

# Marine Biology, BS (Boston)

The Bachelor of Science in Marine Biology provides students with a solid foundation in marine biology, with flexibility to explore ocean and coastal processes, marine biogeochemistry, the ecology and evolution of marine organisms, and the ocean's role and responses in global change. Core, skills-based courses are designed to prepare students for in-depth examination of the contemporary issues facing marine organisms and ecosystems, while helping to develop resumés that are strengthened by experiential learning. This major also provides options for students following a pre-vet or pre-med track.

Faculty teaching the courses are experts who are dedicated to marine research and experiential learning, providing students the opportunities to learn valuable skills and to expand their professional science network. Students may actively participate in field and lab work, internships at Northeastern University's Marine Science Center in Nahant, MA or study abroad through Dialogue of Civilizations programs. Additional opportunities exist for students in this strong, interdisciplinary program that prepares students for direct entry into the job market or a competitive graduate program.

**Students majoring in Marine Biology cannot be combined with majors in Biology, Ecology and Evolutionary Biology, or Environmental and Sustainability Sciences, nor can they minor in Biology, Ecology and Evolutionary Biology, or Environmental and Sustainability Sciences.**

## Program Requirements

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

## Universitywide Requirements

All undergraduate students are required to complete the Universitywide Requirements (<https://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements/>).

## NUpath Requirements

All undergraduate students are required to complete the NUpath Requirements (<https://catalog.northeastern.edu/undergraduate/university-academics/nupath/>).

## Marine Biology Major Requirements

Code	Title	Hours
<b>Introduction to College</b>		
INSC 1000	Science at Northeastern	1
<b>Foundations Courses</b>		
EEMB 1101 and EEMB 1102	Foundations in Ecology and Evolutionary Biology and Lab for EEMB 1101	5
EEMB 1105 and EEMB 1106	Foundations in Ecological and Evolutionary Genomics and Lab for EEMB 1105	5
<b>Genetics</b>		
BIOL 2301 and BIOL 2302	Genetics and Molecular Biology and Lab for BIOL 2301	5
<b>Ecology</b>		
EEMB 2302 and EEMB 2303	Ecology and Lab for EEMB 2302	5
<b>Evolution</b>		
EEMB 2400	Introduction to Evolution	4
<b>Marine Biology</b>		
EEMB 2700 and EEMB 2701	Marine Biology and Lab for EEMB 2700	5
<b>Conservation</b>		
EEMB 3460	Conservation Biology	4
<b>Scientific Communication</b>		
ENVR 4000	Science Communication and Professional Development	4
<b>Capstone</b>		
Complete one of the following:		4
BIOL 4701	Biology Capstone	
ENVR 4971	Junior/Senior Honors Project 2	
ENVR 4997	Senior Thesis	

**Supporting Courses for Marine Biology**

<b>Code</b>	<b>Title</b>	<b>Hours</b>
<b>Mathematics</b>		
MATH 1251 or MATH 1241 or MATH 1341	Calculus and Differential Equations for Biology 1 Calculus 1 Calculus 1 for Science and Engineering	4
<b>Introduction to Data</b>		
ENVR 1500 and ENVR 1501	Introduction to Environmental, Social, and Biological Data and Lab for ENVR 1500	5
<b>Biostatistics</b>		
ENVR 2500 and ENVR 2501	Biostatistics and Lab for ENVR 2500	5
<b>Chemistry</b>		
CHEM 1161 and CHEM 1162 and CHEM 1163	General Chemistry for Science Majors and Lab for CHEM 1161 and Recitation for CHEM 1161	5
Complete one of the following:		4-5
CHEM 2311 and CHEM 2312	Organic Chemistry 1 and Lab for CHEM 2311	
ENVR 3410	Environmental Geochemistry	
ENVR 4504	Environmental Pollution	
<b>Physics</b>		
Complete a lecture/lab set for Physics 1:		5
<i>Physics 1</i>		
PHYS 1145 and PHYS 1146	Physics for Life Sciences 1 and Lab for PHYS 1145 (recommended)	
PHYS 1151 and PHYS 1152 and PHYS 1153	Physics for Engineering 1 and Lab for PHYS 1151 and Interactive Learning Seminar for PHYS 1151	
PHYS 1161 and PHYS 1162 and PHYS 1163	Physics 1 and Lab for PHYS 1161 and Recitation for PHYS 1161	
PHYS 1171 and PHYS 1172 and PHYS 1173	Physics 1 for Bioscience and Bioengineering and Lab for PHYS 1171 and Interactive Learning Seminar for PHYS 1171	

**Marine Biology Electives**

<b>Code</b>	<b>Title</b>	<b>Hours</b>
ENVR 3125 or ENVR 3600	Global Oceanic Change Oceanography	4
Complete five of the following:		20-21
BIOL 5587	Comparative Neurobiology	
EEMB 3455	Ecosystems Ecology	
EEMB 3465	Ecological and Conservation Genomics	
EEMB 3466	Disease Ecology	
EEMB 3600	Animal Behavior	
EEMB 5130	Population Dynamics	
ENVR 3125	Global Oceanic Change (If not used to fulfill another requirement of this program)	
ENVR 3300 and ENVR 3301	Geographic Information Systems and Lab for ENVR 3300	
ENVR 4504	Environmental Pollution	
ENVR 4505	Wetlands	
ENVR 4970	Junior/Senior Honors Project 1	
ENVR 5220	Ecosystem-Based Management	
EEMB 5542	Marine Spatial Planning	

Elective courses available at Nahant campus to students approved for PlusOne admission to the MS Marine Biology program:

EEMB 5510	New England Marine Biomes
EEMB 5522	Experimental Design Marine Ecology
EEMB 5546	Sustainability of the Land-Sea Interface

## NUPath Requirements

The following NUPath requirements are fulfilled by required courses in this major:

- Analyzing and Using Data (AD)
- Conducting Formal and Quantitative Reasoning (FQ)
- Demonstrating Thought and Action in a Capstone (CE)
- Engaging with the Natural and Designed World (ND)
- Two Writing-Intensive Courses in the Disciplines (WI)

Other NUPath requirements may be fulfilled by electives in the major.

## Writing Requirements

Code	Title	Hours
ENGW 1111	First-Year Writing	4
or ENGW 1102	First-Year Writing for Multilingual Writers	
ENGW 3307	Advanced Writing in the Sciences	4
or ENGW 3303	Advanced Writing in the Environmental Professions	
or ENGW 3315	Interdisciplinary Advanced Writing in the Disciplines	

## Co-op Requirements

Code	Title	Hours
Students who want to participate in co-op will need to complete EESC 2000 Professional Development for Co-op.		
EESC 2000	Professional Development for Co-op	1

## Science GPA Requirement (Marine Biology)

A minimum 2.000 GPA in the following course codes is required: EEMB, ENVR

## Marine Biology Major Credit/GPA Requirements

Complete 94 semester hours in the major.

## Program Requirement

131 total semester hours required

## Plan of Study

### Sample Plan of Study

#### FOUR YEARS, TWO CO-OPS IN SPRING/SUMMER FIRST HALF

Year 1							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
ENVR 1000		1 EEMB 1105 and EEMB 1106		5 Vacation		Elective	4
EEMB 1101 and EEMB 1102		5 EEMB 2700 and EEMB 2701		5		Elective	4
MATH 1251		4 CHEM 1161 and CHEM 1162 and CHEM 1163		5			
ENGW 1111		4 Elective		4			
Elective		4					
	18		19		0		8
Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
EEMB 2302 and EEMB 2303		5 Co-op		0 Co-op		0 PHYS 1161 and PHYS 1162 and PHYS 1163	5
EEMB 2400		4				Elective	4

ENVR 1500 and ENVR 1501	5							
Elective	4							
EESC 2000	1							
	19		0		0			9
<b>Year 3</b>								
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>	<b>Summer 1</b>	<b>Hours</b>	<b>Summer 2</b>	<b>Hours</b>	
ENVR 2500 and ENVR 2501 and ENVR 2502	5	Co-op		0	Co-op	0	ENGW 3303	4
ENVR 3410	4					Elective		4
ENVR 3600	4							
Marine biology elective	4							
	17		0		0			8
<b>Year 4</b>								
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>					
BIOL 2301 and BIOL 2302	5	ENVR 4000	4					
EEMB 3460	4	ENVR 4997	4					
Marine biology elective	4	Marine biology elective	4					
Marine biology elective	4	Marine biology elective	4					
	17		16					
<b>Total Hours: 131</b>								