

ENVIRONMENTAL SCIENCE MAJOR WITH ENVIRONMENTAL GEOLOGY OPTION, BACHELOR OF SCIENCE (BS)

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. All students take a core of Environmental Science courses complemented by a concentration in one of the three core sciences (biology, chemistry, and geoscience). Motivated students have the opportunity to obtain a double major in both Environmental Science and their concentration area. Graduates leave Eastern with the necessary professional and technical skills for employment in the environmental profession or entry into graduate or professional school.

Each student should meet with an advisor when declaring environmental science as a major.

Students should start the program with the necessary mathematics background to enter into the calculus or statistics sequence.

MATH 141 PRECALCULUS I (or equivalent)

It is recommended that students complete these required courses within the first two years.

ENVS 100 INTRODUCTION TO ENVIRONMENTAL SCIENCE

BIOL 171 BIOLOGY I
& BIOL 172 and BIOLOGY II
& BIOL 173 and BIOLOGY III

CHEM 171 GENERAL CHEMISTRY I
& 171L and GENERAL CHEMISTRY LABORATORY I
& CHEM 172 and GENERAL CHEMISTRY II
& CHEM 172L and GENERAL CHEMISTRY LABORATORY II
& CHEM 173 and GENERAL CHEMISTRY III
& CHEM 173L and GENERAL CHEMISTRY LABORATORY III

GEOS 111 THE EARTH'S INTERIOR
& GEOS 112 and THE EARTH'S SURFACE

All Environmental Science students must take a junior year and a final senior year environmental seminar.

ENVS 300 ENVIRONMENTAL SCIENCE JUNIOR SEMINAR 1

ENVS 400 ENVIRONMENTAL SCIENCE SENIOR SEMINAR 1

Note: some course options may not result in there being 60 upper division credits required for graduation within the major—advisor consultation is required.

Grade Requirements: students must maintain an average GPA ≥ 2.0 in the major to graduate from the program.

Note: may only count BIOL 380 once.

Environmental Science Required Courses

BIOL 171 BIOLOGY I 5

BIOL 172	BIOLOGY II	5
BIOL 173	BIOLOGY III	5
BIOL 270	BIOLOGICAL INVESTIGATION	3
BIOL 440	ECOLOGY	4
CHEM 171 & 171L & CHEM 172 & CHEM 172L & CHEM 173 & CHEM 173L	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I and GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II and GENERAL CHEMISTRY III and GENERAL CHEMISTRY LABORATORY III	15
DSCI 245	BUSINESS STATISTICS 1 (may only count BIOL 380 once)	4-5
or BIOL 380	DATA ANALYSIS FOR BIOLOGISTS	
or MATH 380	ELEMENTARY PROBABILITY AND STATISTICS	
DSCI 346	BUSINESS STATISTICS 2 (may only count BIOL 380 once)	4-5
or BIOL 380	DATA ANALYSIS FOR BIOLOGISTS	
or MATH 161	CALCULUS I	
ECON 100	GENERAL EDUCATION ECONOMICS	5
ENVS 100	INTRODUCTION TO ENVIRONMENTAL SCIENCE	5
ENVS 300	ENVIRONMENTAL SCIENCE JUNIOR SEMINAR	1
ENVS 400	ENVIRONMENTAL SCIENCE SENIOR SEMINAR	1
GEOS 111 or GEOS 100	THE EARTH'S INTERIOR DISCOVERING GEOLOGY	5
GEOS 112 or GEOS 113	THE EARTH'S SURFACE THE EARTH'S CLIMATE AND WEATHER	5
GEOS 323 or ENVS 323	GEOGRAPHIC INFORMATION SYSTEMS I: SPATIAL ANALYSIS FOR ENVIRONMENTAL SCIENCES GEOGRAPHIC INFORMATION SYSTEMS I: SPATIAL ANALYSIS FOR ENVIRONMENTAL SCIENCES	5
GEOS 320	ENVIRONMENTAL GEOLOGY	4
GEOS 470	GROUNDWATER HYDROLOGY	4
PLAN 431 or PLAN 430	ENVIRONMENTAL IMPACT STATEMENTS ENVIRONMENTAL PLANNING	3

Environmental Geology—Required Geoscience Courses

GEOS 222	THE EARTH THROUGH TIME	5
GEOS 311	EARTH MATERIALS	4
GEOS 360	GEOLOGIC HAZARDS	4
GEOS 411	SEDIMENTOLOGY AND STRATIGRAPHY	4
GEOS 462 or GEOS 466	PRINCIPLES OF GEOCHEMISTRY ISOTOPIC TRACERS IN THE ENVIRONMENT	4
GEOS 475	ENGINEERING GEOLOGY OF SOILS: INTRODUCTION TO GEOTECHNICAL ENGINEERING	4

Electives—upper division with advisor's consent 4

Capstone—choose one 4-5

GEOS 490A	SENIOR CAPSTONE: WATER AND THE WEST, WATER RESOURCES IN ARID LANDS	
or GEOS 490B	CAPSTONE: ENVIRONMENTAL GEOCHEMISTRY	
or ENVS 490	CAPSTONE: ENVIRONMENTAL GEOCHEMISTRY	

Total Credits 116-119

Plan of Study

The following plan of study is for a student with zero credits. Individual students may have different factors such as: credit through transfer work,

Advanced Placement, Running Start, or any other type of college-level coursework that requires an individual plan.

Courses could be offered in different terms, checking the academic schedule is paramount in keeping an individual plan current. **Students should connect with an advisor to ensure they are on track to graduate.**

All Undergraduate students are required to meet the Undergraduate Degree Requirements (<http://catalog.ewu.edu/undergraduate-degree/>).

First Year

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
CHEM 171 & 171L (Natural Science BACR 1)	5	CHEM 172 & 172L (Natural Science BACR 2)	5	CHEM 173 & 173L	5
GEOS 111 or 100	5	GEOS 112 or 113	5	ENGL 101	5
MATH 141	5	MATH 142	5	ENVS 100	5
	15		15		15

Second Year

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
BIOL 171	5	BIOL 172	5	BIOL 173	5
ENGL 201	5	GEOS 311	4	GEOS 222	5
GEOS 320	4	GEOS 323	5	Humanities & Arts BACR 1 ¹	5
	14		14		15

Third Year

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
ENVS 300	1	BIOL 270	3	DSCI 346, BIOL 380, or MATH 161	4-5
GEOS 411	4	DSCI 245, BIOL 380, or MATH 380	4-5	ECON 100 (Social Science BACR 1)	5
GEOS 470	4	GEOS 360	4	Social Science BACR 2 ¹	5
PLAN 431 or 430	3-5	Diversity - graduation requirement ¹	5		
Elective - certificate, minor, or general elective	4				
	16-18		16-17		14-15

Fourth Year

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
BIOL 440	4	ENVS 400	1	GEOS 490A, 490B, or ENVS 490 (Senior Capstone - graduation requirement)	4
GEOS 475	4	GEOS 462 or 466	4	Elective - certificate, minor, or general elective	5
Global Studies - graduation requirement ¹	5	Environmental Science Elective ²	4	Elective - certificate, minor, or general elective	5
Humanities & Arts BACR 2 ¹	5	Elective - certificate, minor, or general elective	5		
	18		14		14

Total Credits 180-184

¹ University Graduation Requirements (UGR) and Breadth Area Course Requirements (BACR) courses may be less than 5 credits and additional credits may be required to reach the required 180 total credits needed to graduate. Students should connect with an advisor to ensure they are on track to graduate.

² Electives—four credits upper division with advisor's consent.

University Competencies and Proficiencies

English (<http://catalog.ewu.edu/undergraduate-degree/#newitemtext>)

Quantitative and Symbolic Reasoning (<http://catalog.ewu.edu/undergraduate-degree/#mathcompficienciestext>)

Placement and Clearance (<http://catalog.ewu.edu/placement/>)

Prior Learning/Sources of Credit AP, CLEP, IB (<http://catalog.ewu.edu/prior-learning/>)

General Education Requirements (<http://catalog.ewu.edu/undergraduate-degree/#generaleducationrequirementstext>) (GER)

- Minimum Credits—180 cumulative credit hours
 - 60 upper-division credits (300 level or above)
 - 45 credits in residence (attendance) at Eastern, with at least 15 upper-division credits in major in residence at Eastern
- Minimum Cumulative GPA ≥ 2.0

Breadth Area Core Requirements (BACR)

Humanities and Arts (<http://catalog.ewu.edu/undergraduate-degree/#humanitiesandfineartstext>)

Natural Sciences (<http://catalog.ewu.edu/undergraduate-degree/#naturalsciencesgecrtxt>)

Social Sciences (<http://catalog.ewu.edu/undergraduate-degree/#socialsciencesgecrtxt>)

University Graduation Requirements (<http://catalog.ewu.edu/undergraduate-degree/#universitygraduationrequirementstext>) (UGR)

Diversity Course List (<http://catalog.ewu.edu/undergraduate-degree/#cultureandgenderdiversityintheuslisttext>)

World Language (<http://catalog.ewu.edu/undergraduate-degree/#worldlanguagetext>) (for Bachelor of Arts)

Global Studies Course List (<http://catalog.ewu.edu/undergraduate-degree/#internationalstudiesrequirementtext>)

Minor or Certificate (<http://catalog.ewu.edu/undergraduate-degree/#majorminororcertificateugrtxt>)

Senior Capstone Course List (<http://catalog.ewu.edu/undergraduate-degree/#capstonecourselisttext>)

Application for Graduation (use EagleNET (<https://inside.ewu.edu/eaglenet/>)) must be made at least two terms in advance of the term you expect to graduate (undergraduate and post-baccalaureate).

Use the Catalog Archives (<http://catalog.ewu.edu/archives/>) to determine *two important catalog years*.

Requirements in Degree Works (<https://inside.ewu.edu/records-and-registration/degree-works/>) are based on these two catalog years:

- The catalog *in effect at the student's first term* of current matriculation is used to determine **BACR** (Breadth Area Credit Requirements) **and** **UGR** (Undergraduate Graduation Requirements).
- The catalog *in effect at the time the student declares a major or minor* is used to determine the program requirements.

Students who earn a BS in Environmental Science with Environmental Geology from EWU should be able to:

- demonstrate effective oral, graphical, and written communication abilities, and critical thinking skills as related to the environmental sciences;

- demonstrate knowledge of the interrelationships among the physical and biological components of ecosystems;
- develop an integrated knowledge of major concepts in the area of environmental sciences and an understanding of fundamental roles that biology, chemistry, and geology play in environmental science;
- develop sufficient preparation in the environmental sciences to successfully compete in a graduate or professional program, or to realize employment in an environmental sciences-related career;
- use epistemologically sound quantitative techniques for the analysis of biotic and abiotic samples and systems.