Marine Sciences (MAR)

Major and Minor in Marine Sciences
Marine Sciences Research Center
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ASSISTANT TO THE DIRECTOR: Nancy Glover
EDUCATION OFFICE: 105 Endeavour Hall  PHONE: (631) 632-8681  E-MAIL: msrcgrad@notes.cc.sunysb.edu
WEB ADDRESS: http://www.msrc.sunysb.edu

Faculty
Please see the faculty listing in the entry for the Atmospheric and Oceanic Sciences major. A complete list of faculty including all adjunct faculty can be found on the MSRC Web site at http://www.msrc.sunysb.edu/people/people_1.htm.

Marine Sciences is a highly interdisciplinary field requiring an understanding and application of basic science, including biology, physics, and chemistry. In particular, the Marine Sciences major provides students with a solid background in basic biology as well as in the physics and chemistry of the ocean. Upper-division electives permit each student to gain a deeper understanding of particular groups of organisms (microorganisms, algae, marine invertebrates, fish, and marine mammals) and of habitats (salt marshes, rocky intertidal, barrier islands, dunes, estuaries, and the open ocean).

Stony Brook's center for research, education, and public service in the atmospheric sciences. The MSRC is one of the nation's leading coastal oceanographic and atmospheric institutions, and the expertise of the MSRC faculty places them at the forefront of addressing and answering questions about regional environmental problems, as well as problems relating to the global ocean and atmosphere. The primary focus of the MSRC faculty is on fundamental research designed to increase understanding of the processes that characterize the coastal ocean and the atmosphere. The MSRC is also committed to applying the results of research to solve problems arising from society's uses and misuses of the environment. The Center includes institutes in several major areas: the Institute for Terrestrial and Planetary Environments, the Living Marine Resources Institute, the Long Island Groundwater Resource Institute, and the Waste Reduction and Management Institute. The institutes and many research projects add a wealth of varied resources to education and research at Stony Brook.

The MSRC offers undergraduate majors in atmospheric and oceanic sciences, environmental studies, marine sciences, and marine vertebrate biology, and minors in environmental studies and marine sciences. See the separate entries for atmospheric and oceanic sciences (ATM), environmental studies (ENS), and marine vertebrate biology (MVB) in the alphabetical listings of Approved Majors, Minors, and Programs. The MSRC also offers several cooperative programs in both marine and environmental sciences with departments in the College of Arts and Sciences (Chemistry, Geosciences) and the College of Engineering and Applied Sciences (Chemical and Molecular Engineering).

An Environmental Studies Living Learning Center is available, housed in Hendrix College, which is a part of the Science and Society College. The Living Learning Center offers special programs, such as a seminar series showcasing faculty research and selected courses in the major and minor.

Research opportunities in marine sciences, atmospheric sciences, and waste management are available to undergraduates. Information on research opportunities may be found by contacting faculty directly or on the MSRC Web site at http://www.msrc.sunysb.edu.

All students should consult with the director of undergraduate studies to design and approve an acceptable course of study before declaring the major.

Courses Offered in Marine Sciences
See the Course Descriptions listing in this Bulletin for complete information.
MAR 101-E Long Island Sound: Science and Use
MAR 104-E Oceanography
MAR 301 Environmental Microbiology
MAR 302 Marine Microbiology and Microbial Ecology
MAR 303 Long Island Marine Habitats
MAR 304-E Waves, Tides, and Beaches
MAR 305 Experimental Marine Biology
MAR 308 Principles of Instrumental Analysis
MAR 315-H Conservation Biology and Marine Biodiversity
MAR 318 Engineering Geology and Coastal Processes
MAR 320 Limnology
MAR 333-H Coastal Oceanography
MAR 334-E Remote Sensing of the Environment
MAR 336 Marine Pollution
MAR 340-H Environmental Problems and Solutions
MAR 346 Marine Sedimentology
MAR 349 Introduction to Biological Oceanography  
MAR 350 Introduction to Ocean Physics  
MAR 351 Introduction to Ocean Chemistry  
**MAR 352 Introduction to Physical Oceanography**  
MAR 353 Physical Oceanography Laboratory  
MAR 354 Coastal and Estuarine Geology  
MAR 366 Plankton Ecology  
MAR 370 Marine Mammals  
MAR 371 The Biology and Conservation of Marine Birds and Sea Turtles  
**MAR 375 Marine Mammal and Sea Turtle Rehabilitation**  
MAR 380 Ichthyology  
MAR 385 Principles of Fishery Biology and Management  
MAR 388 Tropical Marine Ecology  
MAR 392-H Waste Management Issues  
MAR 394-H Environmental Toxicology and Public Health  
MAR 395 Topics in Marine Environmental Sciences  
MAR 475 Undergraduate Teaching Practicum  
MAR 487 Research in Marine Sciences  
MAR 488 Internship  

**Requirements for the Major in Marine Sciences (MAR)**

The major in Marine Sciences leads to a Bachelor of Sciences degree. Completion of the major requires between 68 and 71 credits. Of these, no more than one course (4 credits) with a grade lower than C can be credited to the major.

1. **Foundation Courses (40-41 credits)**  
   - BIO 150 The Living World  
   - BIO 201 Organisms to Ecosystems  
   - BIO 202 Molecular and Cellular Biology  
   - BIO 203 Cellular and Organ Physiology  
   - CHE 131/133, 132/134 General Chemistry and Lab (see Note 1)  
   - CHE 321 Organic Chemistry  
   - MAT 125, 126 Calculus (see Note 2)  
   - ENS/PHY 119 Physics for Environmental Studies or PHY 121/123 Physics for Life Sciences with lab (see Note 3)  
   - AMS 102 or AMS 110 Statistics  
2. **Oceanography Core (12 credits)**  
   - MAR 349 Biological Oceanography  
   - MAR 350 Introduction to Ocean Physics  
   - MAR 351 Introduction to Ocean Chemistry  
   - MAR 352 Introduction to Physical Oceanography  
   - MAR 353 Physical Oceanography Laboratory  
   - MAR 366 Plankton Ecology  
   - MAR 370 Marine Mammals  
   - MAR 371 Marine Birds and Turtles  
   - MAR 380 Ichthyology  
   - MAR 385 Fisheries Biology  
   - MAR 388 Tropical Marine Ecology  
   - MAR 394-H Waste Management Issues  
   - MAR 395 Topics in Marine Environmental Sciences  
3. **Marine Biology (15-17 credits)**  
   - BIO 353 Marine Ecology  
   - Four marine biology electives from below:  
     - BIO 343 Invertebrate Zoology  
     - BIO 346 Aquatic Arthropods and Vertebrates  
     - MAR 301 Environmental Microbiology  
     - MAR 302 Marine Microbiology and Microbial Ecology  
     - MAR 303 Long Island Marine Habitats  
     - MAR 315 Conservation Biology  
   - MAR 305 Experimental Marine Biology  

**Sample Course Sequence for the Major in Marine Sciences**

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<th>Year</th>
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<th>Spring Credits</th>
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<td>BIO 353</td>
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<td>AMS 110</td>
<td>MAR 349</td>
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<td>CHE 321</td>
<td>ENS/PHY 119</td>
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**Sophomore**

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**Senior**

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1. **Notes:**
   - Sample Course Sequence for the Major in Marine Sciences
   - Spring Credits
     - BIO 201 4  
     - AMS 110 3  
     - CHE 321 3  
     - D.E.C. 3  
     - D.E.C. 3  
     - Total 16  
   - Summer Credits
     - MAR 354 4  
     - MAR 353 4  
     - ENS/PHY 119 4  
     - Upper-Division D.E.C. 3  
     - Total 15  
   - Fall Credits
     - MAR 351 3  
     - MAR elective 3  
     - Elective 3  
     - Elective 3  
     - Upper-Division D.E.C. 3  
     - Total 15  
   - Spring Credits
     - MAR 352 3  
     - MAR elective 3  
     - Elective 3  
     - Elective 3  
     - Upper-Division D.E.C. 3  
     - Total 15  

http://www.stonybrook.edu/ugbulletin
1. CHE 141/143, 142/144 Honors
   Chemistry and Lab may be substituted for CHE 131/133, 132/134
2. MAT 131, 132 or MAT 141, 142 may be substituted for MAT 125, 126
3. The first semester of any calculus-based Physics with lab can be substituted, such as PHY 125 or 131/133 or 141 or 142.

Requirements for the Minor in Marine Sciences (MAR)
The minor in Marine Sciences is open to students who either wish to prepare themselves for future graduate education in marine sciences or who are preparing for a career in a marine-related field. The minor, which is interdisciplinary in nature, provides a foundation in marine aspects of biology, chemistry, geology, and physics for the undergraduate. Intended primarily for science majors, the minor assumes completion of basic courses in mathematics, physics, chemistry, biology, or geology. No more than three credits of courses taken under the Pass/No Credit option may be applied toward the minor. Completion of the minor requires 18 credits.

1. MAR 101 or 104
2. At least 15 credits from the following:
   Upper-division MAR courses
   BIO 343
   BIO/GEO 353
   Note: No more than three credits each of MAR 487 and MAR 488 may be applied toward this requirement.