Marine Vertebrate Biology (MVB)

Major in Marine Vertebrate Biology
School of Marine and Atmospheric Sciences (SoMAS)
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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 SoMAS Web site at

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 School of Marine and Atmospheric Sciences, one of the leading oceanographic institutions in the nation. The School of Marine and Atmospheric Sciences (SoMAS) is Stony Brook University’s center for education, research, and public service in the ocean, atmospheric and environmental sciences. Housed within the SoMAS are the Marine Sciences Research Center (MSRC) and the Institute for Terrestrial and Planetary Atmospheres (ITPA). MSRC is the only state-designated center for marine research, education, and public outreach within the State University of New York system. The SoMAS is one of the nation’s leading coastal oceanographic and atmospheric institutions, and the expertise of the SoMAS faculty places SBU 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 SoMAS faculty is on fundamental research designed to increase understanding of the processes that characterize the coastal ocean and the atmosphere. The SoMAS is also committed to applying the results of research to solve problems arising from society’s uses and misuses of the environment. The SoMAS also includes mission-oriented 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 SoMAS offers undergraduate majors in atmospheric and ocean sciences, environmental studies, marine sciences, and marine vertebrate biology, and minors in environmental studies and marine sciences. See the separate entries for atmospheric and ocean sciences (ATM), environmental studies (ENS), and marine sciences (MAR) in the alphabetical listings of Approved Majors, Minors, and Programs. The SoMAS 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 SoMAS Web site at http://www.somas.stonybrook.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 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 366 Plankton Ecology
- MAR 370 Marine Mammals

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**Sample Course Sequence for the Major in Marine Vertebrate Biology**

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The major in Marine Vertebrate Biology leads to a Bachelor of Sciences degree. Completion of the major requires between 69 and 74 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 (43-46 credits)**
   - BIO 201 Organisms to Ecosystems
   - BIO 202 Molecular and Cellular Biology
   - BIO 203 Cellular and Organ Physiology
   - BIO 204 Fundamentals of Scientific Inquiry in the Biological Sciences I
   - BIO 205 Fundamentals of Scientific Inquiry in the Biological Sciences II
   - 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 and MAR 352 Introduction to Physical Oceanography and MAR 353 Physical Oceanography Laboratory, 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
   - 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 or MAR 302 Marine Microbial Ecology
     - 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 or MAT 171 may be substituted for MAT 125, 126
3. PHY 125, 126, 127 or PHY 131/133, 132/134 or PHY 141, 142 may be substituted for the two-semester physics sequences listed above