Program Mission

The mission of the Environmental Sciences (ENVS) Program is to prepare students for entry into graduate school and productive careers in Environmental Sciences and Environmental Science related occupations.

Objectives

- Provide students with a strong academic curricula in Environmental Sciences.
- Prepare students to be adaptable to new developments in Environmental Sciences.
- Train students to conduct scientific research through example, mentoring and personal experience.
- Prepare students for employment in newly evolving and conventional scientific fields related to Environmental Sciences.

Program Description

The ENVS program offers undergraduate BS degrees specializing in two areas of interest: Marine Science or Environmental Chemistry. UMES also offers a Dual Degree BS program in conjunction with Salisbury University. Three graduate degrees are offered through the ENVS program, a BS/MS degree, a MS degree and a PhD degree in conjunction with the USM MEEES program.

Environmental Science Curriculum

The ENVS program B.S. curriculum comprises 28 credit hours of required core courses, 46 hours of elective course requirements, 3 hours of program electives, and an additional 42 semester hours of general education courses. To receive the B.S./M.S. degree, students must satisfy the 120 credit B.S. degree requirements and M.S. degree requirements which include a total of 30 course credits: core work (24 credits) and Master's Thesis research (6 credits).

Environmental Chemistry Core Courses

- CHEM311/312 Analytical Chemistry I & II
- CHEM488A/489 Environmental Chemistry/Lab
- ENV221/222 Prin. of Environ. Science/Lab
- ENV403/405 Marine Ecotoxicology/Lab
- ENV405 Earth Science
- ENV497 Senior Seminar
- ENV498/499 Ind. Study/UG Research

Marine Science Core Courses

- BIOL 301/303 Microbiology
- BIOL201/203 Marine Zoology/Lab
- BIOL202/204 Marine Botany/Lab
- BIOL 402 Ecology
- ENV202/204 General Oceanography/Lab
- ENV221/222 Prin. of Environ. Science/Lab
- ENV403/405 Marine Ecotoxicology/Lab
- ENV497 Senior Seminar
- ENV498/499 Ind. Study/UG Research

BS/MS Option Curriculum

Additional Courses to fulfill M.S. Requirements, Course NoTitle
- MEES XXX Electives (14 credits)
- MATH 410 Mathematical Statistics II
- CS&PD 624 Real Time (RT) PCR, Gas Chromatography Mass Spectrometer (GC-MS), Mass-Assisted Laser Desorption/Ionization Specotrometer (MALDI), Ion Chromatograph (IC), Nuclear Magnetic Resonance Spectrophotometer (NMR), Inductively Coupled Plasma Mass Spectrometer (ICP-MS), High-Performance Liquid Chromatograph (HPLC) with Dode Array and Fluorescence Detection, HPLC for Carbohydrate Analysis, Atomic Absorption Spectrophotometer (AAS), Thermogravimetric Analyzer (TG/MS/GC), X-Ray Diffractometer, Toxicity Analyzer, Laser Zee Meter, Autoclave, Differential Thermal Analyzer (DTA), Solution Phase Synthesizer (SPS), Microplate Reader with Fluorescence Detector, Electrophoresis Equipment for Protein Analysis, Porosimeter (ASAP2010), Fluorometer, Infrared Spectrometer, and UV-VIS Spectrophotometer, as well as several boats, ysi-8600, trawl and bongo nets.

Faculty Research Interests

Current areas of faculty research include water-air-soil pollution, heavy metal toxicity, environmental endocrinology, marine natural products, biological rhythms, marine invertebrates, mariculture, laser and application, solar energy storage/conversion, insect resistance of soybeans, renewable energy and fisheries science. Environmental Science majors also have the opportunity to participate in internships and/or faculty research projects with private industries, state, federal and local government agencies including the Department of Energy, National Institute of Health, Federal Government Research Laboratories, Hewlett Packard, US Army Waterways Experimental Research Station and other Universities with which collaborative agreements have been established.

Equipment

Equipment holdings reflects current trends in research and technology. They include: Nippon Mercury Analyzer (MA 2000); Catbub Fluorescence-Activated Cell Sorter (FACS); Micro Array, Real Time (RT) PCR, Gas Chromatography Mass Spectrometer (GC-MS), Mass-Assisted Laser Desorption/Ionization Spectrometer (MALDI), Ion Chromatograph (IC), Nuclear Magnetic Resonance Spectrophotometer (NMR), Inductively Coupled Plasma Mass Spectrometer (ICP-MS), High-Performance Liquid Chromatograph (HPLC) with Dode Array and Fluorescence Detection, HPLC for Carbohydrate Analysis, Atomic Absorption Spectrophotometer (AAS), Thermogravimetric Analyzer (TG/MS/GC), X-Ray Diffractometer, Toxicity Analyzer, Laser Zee Meter, Autoclave, Differential Thermal Analyzer (DTA), Solution Phase Synthesizer (SPS), Microplate Reader with Fluorescence Detector, Electrophoresis Equipment for Protein Analysis, Porosimeter (ASAP2010), Fluorometer, Infrared Spectrometer, and UV-VIS Spectrophotometer, as well as several boats, ysi-8600, trawl and bongo nets.

Career Opportunities

Graduates in Environmental Sciences will qualify for employment as an Air Pollution Supervisor, Water Treatment Plant Manager, Energy & Environment Specialist, Oceanographer, Marine Biologist, Soil Conservationist, Environmental Chemist/Biologist, or Fisheries Scientist.

Scholarships

- Department of Natural Sciences
- UMES Honors Program