

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

The environmental geoscience (BS) concentration 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

- **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 (<https://www.sru.edu/academics/majors-and-minors/environmental-geosciences-geology/>)

Professional Licensure/Certification Page (<https://www.sru.edu/students/student-consumer-information/professional-licensures/>)