ENVIRONMENTAL SCIENCE M.S.

Degree: Master of Science
https://www.towson.edu/fcsm/departments/environsci/grad/science/

Program Director: Joel Moore
Phone: 410-704-4245
Email: moore@towson.edu

The graduate program in environmental science (ENVS) is an interdisciplinary program with core courses taught by biologists, geologists and chemists. The program seeks to provide students with the ability to collect and evaluate geological, chemical and ecological data associated with creating and resolving solutions to the most pressing environmental issues and problems currently faced by metropolitan areas. The program has a thesis and a non-thesis capstone option, both designed to develop a student's ability to communicate the scientific basis for environmental decisions that impact human health and the environment to a wide audience of potential stakeholders including policy makers and disciplinary scientists.

Students pursuing a thesis will work with a research adviser to develop a scientifically sound project with the ultimate goal being the successful defense of their thesis. The non-thesis students will complete their degree in with the capstone Research Practicum course (ENVS 798) where they will conduct a comprehensive scientific review of the policy and/or regulations governing a current or emerging environmental issue. As part of the requirements for ENVS 798 these students will draft a policy analysis document to be reviewed by an external content expert and make a presentation of their findings to a panel of invited experts and guests.

The students currently enrolled in the program come from a range of backgrounds and disciplines that include those already working in the environmental field, those who are looking to enter the environmental work force or go on for an advanced graduate degree in a related field, and educators seeking to expand their knowledge of environmental sciences in metropolitan areas so they can teach the specialty.

Four concentrations were developed within the program, based on workforce needs identified by regional environmental professionals: Biological Resources Management, Water Resources Management and Assessment, Wetlands Assessment and Management, and Environmental Spatial Analysis.

The graduate handbook describes the policies and procedures pertaining to the M.S. degree and graduate certificate in Environmental Science. All required courses in the program and all ENVS-sponsored electives are taught in the late afternoon or evening.

Requirements

Admission Requirements

Application deadlines and a full listing of materials required for admission can be found on the website.

Prerequisites for Admission

- A minimum undergraduate GPA of 3.0 for full admission and 2.75 for conditional admission
- Students without an undergraduate degree in a related area (i.e. biology, chemistry, geology, or environmental science) are required to complete the following courses with a minimum GPA of 2.75 in order to be considered for admission. This should be done in consultation with the Graduate Program Director:
  - two terms of introductory biology with laboratory
  - two terms of introductory chemistry with laboratory
  - one term of statistics or one term of calculus

Degree Requirements

All M.S. students complete 30 units of graduate work. No more than three courses may be at the 500 level. In addition to completing the core courses listed below, all students select their elective courses from among those listed below.

Thesis Option (30 units)

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>ENVS 600</td>
<td>ENVIRONMENTAL SCIENCE AND SUSTAINABILITY COLLOQUIUM</td>
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Core Areas

Select one course from three of the four core areas listed below

Core Area 1: Environmental Geology
- ENVS 601 TOPICS IN ENVIRONMENTAL GEOLOGY
- ENVS 650 AQUEOUS GEOCHEMISTRY

Core Area 2: Ecosystem Science
- ENVS 604 ECOSYSTEM ECOLOGY

Core Area 3: Environmental Chemistry
- ENVS 605 CHEMISTRY OF ENVIRONMENTAL SYSTEMS

Core Area 4: Environmental Law, Policy, and Education
- BIOL 651 ENVIRONMENTAL AND BIOLOGICAL SCIENCE IN INTEGRATED STEM EDUCATION
- ENVS 582 ENVIRONMENTAL EDUCATION & SERVICE LEARNING IN THE TROPICS
- ENVS 603 ENVIRONMENTAL LAW AND REGULATIONS
- ENVS 611 WATER POLICIES OF THE UNITED STATES
- ENVS 620 ENVIRONMENTAL POLICY AND SUSTAINABLE MANAGEMENT
- ENVS 625 SCIENCE AND POLICY OF THE CHESAPEAKE BAY RESTORATION

Electives (see list below) 12-13

M.S. Thesis
- ENVS 896 THESIS 6

Total Units 30

Non-Thesis Option (30 units)

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<tr>
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<td>ENVIRONMENTAL SCIENCE AND SUSTAINABILITY COLLOQUIUM</td>
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Core Areas 14

Select one course from each of the four core areas listed below
Core Area 1: Environmental Geology

- **ENVS 601** TOPICS IN ENVIRONMENTAL GEOLOGY
- **ENVS 650** AQUEOUS GEOCHEMISTRY

Core Area 2: Ecosystem Science

- **ENVS 604** ECOSYSTEM ECOLOGY

Core Area 3: Environmental Chemistry

- **ENVS 605** CHEMISTRY OF ENVIRONMENTAL SYSTEMS (CHEMISTRY OF ENVIRONMENTAL SYSTEMS)

Core Area 4: Environmental Law, Policy, and Education

- **BIOL 651** ENVIRONMENTAL AND BIOLOGICAL SCIENCE IN INTEGRATED STEM EDUCATION
- **ENVS 582** ENVIRONMENTAL EDUCATION & SERVICE LEARNING IN THE TROPICS
- **ENVS 603** ENVIRONMENTAL LAW AND REGULATIONS
- **ENVS 611** WATER POLICIES OF THE UNITED STATES
- **ENVS 620** ENVIRONMENTAL POLICY AND SUSTAINABLE MANAGEMENT
- **ENVS 625** SCIENCE AND POLICY OF THE CHESAPEAKE BAY RESTORATION

Electives (see list below) 12

- **ENVS 798** RESEARCH PRACTICUM 3

**Total Units** 30

**Electives**

All ENVS courses at the 500-level and 600-level are approved electives. Core area courses taken in excess of the minimum requirements for the core areas also qualify as electives. Additional approved electives are shown below.

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<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>BIOL 506</td>
<td>LIMNOLOGY</td>
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<tr>
<td>BIOL 510</td>
<td>CONSERVATION BIOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 518</td>
<td>MICROBIOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 532</td>
<td>VASCULAR PLANT TAXONOMY</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 535</td>
<td>PLANT ECOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 555</td>
<td>FISH BIOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 556</td>
<td>ORNITHOLOGY</td>
<td>4</td>
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<tr>
<td>BIOL 561</td>
<td>ENTOMOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 567</td>
<td>HERPETOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 601</td>
<td>CURRENT TOPICS IN BIOLOGY (^1)</td>
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</tr>
<tr>
<td>BIOL 603</td>
<td>DATA ANALYSIS AND INTERPRETATION FOR BIOLOGISTS</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 609</td>
<td>COMMUNITY ANALYSIS AND BIOASSESSMENT</td>
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</tr>
<tr>
<td>BIOL 610</td>
<td>POPULATION AND COMMUNITY BIOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 611</td>
<td>GLOBAL CHANGE BIOLOGY</td>
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<tr>
<td>BIOL 619</td>
<td>ENVIRONMENTAL MICROBIOLOGY</td>
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<td>GEOG 503</td>
<td>SOILS AND VEGETATION</td>
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<td>GEOG 516</td>
<td>QUANTITATIVE METHODS IN GEOGRAPHY</td>
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<td>GEOG 523</td>
<td>GIS APPLICATIONS</td>
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<tr>
<td>GEOG 557</td>
<td>STUDIES IN NATURAL HAZARDS</td>
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**Learning Outcomes**

a. Collect and evaluate geological, chemical and ecological data associated with creating and resolving solutions to current (and local) environmental problems.

b. Interpret the legal framework that underlies environmental regulation as it applies to protecting human health and the environment.

c. Apply their knowledge of geological, chemical and ecological processes to environmental data collection, analysis and interpretation in order to propose viable solutions to complex multidisciplinary environmental issues.

d. Find, read and comprehend the primary scientific literature that relates to environmental issues and produce written documents using a scientific format.

e. Communicate clearly, both in writing and orally, to a wide audience (potential stakeholders) the scientific basis for environmental decisions that impact human health and the environment.