.S.)/Marine Biology and Coastal Science (M.S.) program take only 2 elective courses.

Major Electives

Code	Title	Credits
BIMS 490	Field Methods in the Marine Sciences	4
BIOL 380	Genetics	4
BIOL 460	Biological Oceanography	3
BIOL 461	Aquatic Ecology	3
BIOL 467	Biology of the Fishes	4
CHEM 231	Organic Chemistry II	3
CHEM 233	Experimental Organic Chemistry II	2
CHEM 310	Analytical Chemistry	5
EAES 210	Introduction to GIS and Remote Sensing	3
EAES 310	Geographic Information Systems (GIS)	3
EAES 311	Fundamentals of Remote Sensing of Environment	3
EAES 331	Geohydrology	3
EAES 340	Sedimentology	4
EAES 341	Principles of Soil Science	3
EAES 451	Coastal Marine Geology	4

General Education Requirements

Click here for a list of courses that fulfill General Education categories. (<http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/general-ed-ba-bs/>)

Code	Title	Credits
A. New Student Seminar		
	Complete a 1 credit New Student Seminar course.	1
C. Communication		

1. <i>Writing</i>	3
2. <i>Literature</i>	3
3. <i>Communication</i>	3
D. Fine and Performing Arts	
Complete a 3 credit Fine and Performing Arts course.	3
F. Humanities	
1. <i>Great Works and Their Influences</i>	3
2. <i>Philosophical and Religious Perspectives</i>	3
G. Computer Science	
Complete a 3 credit Computer Science course.	3
H. Mathematics	
Fulfilled by collateral mathematics requirement in the major.	
I. Natural Science Laboratory	
BIOL 113 Principles of Biology II (Fulfilled in the major.)	
J. Physical Education	
Complete a 1 credit Physical Education course.	1
K. Social Science	
1. <i>American and European History</i>	3
2. <i>Global Cultural Perspectives</i>	3
3. <i>Social Science Perspectives</i>	3
L. Interdisciplinary Studies	
Complete a 3 credit Interdisciplinary Studies course.	3
Total Credits	35

GENERAL EDUCATION: (C3) Communication	3
Credits	6
Total Credits	10

World Languages and Cultures Requirements

Click here for a list of courses that fulfill World Languages and Cultures categories. (<http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/world-languages-cultures-requirement/>)

Code	Title	Credits
World Languages		
Based on language placement exam, complete one or two sequential courses in the same language.		3-6
World Cultures		
Requirement may be fulfilled by course selected in General Education 0-3 - Social Science: Global Cultural Perspectives.		
Total Credits		3-9

Recommended Roadmap to Degree Completion

This recommended four-year plan is provided as an outline for students to follow in order to complete their degree requirements within four years. This plan is a recommendation and students should only use it in consultation with their academic advisor.

Course	Title	Credits
First Year		
Fall		
GENERAL EDUCATION: (A) New Student Seminar		1
GENERAL EDUCATION: (C1) Writing		3
	Credits	4
Spring		
GENERAL EDUCATION: (C2) Literature		3