

# ENVIRONMENTAL GEOSCIENCE, BACHELOR OF SCIENCE (BS) - CONCENTRATION IN GEOLOGY - LIBERAL STUDIES

The environmental geoscience (BS) track in geology focuses on providing students with a scientific understanding of the Earth and surrounding environment. The student in geology gains an understanding of the various terrestrial processes and features (mountains, oceans, volcanoes, glaciers); the immenseness of geologic time, the history of the earth and organisms that inhabit it (fossils); the role of water, fuel, and mineral resources in the development of civilization; and the close interaction between the geologic and organic environments.

Demand for the professional geologist comes from the needs of engineering, hydrogeologic and environmental firms; geological surveys; oil, gas and mining companies; state and national parks; museums; conservation agencies; planning commissions; and teaching institutions. A student who completes a bachelor of science in geology will have the basis for entry to graduate schools or for employment as a geologist.

Candidates completing this program are eligible to sit for the two-part Association State Boards of Geology (ASBOG) examination required for a Professional Geologist license in Pennsylvania. The first examination, Fundamentals of Geology, can be taken upon graduation. The second examination, Principles and Practices of Geology, can be taken after working for five years. Regulations for licensing vary by state and you are urged to check with the licensing board in the state you will be working.

## Program Learning Outcomes

### Environmental Geoscience, BS

- **Outcome 1 (EGEO):** Each graduate shall develop general knowledge and understanding of the composition, history, and structure of the planet, and of the physical, chemical, and biological processes involved in the interactions between the geosphere, hydrosphere, atmosphere, and biosphere.
  - Each graduate will demonstrate an understanding of plate tectonic theory and be able to describe how it operates
  - Each graduate will demonstrate an understanding of the geologic time scale and the timing of major events in Earth history
  - Each graduate will demonstrate the ability to characterize and identify important rocks and minerals, and to interpret the processes by which they formed
  - Each graduate will demonstrate an understanding of the history, causes, and effects of global climate change
  - Each graduate will demonstrate an understanding of evolutionary theory and its evidence in the fossil record
  - Each graduate will demonstrate an understanding of the internal structure of Earth
  - Each graduate will be able to explain the fundamental principles of the hydrologic cycle

### Geology, Geology, and the Environment, Overall

- **Outcome 1:** Each graduate will develop strong written and oral communication skills, demonstrate the ability to work in a collaborative environment, and exhibit professional attitudes and behavior.
  - Each graduate will deliver oral presentations, demonstrating the ability to effectively communicate discipline-specific concepts
  - Each graduate will write scholarly papers using acceptable format and organization with proper citations to appropriate literature.
  - Each graduate will actively participate in collaborative projects and in academic field trips
  - Each graduate will demonstrate professionalism and integrity in his/her academic conduct
  - Each graduate shall develop the ability to respect and integrate diverse worldviews in problem-solving frameworks
- **Outcome 2:** Each graduate shall possess and apply critical thinking and problem solving skills.
  - Each graduate will demonstrate the ability to develop valid research questions and hypotheses
  - Each graduate will demonstrate the ability to apply proper techniques for data acquisition and interpretation in a problem-solving context
  - Each graduate will demonstrate the ability to solve open-ended problems using scientific methodology
  - Each graduate will develop the ability to make informed, scientifically-based decisions regarding environmental issues
- **Outcome 3:** Each graduate shall develop skills in quantitative, qualitative, technological, laboratory, and field procedures.
  - Each graduate will learn and employ accepted laboratory and field techniques, protocols, and safety procedures
  - Each graduate will learn to read, construct, and comprehend thematic maps and derive perspective output from a map
  - Each graduate will demonstrate the ability to apply knowledge, concepts and techniques from complementary disciplines to solve problems

## Related Links

[Environmental Geoscience - Geology, BS Program Page](#)

[Geography, Geology, and the Environment Department Page](#)

[Professional Licensure/Certification Page \(http://www.sru.edu/Documents/offices/PRMA/PLC.pdf\)](http://www.sru.edu/Documents/offices/PRMA/PLC.pdf)

## Curriculum Guide

### GPA Requirement

Major GPA: 2.0 or higher

Overall GPA: 2.0 or higher

### Summary\*

Code	Title	Hours
	Liberal Studies Requirements	46-47
	Other Basic Requirements	0-3
	Computer Competency	0-3
	Major Requirements	58

Natural Science & Math College Wide Requirement	12
Electives	15

\* All undergraduate degree programs require a minimum of 120 credits. Some courses meet multiple requirements, but are only counted once toward the 120 credit total required to graduate.

## Liberal Studies Requirements

See Liberal Studies Guide for Goal and Enrichment choices

Code	Title	Hours
<b>Goal Course Requirements</b>		
Complete Goal requirements as indicated below		
<i>Basic Requirements</i>		
ENGL 102	Critical Writing	3
ENGL 104	Critical Reading	3
COMM 200	Civil Discourse: Theory & Practice	3
<i>The Arts</i>		
Goal ( <a href="http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/">http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/</a> )		3
<i>Global Community</i>		
Goal–Non-US ( <a href="http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/">http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/</a> )		3
Goal–Non-US ( <a href="http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/">http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/</a> )		3
Goal–US ( <a href="http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/">http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/</a> )		3
<i>Human Institutions/Interpersonal Relationships</i>		
Goal ( <a href="http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/">http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/</a> )		3
<i>Science, Technology &amp; Math</i>		
Select from the following recommended courses:		9-10
PHYS 211	General Physics I with Lab	
CHEM 107	General Chemistry I	
CHEM 111	General Chemistry I Lab	
MATH 225	Calculus I	
<i>Challenges of the Modern Age</i>		
Goal ( <a href="http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/">http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/</a> )		3
Subtotal		36-37
<b>Enrichment Course Requirements</b>		
Select one course from three of the following Enrichment Areas:		9-10
The Arts ( <a href="http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/">http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/</a> )		
Global Community ( <a href="http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/">http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/</a> )		
Human Institutions/Interpersonal Relationships ( <a href="http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/">http://catalog.sru.edu/undergraduate/liberal-studies/liberal-studies-guide/</a> )		
Science, Technology & Math (p. 2) <sup>1</sup>		
Subtotal		9-10
Total Hours		46-47

### Note

<sup>1</sup> MATH 230 recommended

\* Some courses may require pre-requisites. Please see course descriptions to determine if there are any pre-requisites for that specific course.

### Basic Math Requirement

Check with your adviser or a current degree audit report to see if you have been exempted from this course. The credit earned in this course will not be counted toward the 120 credit hour minimum needed to earn a degree.

Code	Title	Hours
Complete one of the following:		0-3
Meet required minimum SAT or ACT math score OR		
ACSD 110	Beginning Algebra	
Total Hours		0-3

### Computer Competency

Code	Title	Hours
Demonstrate "computer competency" by one of the following:		0-3
Pass Computer Competency Exam OR		
Select one of the following at SRU or another post-secondary institution:		
CPSC 100	Introduction to Computing for Liberal Arts	
CPSC 110	Computer Concepts	
CPSC 130	Introduction to Computing and Programming	
PE 202	Technology for Wellness	
Total Hours		0-3

### Major/Concentration Requirements

- 29 major credits must be taken at SRU or PASSHE
- 29 major credits must be taken at the 300 level or above

Code	Title	Hours
<b>Environmental Geoscience Core</b>		
Any 100-level EGEO course <sup>1</sup>		3
EGEO 201	Earth Materials and Processes/Lab <sup>1</sup>	4
EGEO 202	Earth History/Lab <sup>1</sup>	4
EGEO 203	Quantitative Methods <sup>1</sup>	3
EGEO 272	Introduction to Georeports/Lab <sup>1</sup>	1
Subtotal		15
<b>Geology Core Program Requirements</b>		
EGEO 303	Paleontology/Lab <sup>1</sup>	4
EGEO 327	Structural Geology <sup>1</sup>	4
EGEO 341	Geomorphology/Lab <sup>1</sup>	3
EGEO 351	Mineralogy/Lab <sup>1</sup>	4
EGEO 352	Petrology/Lab <sup>1</sup>	4
EGEO 362	Stratigraphy/Lab <sup>1</sup>	4
Subtotal		23
<b>Electives</b>		
Select nine credits from the list below		9
Subtotal		9
<b>Field Camp</b>		
Select four credits minimum at an acceptable field station		

EGEO 399	Field Camp <sup>1</sup>	4
Subtotal		4
<b>Related Courses</b>		
GES 325	Introduction to Geographic Information Science <sup>1</sup>	3
or GES 410	Remote Sensing	
MATH 230	Calculus II <sup>1</sup>	4
Subtotal		7
Total Hours		58

<sup>1</sup> Course counts for 50% of Major requirements and Major GPA

\* Some courses may require pre-requisites. Please see course descriptions to determine if there are any pre-requisites for that specific course.

## Electives

Code	Title	Hours
EGEO 271	Geotechniques: Lab <sup>1</sup>	2
EGEO 323	Planetary Geology <sup>1</sup>	3
EGEO 328	Plate Tectonics <sup>1</sup>	3
EGEO 342	Glacial Geology/Lab <sup>1</sup>	3
EGEO 358	Introduction to Geophysics/Lab <sup>1</sup>	3
EGEO 360	Introduction to Hydrology/Lab <sup>1</sup>	3
EGEO 448	X-ray Spectrometry <sup>1</sup>	3
EGEO 451	Geochemistry/Lab <sup>1</sup>	4
EGEO 453	Geotechniques: Geochemistry <sup>1</sup>	1
EGEO 458	Geophysical Field Methods/Lab <sup>1</sup>	3
EGEO 460	Hydrogeology <sup>1</sup>	3
EGEO 469	Field Investigations in the Geosciences <sup>1</sup>	1-3
EGEO 476	Geotechniques: Geophysics <sup>1</sup>	1
EGEO 482	Senior Seminar <sup>1</sup>	1
EGEO 498	Selected Topics <sup>1</sup>	3
ENVS 311	Environmental Monitoring and Sampling <sup>1</sup>	3

<sup>1</sup> Course counts for 50% of Major requirements and Major GPA

## Required Related Courses

Code	Title	Hours
<b>These credits do not count towards the major</b>		
CHEM 108	General Chemistry II	3
CHEM 112	General Chemistry II Lab	1
PHYS 213	General Physics III/ Lab	4
Total Hours		8

## Natural Science & Math College Wide Requirement

Code	Title	Hours
CHEM 107	General Chemistry I	3
CHEM 111	General Chemistry I Lab	1
MATH 225	Calculus I	4
PHYS 211	General Physics I with Lab	4
Total Hours		12

## Important Curriculum Guide Notes

This Curriculum Guide is provided to help SRU students and prospective students better understand their intended major curriculum. Enrolled SRU students should note that the My Rock Audit may place already-earned and/or in progress courses in different, yet valid, curriculum categories. Enrolled SRU students should use the My Rock Audit Report and materials and information provided by their faculty advisers to ensure accurate progress towards degree completion. *The information on this guide is current as of the date listed. Students are responsible for curriculum requirements at the time of enrollment at the University.*

PASSHE - Pennsylvania State System of Higher Education Institutions

ENVIRONMENTAL GEOSCIENCE - BS (6124)

Concentration in Geology (GEOL)

This program is effective as of Fall 2016.

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