About the Marine Sciences Research Center

MSRC is the center for education, research, and public service in marine and atmospheric sciences for the State University of New York system and home of the atmospheric sciences at Stony Brook.

MSRC is one of the leading coastal oceanographic and atmospheric institutions in the world. The Center includes institutes in several major areas that add a wealth of varied resources to our students' education and research: the Waste Reduction and Management Institute, the Living Marine Resources Institute, and the Institute for Terrestrial and Planetary Atmospheres.

Besides the undergraduate degree programs listed in this brochure, MSRC has several cooperative programs with departments in the College of Arts and Sciences and the College of Engineering and Applied Sciences. Upper-division and lower-division undergraduate courses are taught through MSRC, and research opportunities are available to outstanding undergraduate students.

About Long Island

Long Island offers a great diversity of habitats and scale of human influences that make it an ideal living laboratory for study and research opportunities:

- A large variety of yearly weather regimens resulting from our location on the Atlantic seaboard.
- Estuaries, bays, barrier beaches, dunes, bluffs, and groundwater aquifers.
- A large gradient of population and degradation of air quality and coastal waters — from poor quality in the densely populated metropolitan area to pristine in the east end.

STONY BROOK
STATE UNIVERSITY OF NEW YORK

For more information Contact:

Director of Undergraduate Studies
Marine Sciences Research Center
Stony Brook University
Stony Brook, New York 11794-5000

(631) 632-8681
msrcugrad@notes.cc.sunysb.edu
http://atmos.msrc.sunysb.edu

ATMOSPHERIC AND OCEANIC SCIENCES

CURRICULUM 2006-2007 UNDERGRADUATE STUDY

marine sciences research center

Stony Brook University

New, expanded selection of courses and program options:

Atmospheric and Oceanic Sciences Major

Two tracks of study are available in the Atmospheric and Oceanic Sciences undergraduate major at Stony Brook. One is intended for students wishing to learn about the physical behavior of the atmosphere and its application to weather forecasting and the other track is for students who wish to learn about physical phenomena in the atmosphere and the oceans and their interactions.
The core courses for both tracks are are as follows:

A. Mathematics, Physics and Chemistry Requirements

MAT 131 and 132 (calculus); or any three course sequence of calculus
MAT 203 or 205 or AMS 261
CHE 131 and 132 or 141 and142
PHY 125, 126, 127 or 131, 132, or 141, 142
PHY 251 Modern Physics or ATM 320 Data Analysis
MAT 303 Calculus IV or AMS 361 Applied Calculus
MEC 111 Computer Science for Engineers

B. Upper-Division Writing Requirement

C. Departmental Course Requirements

ATM 205 Introduction to Atmospheric Sciences
ATM 345 Atmospheric Thermodynamics and Dynamics
ATM 346 Advanced Dynamic Meteorology
ATM 397 Air Pollution and Its Control
MAR 350 Ocean Physics
MAR 334 Remote Sensing

The additional requirements for the Meteorology track are as follows:

ATM 247 Atmospheric Structure and Analysis
ATM 347 Advanced Synoptic Meteorology and Weather Forecasting
ATM 348 Atmospheric Physics

In this track, students learn both the mathematics and physics governing atmospheric behavior and apply this knowledge to forecasting the weather using real-time data received at our weather laboratory.

Opportunities are available for students to gain additional practical experience by working under cooperative agreements at two nearby NOAA weather forecasting installations. Students graduating in this track will have satisfied all of the course work recommended by the American Meteorological Society for undergraduate training in meteorology and also the course work required by NOAA for certification as an entry level government meteorologist.

The additional requirements of the Atmosphere/Ocean track are as follows:

MAR 308 Instrumental Analysis
MAR 340 Environmental Problems
MAR 333 Coastal Oceanography

Students graduating in this track will have taken the course work necessary to prepare them for study toward graduate degrees that prepare them for research and teaching positions in the atmospheric sciences, in physical oceanography or in atmosphere-ocean interactions.

Marine Sciences Minor

The minor in marine sciences (MAR) 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. It requires 18 credits:

Requirements

1. Either MAR 101, Long Island Sound: Science and Use (3 credits) or MAR 104 Oceanography (3 credits).
2. At least 15 credits from the following: Any upper-division MAR course BIO 343, or BIO 353 (with a maximum of 3 credits each from Research, MAR 487 and Internship, MAR 488).

UNDERGRADUATE COURSES OFFERED

(credit hours in bold)

I. Atmospheric Sciences/Meteorology

ATM 102 Weather and Climate (**3**)
ATM 205 Introduction to Atmospheric Sciences (**3**)
ATM 237 Current Topics in World Climate (**3**)
ATM 247 Atmospheric Structure and Analysis (**3**)
ATM 305 Global Atmospheric Change (**3**)
ATM 320 Spatial Data Analysis Using Matlab (**3**)
ATM 345 Atmospheric Thermodynamics and Dynamics (**3**)
ATM 346 Advanced Dynamic Meteorology (**3**)
ATM 347 Advanced Synoptic Meteorology and Weather Forecasting (**3**)
ATM 348 Atmospheric Physics (**3**)
ATM 397 Air Pollution and Its Control (**3**)
ATM 437 Forecasting Practicum (**1**)
ATM 447 Senior Tutorial in Atmospheric Sciences (**1-3**)
ATM 487 Senior Research in Atmosph. Sciences (**1-3**)
ATM 488 Internship (**1-3**)

II. Marine Sciences

MAR 101 Long Island Sound: Science and Use (**3**)
MAR 104 Oceanography (**3**)
MAR 301 Environmental Microbiology (**3**)
MAR 302 Marine Microbiology and Microbial Ecology (**3**)
MAR 303 Long Island Marine Habitats (**4**)
MAR 305 Experimental Marine Biology (**3**)
MAR 304 Waves, Tides and Beaches (**3**)
MAR 308 Instrumental Analysis (**3**)
MAR 313 Marine Biochemistry (**3**)
MAR 318 Engineering Geology and Coastal Processes (**3**)
MAR 320 Limnology (**3**)
MAR 333 Coastal Oceanography (**3**)
MAR 334 Remote Sensing in Oceanography (**3**)
MAR 337 Primary Productivity in the Sea (**2**)
MAR 340 Environmental Problems and Solutions (**3**)
MAR 346 Marine Sedimentology (**3**)
MAR 350 Introduction to Ocean Physics (**2**)
MAR 351 Introduction to Ocean Chemistry (**3**)
MAR 366 Plankton Ecology (**3**)
MAR 371 Introduction to Tropical Marine Ecology (**3**)
MAR 390 Development of Aquaculture (**3**)
MAR 394 Environmental Toxicology and Public Health (**3**)
MAR 395 Topics in Marine Environmental Sciences (**3**)
MAR 410 Modeling Techniques for Marine Geochemistry (**3**)
MAR 475 Teaching Practicum in Marine Sciences (**3**)
MAR 487 Research in Marine Sciences (**1-3**)
MAR 488 Internship (**3-12**)