Environmental Studies (ENS)
Interdisciplinary Major and Living Learning Center Minor in Environmental Studies

School of Marine and Atmospheric Sciences (SoMAS)

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Environmental Studies (ENS)
The Environmental Studies major, leading to a Bachelor of Arts degree, is designed to provide students with the analytical and communication skills and the broad background necessary to understand and address complex environmental issues. The major also offers the opportunity for students to carry out focused study within a specific area of interest. Environmental issues are not resolved in the scientific, technological, social, or political arenas alone. The curriculum is, therefore, interdisciplinary and integrates principles and methodologies from the social sciences, engineering, the natural sciences, and humanities. The goal is to address the complex scientific, legal, political, socioeconomic and ethical issues that define and surround environmental issues.

The major in Environmental Studies prepares the student for further education and entry-level employment in areas such as public interest science and advocacy, environmental conservation, law, journalism, management, television documentary production, ecotourism, population studies, and public service including public health.

To demonstrate depth of learning, an area of concentration is required of all students in the major. Additionally, a research course, an internship, or field study is an essential part of the curriculum to provide real-world experience in an appropriate subject area.

The Environmental Studies major is administered by the School of Marine and Atmospheric Sciences. A Living Learning Center and a minor, with a residential component, are also available. A lounge and study area are available within the Living Learning Center for commuter students enrolled in the major or minor. The Living Learning Center, which is part of the Science and Society College, offers special programs, such as a seminar series showcasing faculty research and selected courses in the major and minor. Students may not pursue the minor in conjunction with the major.

Students should contact the director of undergraduate studies to design and approve an acceptable course of study before declaring the major.

Students may learn more about the School of Marine and Atmospheric Sciences by visiting http://www.somas.stonybrook.edu.

Requirements for the Major and Minor in Environmental Studies (ENS)

Requirements for the Major

The major in Environmental Studies leads to the Bachelor of Arts degree. No more than one course required for the major can receive a letter grade less than C.

Completion of the major requires approximately 66 credits.

A. Foundation Courses (34 credits)
1. Natural Sciences
   BIO 201 Fundamentals of Biology: Organisms to Ecosystems
   BIO 204 Fundamentals of Scientific Inquiry in the Biological Sciences I
   CHE 131, CHE 133 General Chemistry and Lab (See Note 1)
   MAT 125 or MAT 131 or MAT 141 Calculus
   PHY 119/ENS 119 Physics for Environmental Studies (See Note 2)
   One of the following: GEO 101 Environmental Geology or MAR 104 Oceanography or ATM 102 Weather and Climate or ENS 101 Prospects for Planet Earth
2. Social Sciences
   ANP 120 Introduction to Physical Anthropology
   ECO 108 Introduction to Economic Analysis
   POL 102 Introduction to American Government
3. Humanities

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PHI 104 Moral Reasoning or PHI 105 Politics and Society

4. Communications
Proficiency in writing, oral communication, and computer literacy will be encouraged in all students. These skills will be developed within the context of formal coursework and no additional credits are required.

5. 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.

B. Core Courses (20 credits)
1. One of the following statistics courses:
   - AMS 102, AMS 110, AMS 310, ECO 320, POL 201, PSY 201, or SOC 202
2. MAR 340 Environmental Problems and Solutions
3. ENS 301 Contemporary Environmental Issues and Policies
4. ENS 311/BIO 386 Ecosystem Ecology and the Global Environment
5. ENS 312 Population, Technology, and the Environment
6. One of the following (2 credits):
   - ENS 443 Environmental Problem Solving#Independent Research (See Note 3)
   - Internship (See Note 4)

C. Concentration (12 credits)
All students in the major must complete an area of concentration consisting of four courses to develop depth of knowledge in a specific field of interest.

1. Archaeology
   - ANT 104 Introduction to Archaeology
   - ANT 357 The Agricultural Revolution
   - ANT 362 Long Island Archaeology
   - ANT 420 Environmental Analysis using Remote Sensing
   Other upper-division archaeology courses may be substituted with permission of the undergraduate program director

2. Atmospheric Studies
   - ATM 205 Introduction to Atmospheric Science
   - ATM 237 Global Atmospheric Change
   - ATM 397 Air Pollution and its Control
   - MAR 334 Remote Sensing in the Environment
   Other upper-division ATM courses (ATM 345, ATM 346, or ATM 348) may be substituted with permission of the undergraduate program director

3. Conservation/Physical Anthropology
   - ANP 321 Primate Evolution
   - ANP 330 Human Evolution
   - ANP 360 Primate Conservation
   - MAR 315 Conservation Biology and Marine Biodiversity

4. Ecology
   - BIO 351 and BIO 352 Ecology and Ecology Laboratory
   - BIO 353 Marine Ecology
   - BIO 354 Evolution or BIO 385 Plant Ecology
   Other upper-division ecology or marine sciences courses (e.g., MAR 320 Limnology) may be substituted for BIO 353 and BIO 354/BIO 385 with permission of the undergraduate program director.

5. Environmental Economics
   - ECO 303 Intermediate Microeconomic Theory
   - ECO 305 Intermediate Macroeconomic Theory
   - ECO 373 Economics of the Environment and Natural Resources
   Other additional upper-division economics course by permission of the undergraduate director

6. Environmental History
   - HIS 103 American History to 1877 or HIS 104 United States since 1877
   - HIS 365 Environmental History of North America
   - AAS 352 Environmental History of China
   Additional upper-division history course with permission of undergraduate director (for example, HIS 281 or topics course)

7. Environmental Law
   - ENS 333/POL 333 Environmental Law
   - POL 320 Constitutional Law and Politics
   - POL 329 Administrative Law
   Other additional upper-division course (i.e., POL 351, POL 359, PHI 375) with permission of the undergraduate program director.

8. Marine Environmental Studies
   - MAR 333 Coastal Oceanography
   - MAR 336 Marine Pollution
   - MAR 315 Conservation Biology and Marine Biodiversity
   - MAR 385 Principles of Fisheries Biology and Management
   Other upper-division courses (BIO 343, BIO 353; MAR 301, MAR 302, MAR 304, MAR 307, MAR 308, MAR 334, MAR 350, MAR 351, MAR 366, MAR 371, MAR 390) may be substituted with permission of the director of undergraduate studies.
9. Public Policy
PHI 364 Philosophy of Technology
POL 359 Public Policy Analysis
POL 364 Organizational Decision Making
ENS 333/POL 333 Environmental Law
10. Waste Reduction and Management
MAR 392 Waste Management Issues
MAR 393 Waste Treatment Technologies
MAR 394 Environmental Toxicology and Public Health
ENS 333/POL 333 Environmental Law
Or one additional upper-division waste reduction or environmental policy course (with permission of the undergraduate director)

Notes:
1. CHE 141, CHE 143 Honors Chemistry and Lab may be substituted for CHE 131, CHE 133
2. PHY 121/PHY 123, PHY 122/PHY 124 or PHY 125, PHY 126, PHY 127 or PHY 131/PHY 133, PHY 132/PHY 134 or PHY 141, PHY 142 may be substituted for PHY 119/ENS 119.
3. Two credits of any course numbered 487 or equivalent with one of the following designators: ANP, ANT, ATM, BCP, BIO, CHE, ECO, ENS, EST, GEO, MAR, PHY, POL. In addition to other prerequisites, credit toward the major requires approval of the research topic by the Director of Undergraduate Studies of the Marine Sciences Research Center.
4. Two credits of any course numbered 488 or equivalent with one of the following designators: ANP, ANT, ATM, BCP, BIO, CHE, ECO, ENS, EST, GEO, MAR, PHY, POL. In addition to other prerequisites, credit toward the major requires approval of the internship by the Director of Undergraduate Studies.

Honors Program in Environmental Studies
Graduation with departmental honors in Environmental Studies requires the following:

1. Students are eligible to participate in the Honors Program if they have a 3.50 GPA in all courses for the major by the end of the junior year. Students should apply to the SoMAS undergraduate director for permission to participate.
2. Students must prepare an honors thesis based on a research project written in the form of a paper for a scientific journal. A student interested in becoming a candidate for honors should submit an outline of the proposed thesis research project to the SoMAS undergraduate director as early as possible, but no later than the second week of classes in the last semester. The student will be given an oral examination in May on his or her research by his or her research supervisor and the undergraduate research committee. The awarding of honors requires the recommendation of this committee and recognizes superior performance in research and scholarly endeavors. The written thesis must be submitted before the end of the semester in which the student is graduating.
3. If the student maintains a GPA of 3.5 in all courses in their major through senior year and receives a recommendation by the undergraduate research committee, he or she will receive departmental honors.

Living Learning Center Interdisciplinary Minor in Environmental Studies
The Environmental Studies Living Learning Center, housed in the Science and Society College, offers a minor in Environmental Studies as well as activities that emphasize both scientific and social issues encompassed by the broad field of environmental studies. Through this program, motivated natural science and social science students are able to apply their other coursework specifically to the study of the environment. In addition, participation in the program adds a rewarding academic component to each student's residential experience. The minor in Environmental Studies provides enhanced exposure to one subfield of environmental studies, the natural science of the environment.

Requirements for the Minor

No more than one three-credit course in the minor may be taken under the Pass/No Credit option. All upper-division courses offered for the minor must be passed with a letter grade of C or higher.
Completion of the minor requires 18 credits.
1. One introductory course chosen from the following:
   ATM 102/EST 102 Weather and Climate
   BIO 113 General Ecology
   BIO 201 Principles of Biology: From Organisms to Ecosystems
   GEO 101 Environmental Geology
   MAR 101 Long Island Sound: Science and Use
   MAR 104 Oceanography
2. ENS 101 Prospects for Planet Earth
3. ENS 301 Contemporary Environmental Issues and Policies
4. Two advanced courses chosen from the following:
   ANP 360 Primate Conservation
   ANT 420 Environmental Analysis Using Remote Sensing and Geographic Information Systems
   ATM 397 Air Pollution and Its Control
   BIO 351 Ecology
   BIO 352 Ecology Laboratory
   BIO 353/GEO 353 Marine Ecology
   CHE 310 Chemistry in Technology and the Environment
   GEO 304 Energy, Mineral Resources, and the Environment
   GEO 315 Groundwater Hydrology
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MAR 320 Limnology
MAR 333 Coastal Oceanography
MAR 340 Environmental Problems and Solutions

5. At least three credits of independent study or research in any department, approved by the minor coordinator or undergraduate director.

Declaration of the Minor

Students should declare the Environmental Studies minor no later than the middle of their junior year, at which time they should consult with the minor coordinator or undergraduate director and plan their course of study for fulfillment of the requirements.

Sample Course Sequence for the Major in Environmental Studies

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<td>ENS 101, MAR 104, GEO 101, or ATM 102</td>
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<td>CHE 131</td>
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ENS
Environmental Studies

ENS 101 - E: Prospects for Planet Earth
An introduction for non-science majors to global environmental change. Exploration of the natural science of Earth's environment; the scientific, socioeconomic, and political issues that influence human impact on the global environment and responses to environmental changes; the strategies for humans to live in greater harmony with planet Earth. Global issues are related to the particular issues of the United States, the Northeast, and the greater metropolitan New York City-Long Island area.
3 credits

ENS 119 - E: Physics for Environmental Studies
The principles of physics as they apply to environmental issues. A review of mathematics is followed by a discussion of Newton's laws, conservation principles, topics in fluids and wave motion, optical instruments, and radioactivity. Three lectures and one laboratory session per week. This course is offered as both ENS 119 and PHY 119.
Prerequisites: MAT 123; CHE 131
4 credits

ENS 301 - H: Contemporary Environmental Issues and Policies
The scientific, socioeconomic, legal and legislative aspects of current environmental issues and policies. Invited experts address current environmental issues and policies of local, regional and global significance. Topics may include: land use practices and reform, farmland and open space preservation; soil and water conservation; wetlands protection and rehabilitation; waste management and reduction, recycling and composting; air pollution, global warming and sea level rise; and marine wilderness areas.
Prerequisite: One of the following: GEO 101, MAR 104, ATM 102, or ENS 101
3 credits

ENS 311 - H: Ecosystem Ecology and the Global Environment
Ecosystem ecology with an emphasis on biogeochemical cycling in oceans and on land, as well as on biosphere-atmosphere interactions. Topics include earth system processes such as climate and atmospheric composition, the hydrological cycle, cycling of chemicals such as nutrients and metals in the oceans, the soil cycle, and the fate and transport of materials in the atmosphere.

ENS 312 - H: Population, Technology, and the Environment
A study of the biological, social, and economic factors that influence population growth. The development of new technologies and their influence on resource use and the effects that increasing population and changing technologies have on the environment are explored.
Prerequisites: MAR 340; one semester of BIO
3 credits

ENS 333: Environmental Law
Survey of the origins of environmental law and the major legislation enacted by Congress and the state of New York. Special emphasis is placed on the application of environmental law to the problem of solid waste management on Long Island. This course is offered as both ENS 333 and POL 333.
Prerequisites: ECO 108; POL 102
3 credits

ENS 380 - H: Stony Brook in Tanzania: Lake Victoria Environment and Human Health
This course investigates the relationship between environmental quality, human health and welfare. The focus is on Lake Victoria environment and the ways in which people have perceived, used/misused, and conserved it from pre-colonial times to the present. Students will examine changes in attitudes and behaviors toward nature and the interplay between environment and human health. This will be done through interviews and collection of basic environmental and health data, e.g., energy source and consumption, agricultural practices, malnutrition prevalence, and public health records. The class will also evaluate the effectiveness of the disease control activities and their effects on the environment. By course's end students will have gained a deeper understanding of the interaction between environment and health.
Prerequisite: U3 or U4 standing
4 credits

ENS 395: Topics in Environmental Sciences
Semester supplements to this Bulletin contain specific description when course is offered. May be repeated as the topic changes.
Prerequisite: one upper division ENS course
3 credits

ENS 443: Environmental Problem Solving
The integration of information and skills from the natural sciences, social sciences, engineering and the humanities to address important environmental problems. An environmental problem of current interest is presented. Working in small groups, students develop a proposal to solve the problem, collect and analyze data, and present results. Data collection may include field and laboratory work outside of scheduled class meetings.
Prerequisites: U3 or U4 standing; ENS major or minor
2 credits

ENS 447: Readings in Environmental Studies
Tutorial readings in the environmental sciences. This course may be repeated but no more than 3 credits may be used toward Environmental Studies major requirements.
Prerequisite: Permission of instructor and SoMAS undergraduate director
1-3 credits, S/U grading

ENS 488: Internship in Environmental Studies
Internships provide students with an opportunity of gaining experience working in the community at government agencies, environmental groups, aquaria, summer camps, field studies, etc. A suitable proposal must be presented by the student and approved by the Director of Undergraduate Studies before the internship begins. May be repeated for a maximum of 6 credits for the ENS major, 3 credits for the ENS minor.
Prerequisite: Permission of the SoMAS Undergraduate Programs Director
0-6 credits

ENS 487: Independent Research in Environmental Studies
An independent project, developed out of advanced coursework in environmental studies, designed in consultation with and supervised by a faculty member. The project should be formulated before the start of the semester in which the research will be done and should culminate in a substantial written paper. May be repeated.
Prerequisites: Permission of a supervising faculty member and SoMAS Undergraduate Programs Director
0-6 credits

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