MARINE SCIENCE, B.S./ MARINE SCIENCE, M.S.

Contact

Carrie J Byron, Ph.D.
Chair, Graduate Program Committee
cbyron@une.edu (cbyron@une.edu)

Bryan Franks
Academic Director, School of Marine and Environmental Programs
bfranks1@une.edu (bfranks1@une.edu)

Mission

The mission of the School of Marine and Environmental Programs at the University of New England is to help our students gain an understanding of the natural world, develop critical thinking skills, and become scientifically literate. Together, we lay a foundation for lifelong learning and meaningful productive contributions to society.

The Marine Sciences programs encompass a wide variety of disciplines that seek to understand the way the ocean functions, how it is related to earth systems sciences, and how humans interact with the environment. Students will learn the theoretical underpinnings and applications of disciplines from biology to chemistry, geology, and physics. These disciplines are critical to life as we know it on the planet. Students will be able to apply these disciplines to solving real problems in ocean sciences and beyond.

Program Description

The Master of Science in Marine Sciences program offers post-baccalaureate training to students interested in continuing their education in the marine sciences. The classroom curriculum provides a strong background in all aspects of the marine sciences. The program focuses on a thesis research experience: students will conduct research and prepare a thesis on any of a variety of topics selected in consultation with our faculty.

The Accelerated BS/MS in Marine Science enables qualified UNE undergraduates to obtain the M.S. degree through an expedited process that begins during the senior year of undergraduate work. Students will complete much of the M.S. coursework during the fourth year, while also working on a thesis research project under the mentorship of a faculty member. The fifth year will be spent finishing coursework, the research project and writing the thesis.

The student is responsible for completing both the BS in Marine Science and MS in Marine Science, as detailed in both of those academic catalog programs. In this Accelerated BS/MS in Marine Science, a maximum of 12 course credits at the 500-graduate level can double count towards both the undergraduate and graduate degree requirements.

Program Goals

- Provide a knowledge base in the marine sciences that is deeper than the typical undergraduate experience.
- Instill outstanding research skills and a working knowledge of the scientific method by participating in high-quality research.
- Develop scientific communication skills through writing and oral presentations.

Transfer Credit

Students may not transfer credits from other graduate programs. However, if the student has already taken a similar required class at the graduate level, they may substitute another class, including thesis and research credits, in consultation with their major professor, and must receive a grade of B- or P or better for it to count toward their graduate degree.

Admissions

See Graduate Admissions (https://catalog.une.edu/graduate/admissions/) for more information.

Financial Information

Tuition and fees for subsequent years may vary. Other expenses include books and housing. For more tuition and fee information, please consult this catalog's Financial Information (https://catalog.une.edu/undergraduate/financial-information-undergraduate-programs/) section.

Curricular Requirements

The student is responsible for completing both the BS in Marine Science and MS in Marine Science, as detailed in both of those academic catalog programs. In this Accelerated BS/MS in Marine Science, a maximum of 12 course credits at the 500-graduate level can double count towards both the undergraduate and graduate degree requirements.

Marine Science, B.S. Requirements

Marine Biology Concentration

Code	Title	Hours
Nor'easter Core Requirements		
Nor'easter Core Requirements (https://catalog.une.edu/undergraduate/core-curriculum/)		40
Marine Biology Concentration Required Courses		
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	4
or CHE 150 & 150L	University General Chemistry I and University General Chemistry I Lab	
CHE 111 & 111L	General Chemistry II and General Chemistry II Lab	4
or CHE 151 & 151L	University General Chemistry II and University General Chemistry II Lab	
MAR 105 & 105L	Ecology and Evolution of Marine Organisms and Eco/Evo of Mar Organisms Lab	4
MAR 106 & 106L	Cellular and Molecular Biology of Marine Organisms and Cell/Molec Bio/Marine Orgs Lab	4
MAR 250 & 250L	Marine Biology and Marine Biology Lab	4
MAR 270 & 270L	Oceanography and Oceanography Lab	4
MAR 325	Marine Science Speaker Series	1
MAT 150	Statistics for Life Sciences	3
MAT 190	Calculus I	4
PHY 110	General Physics I w/Lab	4
or PHY 210	University Physics I	
PHY 111	General Physics II w/Lab	4

or PHY 211	University Physics II	
One MAR 400-level course [1]		3
One Cellular and Molecular Area Course		3-4
One Organismal Area Course		3-4
One Physiological Area Course		3-4
One Process Area Course		3-4
Eight Credits of Marine Science Electives		8
Open Elective Courses (Students complete open elective credits as necessary to meet the University's 120-credit minimum for graduation. The total number of elective credits required will depend on the student's completed program, core, and other degree requirements.)		17
Total Hours		**120-124**

[1] MAR 400-level may be fulfilled by BIO 422 Coral Biology – Marine Biology Topics: Coral Reefs with lab. MAR 410 Marine Science Research and MAR 495 Adv Marine Science Internship cannot be used for this requirement.

Oceanography Concentration

Code	Title	Hours
Nor'easter Core Requirements		
Nor'easter Core Requirements (https://catalog.une.edu/undergraduate/core-curriculum/)		40
Oceanography Concentration Required Courses		
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	4
or CHE 150 & 150L	University General Chemistry I and University General Chemistry I Lab	
CHE 111 & 111L	General Chemistry II and General Chemistry II Lab	4
or CHE 151 & 151L	University General Chemistry II and University General Chemistry II Lab	
CHE 201 & 201L	Organic Chemistry I and Organic Chemistry I Lab	4
Select one of the following:		4
CHE 202 & 202L	Organic Chemistry II and Organic Chemistry II Lab	
CHE 310 & 310L	Fundamentals of Biochemistry and Biochemistry Lab	
MAR 105 & 105L	Ecology and Evolution of Marine Organisms and Eco/Evo of Mar Organisms Lab	4
MAR 106 & 106L	Cellular and Molecular Biology of Marine Organisms and Cell/Molec Bio/Marine Orgs Lab	4
MAR 250 & 250L	Marine Biology and Marine Biology Lab	4
MAR 270 & 270L	Oceanography and Oceanography Lab	4
MAR 325	Marine Science Speaker Series	1
MAR 366	Adv Oceanography I:Bio/Geo	3
MAR 368	Advanced Oceanography II: Chemical and Physical Oceanography	3
MAT 150	Statistics for Life Sciences	3
MAT 190	Calculus I	4
MAT 195	Calculus II	4
MAT 225	Computer Programming with MAT LAB	3
or DSC 225	Programming 1	
PHY 110	General Physics I w/Lab	4
or PHY 210	University Physics I	
PHY 111	General Physics II w/Lab	4
or PHY 211	University Physics II	
One 400-level MAR course [1]		3
Open Elective Courses (Students complete open elective credits as necessary to meet the University's 120-credit minimum for graduation. The total number of elective credits required will depend on the student's completed program, core, and other degree requirements.)		16
Total Hours		**120**

[1] MAR 400-level may be fulfilled by BIO 422 Coral Biology – Marine Biology Topics: Coral Reefs with lab. MAR 410 Marine Science Research and MAR 495 Adv Marine Science Internship cannot be used for this requirement.

Topic Area Courses

Code	Title	Hours
Topic Area Courses		
Organismal Biology Area Courses:		
BIO 234 & 234L	Environmental Microbiology and Environmental Microbiology Lab	4
BIO 330 & 330L	and (Comparative Vertebrate Anatomy w/Lab)	4
MAR 222 & 222L	Finfish/Shellfish Culture Tech and Finfish/Shellfish Culture Tech Lab	4
MAR 223 & 223L	Health, Nutrition, Feeding Cultured Organisms and Health, Nutrition, Feeding Cultured Organisms Lab	4
MAR 312 & 312L	Plankton Ecology and Plankton Lab	4
MAR 320 & 320L	Invertebrate Zoology and Invertebrate Zoology Lab	4
MAR 331 & 331L	Biology of Fishes and Biology of Fishes Lab	4
MAR 355 & 355L	Biology of Marine Mammals and Biology of Marine Mammals Lab	4
MAR 375 & 375L	and (Biology of Sharks, Skates, and Rays w/Lab)	4
MAR 422 & 422L	Coral Biology and Coral Biology Lab	4
MAR 452 & 452L	Nat Hist & Ev of Galapgos Faun and Nat His&Evo Galapagos Faun Lab	4
Process Area Courses:		
MAR 335 & 335L	Animal Behavior and Behavioral Ecology and Animal Behav/Behav Ecology Lab	4
MAR 350 & 350L	Marine Ecology and Marine Ecology Lab	4
MAR 432 & 432L	Fisheries Biology and Fisheries Biology Lab	4
Physiology Area Courses:		

BIO 322	Comparative Animal Physiology	3
BIO 421 & 421L	and (Physiological Ecology of Fishes w/Lab)	4
or MAR 421 & 421L	Marine Science Topics and Marine Science Topics Lab	
MAR 305 & 305L	Aquatic Health Management and Aquatic Health Management Lab	4
MAR 380	Exp. Animal Physiology	4
Cell and Molecular Area Course:		
MAR 220 & 220L	Cellular & Molecular Approaches in Marine Sciences and Cell/Mole Approaches in MS Lab	4

Electives

Code	Title	Hours
Marine Electives		
Any course with a CHE prefix (200-level or above)		3-5
Any course with a GIS prefix		3-4
Any course with a MAF prefix		3
Any course with a MAR prefix (200-level or above)		3-4

Please note: While some courses can fulfill both core and program requirements, the credits earned do not count twice towards the minimum total required credits for the degree.

Students wishing to pursue teacher certification in Life Science can complete a double major with Marine Science and Middle and Secondary Education or a major in Middle and Secondary Education and a concentration in Marine Science. For more information, see the Middle and Secondary Education catalog page. (https://catalog.une.edu/programs/middle-secondary-education-certification-bs/)

Students in this major can participate in the pre-health graduate school preparation tracks. (https://catalog.une.edu/programs/science-prerequisites-health-professions/)

You can find more details about the Marine Science, B.S. program here (https://catalog.une.edu/programs/marine-science-bs/).

Marine Science, M.S. Curricular Requirements

Code	Title	Hours
Program Required Courses		
MAR 503	Research Methods	3
MAR 512	Marine Science Center Seminar	1
MAR 516	Responsible Conduct Research	1
MAR 519	Scientific Literacy and Literature Review	3
MAR 566	Adv Oceanography I:Bio & Geo	3
MAR 568	Advanced Oceanography II: Chemical and Physical Oceanography	3
MAR 590	Marine Science Research/Thesis	18-19
Three to Four credits of 500-level Elective Coursework [1]		3-4
Total Hours		**36**

[1] Marine Sciences M.S. students may request to substitute research credits for elective coursework with approval from their thesis advisor. A formal written request must be submitted to the Graduate Program Committee (GPC), including a justification for the request. If approved by the GPC, students will submit a Course Substitution Form (available on the Office of the Registrar's webpage), which requires approval by the School of Marine and Environmental Programs (SMEP) Academic Director and by the CAS Dean, to the Registrar in preparation for graduation.

You can find more details about the Marine Science, M.S. program here. (https://catalog.une.edu/programs/marine-sciences-ms/)

Academic and Technical Standards

Satisfactory Academic Progress

To remain in the Accelerated BS/MS in Marine Science , a student's cumulative graduate GPA must be a minimum of 3.0. A student whose GPA falls below 3.0 or who receives a grade below B- in any course taken for graduate credit will be placed on academic probation.

Program Completion Timeline

Students have a maximum of five years to complete the graduation requirements for both the undergraduate and M.S. degrees. After two academic years (fall and spring terms), students who have completed their coursework but are still completing their theses are required to enroll in a minimum of one Thesis Writing/Data Analysis credit hour (MAR 595) per semester to remain in the program and the student needs to demonstrate satisfactory progress towards their degree completion. In such a case, the student should contact Student Financial Services to determine whether this change from full-time status affects their financial aid.

Probation/Dismissal

A student engaged in graduate (500-level) coursework whose GPA for any semester falls below 3.0, or whose cumulative GPA is below 3.0, or who receives a class grade below a B- for any class taken for graduate credit is automatically placed on probation. A student placed on academic probation will be granted one fall or spring semester to raise their cumulative GPA to 3.0 or above, will be required to achieve a minimum GPA of 3.0 for the semester, and cannot receive a second-course grade below B-. Any student who fails to meet these criteria will be considered for dismissal by the School of Marine and Environmental Programs and the Dean of the College of Arts and Sciences.

Learning Outcomes

- Students will demonstrate expertise in their thesis research field
- Students will achieve publication-level proficiency in written and professional oral communication skills
- Students will demonstrate mastery of the concepts and principles of the Marine Sciences
- Students will demonstrate an understanding of research design and have the ability to carry out a research project