

CAREERS IN GEOLOGY

Department of Geology



What Is Geology?

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 student examines folded rocks in Nova Scotia, Canada.



Geologists are curious..

How has the planet changed through time?

How and why did the dinosaurs go extinct?

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

What controls Earth's climate?

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?

WHY ARE THERE LAYERS IN THAT CLIFF?

GEOLOGISTS investigate EARTH materials, processes, and products in order to:

- 1) increase understanding of the planet and its history,
- 2) supply things we need,
- 3) protect the environment,
- 4) mitigate natural hazards.



Marshall Geology students working in the field along the AA Highway in KY.

What Can I Do as a Geologist?

A few examples...

- **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.
- **Hydrogeology** – study of the abundance, distribution, and quality of ground water.
- **Engineering geology** – study of geological factors regarding the location, design, construction, operation and maintenance of engineering works

- **Seismology** -study of the origin, geographic distribution, effects, and possible prediction of earthquakes.
- **Paleoclimatology & paleoceanography** – study of past changes in Earth's climate and oceans...as key to future.
- **Paleontology** – study of fossils to understand past life forms and their evolution, and to reconstruct past environments.
- **Structural geology** – study of deformation, fracturing, and folding of the Earth's crust.
- **Volcanology** – study of volcanoes and volcanic phenomena.
- **Astrogeology** -the study of the *geology* of the celestial bodies such as the *planets* and their moons, asteroids, comets, and meteorites.

Where can I get a job as a Geologist?

■ Federal or state government

- US Geological Survey, Department of Energy, Forest Service, NASA, NOAA, US Army Corps of Engineers, state geological surveys and highway departments (WV DEP, DOH, GES)

■ Industry

- Oil companies, environmental & engineering firms, mining companies, consulting firms

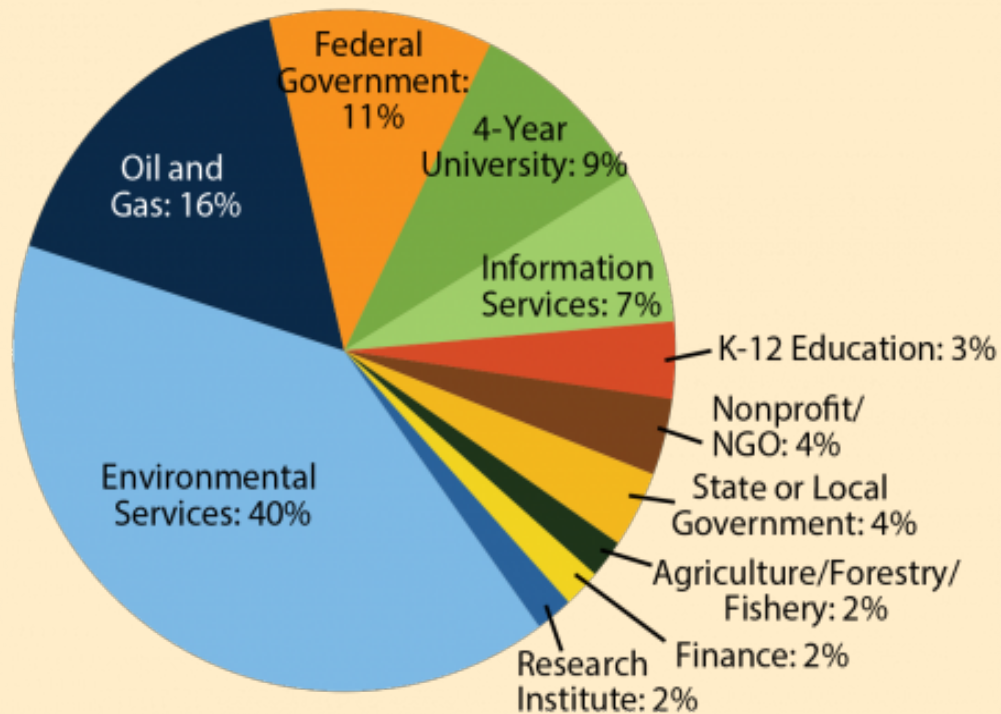
■ Educational and research institutions

- K-12 schools, universities, and museums

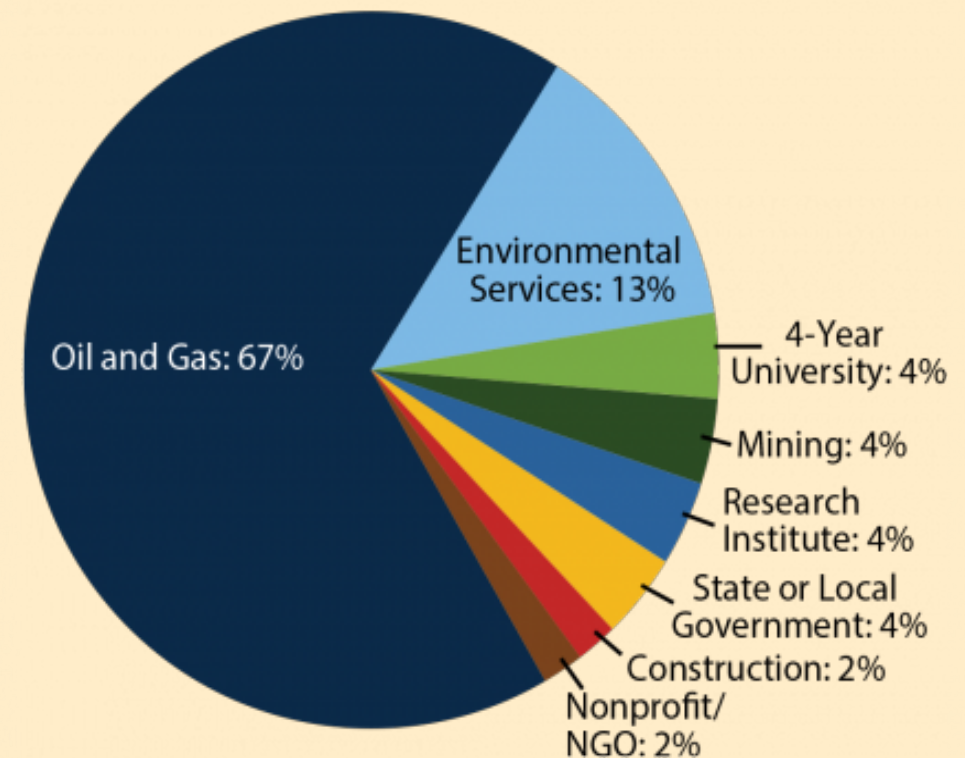
According to the American Geosciences Institute, about 324,000 geoscientists work in the US. Most are employed by industries related to oil and gas, mining and minerals, and water resources.

Employment Trends

Graduates with a BA/BS



Graduates with a MA/MS



Employment Outlook

Several current issues present challenges—and employment opportunities—for geologists:

- Decreasing mineral and water resources
- Horizontal drilling and fracking
- 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

Employment Outlook

- ❖ WV is currently the 2nd largest producer of coal, 8th largest producer of natural gas.
- ❖ BLS predicts employment in Geology projected to grow 10-14% in the next 8 years.
- ❖ AGI predicts a shortage of 135,000 jobs in 6 years.
- ❖ Drilling and Fracking are expected to pick up in mid- 2018

How much money do Geologists make?

The following information comes from the Bureau of Labor Statistics:

- In May 2016, the median annual salary of geoscientists was \$89,780. The middle 50% earned between \$49,260 and \$98,380.
- Beginning salary offers in July 2016 for graduates with bachelor's degrees in geology were typically \$30,000-50,000.

What does the Department of Geology at Marshall University have to offer?

- ❖ Low faculty-to-student ratio and small majors classes.
- ❖ Financial scholarship program for top students.
- ❖ Opportunities for travel through field trips and field-based courses.
- ❖ Research opportunities for undergraduates.
- ❖ Excellent employment track record: nearly all of our recent undergraduates have landed jobs in geology.
- ❖ Our graduates get to do what they were trained to do, and make a good living.

Student Resources

- Financial support for travel and research
- Scholarships
 - Academic Scholarships
 - Tuition Waiver
 - Fox Field Camp Scholarship

**Geologists explore, investigate, discover,
collect, analyze, interpret, and solve...**



Geology majors measuring bedding and foliation in the Blue Ridge, NC



Student using petrographic microscope to examine wafer-thin rock sample using plane-polarized and cross-polarized light.



Marshall Geology students in the field..



Trackway discovery...



Ripple marks in sand that was once an ancient seafloor. This sandstone produces oil a few miles away..

Geologists Travel!

MU Grad Ashley Bandy



CAREERS IN GEOSCIENCES

<https://www.youtube.com/watch?v=naMxvhPdi5g>

Join us for a great undergraduate experience at Marshall!



Take a big step toward a bright and rewarding future as a professional geoscientist!