Marine Vertebrate Biology (MVB)

Major in Marine Vertebrate Biology
Marine Sciences Research Center
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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/faculty

The Marine Vertebrate Biology major provides students with a solid background in basic biology with an emphasis on marine vertebrate organisms such as fish, sharks, birds, turtles and marine mammals. It provides a more intensive zoology background than the Marine Sciences degree.

Students are encouraged to participate in research and internships. Opportunities for experiential learning are available through field and laboratory courses taught at or near the Stony Brook campus and from a field station near the ocean in Southampton New York.

Most students who wish to have a career in research related to the marine environment will need to plan for graduate study. Career possibilities include research, education, or work in government agencies or non-profit organizations.

The Marine Vertebrate Biology major is administered by the Marine Sciences Research Center, one of the leading oceanographic institutions in the nation. The Marine Sciences Research Center (MSRC) is the center for marine research, education, and public service in the marine and environmental sciences of the State University of New York system. In addition, the MSRC is the University at 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 Atmospheres, 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 sciences (MAR) 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 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 Vertebrate Biology
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
The Department of Materials Science and Engineering offers the minor in Materials Science.
MAR 350 Introduction to Ocean Physics
MAR 351 Introduction to Ocean Chemistry
MAR 366 Plankton Ecology
## Sample Course Sequence for the Major in Marine Vertebrate Biology

### Freshman Fall Credits
- **D.E.C. A** 3
- CHE 131 4
- CHE 133 4
- MAT 125 3
- D.E.C. 3
- **Total 14**

### Spring Credits
- **D.E.C. A** 3
- CHE 132 4
- CHE 134 4
- BIO 150 3
- MAT 126 3
- **Total 14**

### Sophomore Fall Credits
- BIO 201 4
- AMS 119 3
- CHE 321 3
- D.E.C. 3
- **Total 16**

### Spring Credits
- BIO 202 4
- BIO 344 4
- D.E.C. 3
- **Total 14**

### Junior Fall Credits
- MAR 349 4
- ENS/PHY 119 3
- MAR Biology Elective 3
- D.E.C. 3
- **Total 16**

### Spring Credits
- MAR 350 2
- Elective 3
- Upper-Division D.E.C. 3
- **Total 15**

### Senior Fall Credits
- MAR Vertebrate Core Elective 3
- MAR Biology Elective 3
- Elective 3
- Elective 3
- Upper-Division D.E.C. 3
- **Total 15**

### Spring Credits
- MAR Vertebrate Core Elective 3
- MAR Biology Elective 3
- Elective 3
- Elective 3
- Upper-Division D.E.C. 3
- **Total 15**

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**MAR 370** Marine Mammals  
**MAR 371** The Biology and Conservation of Marine Birds and Sea Turtles  
**MAR 380** Ichthyology  
**MAR 385** Principles of Fishery Biology and Management  
**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 Vertebrate Biology (MVB)

The major in Marine Vertebrate Biology leads to a Bachelor of Sciences degree. Completion of the major requires between 67-72 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 (42-45 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 231 Organic Chemistry  
   - MAT 125, 126 Calculus (See Note 2)  
   - ENS/PHY 119 Physics for Environmental Studies and MAR 350 Introduction to Ocean Physics, or PHY 121/123, 122/124 Physics for Life Sciences and labs (see Note 3)  
   - AMS 102 or AMS 110 Statistics  

2. **Zoology and Marine Vertebrate Core (13 credits)**  
   - BIO 344 Chordate Zoology  
   - BIO 354 Evolution or BIO 320 Genetics  

   Two of the following:  
   - MAR 370 Marine Mammals  
   - MAR 371 Marine Birds and Turtles  
   - MAR 380 Ichthyology  

3. **Marine Biology (12-14)**  
   - MAR 349 Biological Oceanography or BIO 353 Marine Ecology  

   Three electives from below:  
   - BIO 328 Mammalian Physiology  
   - BIO 343 Invertebrate Zoology  
   - BIO 351 Ecology  
   - BIO 359 Behavioral Ecology  
   - MAR 301 Environmental Microbiology  
   - MAR 302 Marine Microbiology  
   - MAR 303 Long Island Marine Habitats  
   - MAR 305 Experimental Marine Biology  
   - MAR 315 Conservation Biology  
   - MAR 366 Plankton Ecology  
   - MAR 385 Fisheries Biology  
   - MAR 487 Research or MAR 488 Internship (maximum of three credits can be used for required elective)

4. **Upper-Division Writing Requirement**  
   All students in the major must submit two papers from any upper division course in the major to the director of undergraduate programs for evaluation by the end of the junior year.

Notes:

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. PHY 125, 126, 127 or PHYS 131/133, 132/134 or PHYS 141, 142 may be substituted for the two-semester physics sequences listed above

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http://www.stonybrook.edu/ugbulletin