

# ENVIRONMENTAL SCIENCE

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## Faculty

Biology—154 Science Building  
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Chemistry/Biochemistry—1075 Washington Street, CEB 304  
 Nicholas Burgis (nburgis@ewu.edu), Ashley Lamm (alamm@ewu.edu), Tony Masiello (amasiello@ewu.edu), Wes Steiner (wsteiner@ewu.edu)

Geosciences—129 Patterson Hall  
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## Staff

Jessica Samson (jsamson1@ewu.edu) - Environmental Science Admin Asst, 129 Patterson Hall

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## Degrees

BS—Environmental Science Major with Environmental Biology Option (<http://catalog.ewu.edu/stem/environmental/environmental-science-biology-option-bs/>)

BS—Environmental Science Major with Environmental Chemistry Option (<http://catalog.ewu.edu/stem/environmental/environmental-science-chemistry-option-bs/>)

BS—Environmental Science Major with Environmental Geology Option (<http://catalog.ewu.edu/stem/environmental/environmental-science-geology-option-bs/>)

Minor—Environmental Science (<http://catalog.ewu.edu/stem/environmental/environmental-science-minor/>)

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Required courses in these programs of study may have prerequisites. Reference the course description section for clarification.

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## Undergraduate Programs

Environmental Science is an interdisciplinary field that combines physical, chemical and biological sciences with social, political, and economic understanding needed to study the environment and address environmental problems. The Environmental Science program integrates classroom work in biology, chemistry, geosciences, and social sciences (economics and planning) with extensive field, lab, and research experience. Graduates leave EWU with the necessary professional and technical skills for employment in the environmental profession or entry into graduate or professional school.

The Environmental Science Program offers undergraduate programs leading to a Bachelor of Science. All majors take a core of Environmental Science courses complemented by a concentration in one of the three core sciences (biology, chemistry, and geosciences). Students acquire and develop scientific knowledge, quantitative and technical skills, capabilities, and values that prepare them to meet the needs and challenges of the contemporary world, including the ability to collect data, communicate effectively, appreciate diversity, work collaboratively, synthesize knowledge utilizing the scientific method, solve complex problems, and adapt to change. Motivated students have the opportunity to obtain a double major in both Environmental Science and their concentration area (biology, chemistry, or geosciences).

Faculty from the departments of Biology, Chemistry and Biochemistry, and Geosciences participate, teach, and advise in the Environmental Science Program. Courses are aimed at introducing students, both science and non-science majors, to a dynamic view of how humans interact with their environment.

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## Environmental Science Courses

**ENVS 100. INTRODUCTION TO ENVIRONMENTAL SCIENCE. 5 Credits.**

**Notes:** this course includes a weekly laboratory that uses basic quantitative techniques for collecting and analyzing data from environmental systems.

**Pre-requisites:** MTHD 104.

**Satisfies:** a BACR for natural sciences.

This course is an introductory exploration of environmental science that emphasizes a scientific approach toward understanding contemporary human interaction with the natural environment. The structure, function and interrelationships of terrestrial, aquatic and atmospheric systems are treated through the application of biological, chemical and geological principles.

**ENVS 300. ENVIRONMENTAL SCIENCE JUNIOR SEMINAR. 1 Credit.**

**Pre-requisites:** ENVS 100 and major declared as Environmental Science. The purpose of this seminar course is to expose students to a variety of potential careers in the environmental sciences.

**ENVS 323. GEOGRAPHIC INFORMATION SYSTEMS I: SPATIAL ANALYSIS FOR ENVIRONMENTAL SCIENCES. 5 Credits.**

**Cross-listed:** GEOS 323.

**Notes:** includes hands-on GIS work in the lab.

**Pre-requisites:** GEOS 111 or GEOS 112 or GEOS 113 or junior standing. Introduction to Geographic Information Systems (GIS) with an emphasis on its applications in the environmental sciences. This course can be taken to satisfy a core requirement for the Geosciences BS and BA, and Certificates in GIS and Remote Sensing.

**ENVS 399. DIRECTED STUDY. 1-5 Credits.**

**ENVS 400. ENVIRONMENTAL SCIENCE SENIOR SEMINAR. 1 Credit.**

**Pre-requisites:** ENVS 300 and junior or senior standing.

Through reading current literature, discussion and writing, students integrate knowledge of chemistry, biology and geology with current environmental issues.

**ENVS 449. ADVANCED SPATIAL ANALYSIS. 5 Credits.**

**Cross-listed:** GEOS 449.

**Pre-requisites:** GEOS 323 or ENVS 323, or GEOS 321.

This is an advanced course where students learn to build Geographic Information System models for environmental applications. In the course, students design, collect data, process data and build several spatial models of increasing complexity. Students will learn advanced techniques in Geographic Information Systems including raster processing, analysis methods and layout design and document their projects in a report form and create production quality maps.

**ENVS 490. CAPSTONE: ENVIRONMENTAL GEOCHEMISTRY. 4 Credits.**

**Cross-listed:** GEOS 490B.

**Pre-requisites:** CHEM 172 and CHEM 172L or permission of instructor.

**Satisfies:** a university graduation requirement—senior capstone.

Application of principles of geochemistry to environmental problems, including air and water pollution, water-rock interactions, weathering and soil formation. Origin, distribution and transport of inorganic contaminants in air, water, soils, sediments and plants. The behavior of trace elements in near surface environments.

**ENVS 496. EXPERIMENTAL COURSE. 1-15 Credits.**

**ENVS 499. DIRECTED STUDY. 1-5 Credits.**