Careers in Geology

Department of Geosciences

University of Nebraska Lincoln

Geology *is the scientific study of planet Earth, emphasizing its physical makeup, its history, and how it works. Study extends across the entire Earth surface, from the Earth's core to the edge of the Atmosphere, and back through time.*

A UNL student examines folded rocks in Nova Scotia, Canada.

Why are there layers in that cliff?

How has the planet changed through time?

How and why did the dinosaurs go extinct?

What controls Earth's climate?

Where can we find water, mineral, and energy resources?

Geologists are curious about planet Earth

How old is that?

Is there a global warming trend?

How and where should we dispose of industrial waste?

Can we predict where and when earthquakes, tsunamis, and volcanic eruptions will occur?

How has life changed through time?

Why are there mountain ranges there?

Geologists *investigate the materials, processes, and products of the Earth to increase understanding of the planet and its history, to supply things we need, to protect the environment, and to mitigate natural hazards.*

Geologists specialize in one of the fields listed on the following pages.

UNL students examine tidal flats on a recent trip to the Bahamas.

- **Economic geology** – study of earth materials of economic interest, including metals, minerals, building stone, petroleum, coal, and water.
- **Environmental geology** – study of problems associated with pollution, waste disposal, and urban development.
- **Geochemistry** – study of the nature and distribution of elements in Earth materials.
- **Geochronology** – using decay rates of radioactive elements to determine the age of rocks
- **Geodynamics** – study of plate tectonics
- **Geomorphology** – study of the nature, origin, and development of landforms
- **Geophysics** – study of the Earth using physical methods, including seismicity and electromagnetism.
- **Hydrogeology** – study of the abundance, distribution, and quality of ground water.

- **Marine geology** – study of the ocean basins and continental shelves.
- **Mineralogy & Petrology** – study of the formation, composition, and genesis of minerals and rocks.
- **Paleoclimatology & paleoceanography** – study of past changes in Earth's climate and oceans
- **Paleontology** – study of fossils to understand past life forms and their evolution, and to reconstruct past environments
- **Sedimentology** – study of the formation, composition, and deposition of sediments and sedimentary rocks.
- **Stratigraphy** – study of the time and space relationships of layered rocks and their mineral and fossil contents
- **Structural geology** – study of deformation, fracturing, and folding of the Earth's crust.
- **Volcanology** – study of volcanoes and volcanic phenomena.

Who employs geologists?

- **Federal or state government**
  - US Geological Survey, Department of Energy, Forest Service, NASA, NOAA, US Army Corps of Engineers, state geological surveys
- **Industry**
  - Oil companies, environmental firms, mining companies, consulting firms
- **Educational and research institutions**
  - K-12 schools, universities, and museums

According to the National Science Foundation, about 125,000 geoscientists work in the US. Most are employed by industries related to oil and gas, mining and minerals, and water resources.

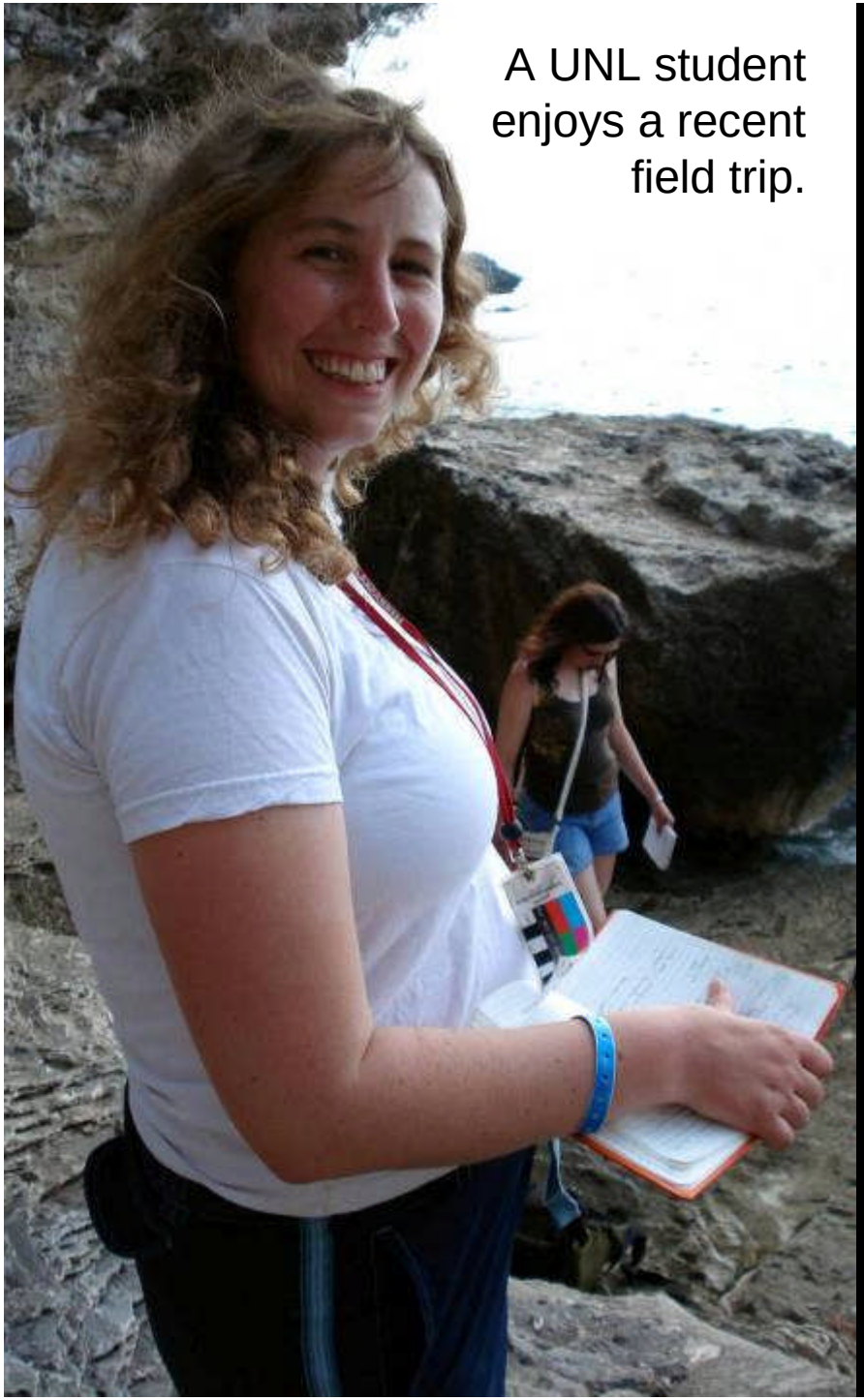
Employment outlook

- **Several topical issues present challenges—and employment opportunities—for geologists:**
  - Decreasing energy, mineral, and water resources
  - Increasing concerns about protecting the environment
  - Global warming and its effect on sea level and climate
  - Predicting and mitigating natural hazards such as earthquakes, tsunamis, volcanic eruptions, and landslides

A UNL student examines a drill-core in a weekend workshop to develop skills in petroleum geology.

Salary outlook

- **The following information comes from the Bureau of Labor Statistics. Find more information here.**
  - In May 2004, the median annual earnings of geoscientists were $68,730. The middle 50% earned between $49,260 and $98,380.
  - Beginning salary offers in July 2005 for graduates with bachelor's degrees in geology averaged $39,365.
  - In 2005, the Federal Government's average salary was $83,178 for geologists and $94,836 for geophysicists.
  - The petroleum & mining industries are vulnerable to recessions and to changes in oil and gas prices, and may release workers when exploration slows down. Consequently, they offer *higher salaries*, but less job security, than other industries. See here for details.



A UNL student enjoys a recent field trip.

Job satisfaction

- Money Magazine has ranked Geologist as second overall out of the 100 perceived best occupations, and in the top 10 for job satisfaction.

Geology at UNL

- **The Department of Geosciences offers both B.S. and B.A. degrees in Geology. Highlights include:**
  - Low faculty-to-student ratio and small majors classes.
  - Strong alumni-supported supported scholarship program for top students.
  - Opportunities for travel through field trips and field-based courses.
  - Research opportunities for undergraduates in the laboratories of active researchers.
  - Excellent employment outlook. Nearly all of our recent undergraduates have landed jobs in geology.
  - Contact the undergraduate advisor for more information.


Learn more about the UNL Geology Program:
www.geosciences.unl.edu