What Can I Do With A Major In …

Geology?

Compiled by the staff at the SUNY Oneonta Career Development Center

Introduction

A degree in Geology prepares you for a wide variety of careers. Geology is a broad interdisciplinary science that involves the studying the composition, structure and history of the earth’s crust. Geologists often find themselves between work in the field, the laboratory, and the office. Your choices for careers include, but are not limited to, new mineral or oil resources, work on environmental problems, such as water supply and contamination, research, or teaching.

Functional Skill Set for Geology Majors:

- Plan programs to prevent floods and erosion.
- Use computer to analyze data.
- Read the history of the Earth’s crust by studying changes in rocks and the scars left by erosion, glaciers, and volcanic eruptions.
- Explain the origin of natural wonders, such as the Grand Canyon.
- Determine the distribution of rocks under the earth or ocean surface by examining drill cores.
- Conduct geological surveys; measure and map the earth’s surface and subsurface layers.
- Trace the flow of water and oil through rock.
- Determine earthquake-prone areas; predicting volcanic or earthquake activity.
- Transferable skills and personal traits: interpersonal skills, team player, creative thinker, independent worker, interested in getting advanced training and degrees, analytical and research skills, written communication skills, perseverance, stamina, ability to visualize.
- Aptitude for accuracy and detail.
- Ability to conduct and clearly explain scientific research.
- Physical stamina, good vision and manual dexterity.
- Thorough knowledge of geological principles and mathematics.
Related Career Titles for Geology Majors

- Aerial Photographer
- Agricultural Engineer
- Architect
- Astronomer
- Cartographer
- Consultant
- Cooperative Extension Agent
- Economic Geologist
- Environmental Consultant
- Environmental Geologist
- Environmental Lawyer
- Environmental Scientist
- Forest Ranger
- General Manager - Petroleum/Mining
- Geochemist
- Geodynamicist
- Geological Oceanographer
- Geodesist
- Geologist
- Geomorphologist
- Geophysicist
- Geophysics Technician
- Geo-Technical Engineer
- Glacial Geologist
- Hydrologist/hydrogeologist
- Industrial Hygienist
- Instrumentation Technician
- Laboratory Technician
- Landscape/Nursery Manager
- Marine Advisor
- Materials Analyst
- Mathematician
- Medical Doctor
- Metallurgical Engineer
- Meteorologist
- Mineralogist
- Mining Engineer
- Mining Engineer
- National Park Service Professional
- Nuclear Engineer
- Oceanographer
- Paleoceanographer
- Paleoclimatologist
- Paleontologist
- Park Ranger
- Parks and Natural Resource
- Peace Corps Worker
- Petroleum Engineer
- Petroleum Geologist
- Petrologist
- Physicist
- Planetary Geologist
- Pollution Control Specialist
- Pollution Remediator
- Project Manager
- Prospector
- Sales Engineer
- Scientific Photographer
- Sedimentologist
- Seismologist
- Soil Scientist
- Stratigrapher
- Structural Geologist
- Surveyor
- Technical Writer/Communicator
- Urban/Regional Planner
- US Foreign Service Worker
- Volcanologist
- Waste Management Specialist
- Water Quality Control Technician
- Water Remote Sensing Interpreter
- Well Logging Specialist
Some Organizations that Typically Employ Geology Majors:

- Colleges/Universities
- Construction firms
- Consulting Firms
- Elementary/Secondary Public or Private Schools
- Engineering Firms
- Federal government agencies including: U.S Geological Survey, National Oceanic and Atmospheric Administration, Department of Defense
- Federal government agencies such as: Bureau of Land Management, Bureau of Reclamation
- Federal government agencies such as: Bureau of Mines, Office of Surface Mining
- Federal government agencies such as: Department of Energy, State government, private entrepreneurial companies, universities and colleges, consulting firms, equipment suppliers
- Federal government agencies such as: Environmental Protection Agency, Bureau of Outdoor Recreation
- Independent drilling companies
- Large and small consulting or engineering firms providing services for: high tech, oil, gas, mining and other industries, federal, state and local government, utility companies, law firms, developers
- Marketing & Research Firms
- Mining Companies
- Mining, exploration and consulting firms
- Museums
- National Laboratories
- Oil and gas industry
- Petroleum and natural gas companies
- Petroleum industry including oil and gas exploration, production, storage and waste disposal facilities
- Private industry
- Private research companies
- Quarries
- Railroad companies
- Research institutes
- Research Laboratories
- State/Federal Government
- Trucking firms
- Water supply & management: consulting and municipalities
Well services and drilling companies

Start a Strategic Plan

Get a great deal of lab experience.
Participate in research
Develop public speaking skills in order to present findings.
Develop excellent writing skills in order to prepare reports and proposals.
Develop leadership and organizational skills in order to manage projects.
Consider a law degree for work with land-use laws and legal matters.
Learn about policy issues at both the federal and state government levels.
Become familiar with environmental regulations and government permit issues.
Obtain experience in mapping and surveying. Develop skills with measuring equipment as well as laboratory equipment and processes.
Obtain a business background to help in managing projects and assessing economic costs and benefits.
Join groups directed toward improvement of natural resources, environment, and pollution control.
Join the student branch of the professional organization(s) related to interest area(s).
Learn a foreign language since work is often done in other countries.
Develop physical stamina to work and do research in remote areas under various conditions.
Excellent verbal and written communication skills are essential. The ability to market your skills and write proposals is necessary to maintain steady work. The ability to obtain grants may be necessary to continue a project.
Majoring in two subject areas can increase employability, for example, geology and physics for geophysics, geology and foreign language for overseas assignments.
Obtain certification/licensing for public school teaching.
Obtain Ph.D. for higher education teaching and/or advance research and administrative positions.
Become familiar with Geographic Information Systems (GIS)
Learn special techniques through fieldwork.

Professional Organizations and Associations for Geology Majors:

American Geological Institute  www.agiweb.org
American Institute of Petroleum Geologists  www.aipg.org
National Park Service  www.nature.nps.gov/
The Geological Society of America - includes job listings  http://www.geosociety.org/
Association for Women Geoscientists  http://awg.org/

National Association of Geosciences’ Teachers  http://www.nagt.org/


Rev. 12/1/10
## GEOLGY
What can I do with this major?

<table>
<thead>
<tr>
<th>AREAS</th>
<th>EMPLOYERS</th>
<th>DESCRIPTIONS/STRATEGIES</th>
</tr>
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<tbody>
<tr>
<td><strong>RESOURCES</strong></td>
<td>Petroleum industry including oil and gas exploration, production, storage, and waste disposal facilities</td>
<td>Geologists working in the area of energy use various methods to determine where energy sources are accumulated.</td>
</tr>
<tr>
<td>Energy (Coal, Oil, Gas, &amp; Other Energy Sources)</td>
<td>Independent drilling companies</td>
<td>Because geologists often work closely with engineers, obtain some knowledge in engineering to aid communication.</td>
</tr>
<tr>
<td>Stratigraphy</td>
<td>Federal government agencies such as:</td>
<td>Gain knowledge of computer modeling and Global Positioning System (GPS). Both are used to locate deposits.</td>
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<tr>
<td>Sedimentology</td>
<td>Department of Energy</td>
<td>Many geologists in this area of expertise work with oil and gas and may work in the geographic areas where deposits are found: Texas, Oklahoma, Louisiana, California, offshore sites, or overseas in oil-producing countries.</td>
</tr>
<tr>
<td>Structural Geology</td>
<td>Bureau of Land Management</td>
<td>This industry is subject to fluctuations, so be prepared to work on a contract basis.</td>
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<tr>
<td>Geophysics</td>
<td>State government</td>
<td>Develop excellent writing skills to publish reports and to solicit grants from government, industry, and private foundations.</td>
</tr>
<tr>
<td>Economic Geology</td>
<td>Private companies</td>
<td>In order to manage projects, obtain management and leadership experience.</td>
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<tr>
<td>Geomorphology</td>
<td>Consulting firms</td>
<td></td>
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<tr>
<td>Paleontology</td>
<td>Equipment suppliers</td>
<td></td>
</tr>
<tr>
<td>Fossil Energy</td>
<td><strong>Minerals</strong></td>
<td>Geologists who are focused in the mineralogy or mining geology area are interested in locating the accumulations of minerals or metals within the earth’s crust.</td>
</tr>
<tr>
<td><strong>Minerals</strong></td>
<td>Mining Companies</td>
<td>Become familiar with environmental regulations and government permit issues.</td>
</tr>
<tr>
<td>Mining Geology</td>
<td>Consulting Firms</td>
<td>Mining geologists rely heavily on the computerized Geologic Block Model to learn about a mineral deposit, so computer literacy is essential.</td>
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<tr>
<td>Mineralogy</td>
<td>Federal government agencies such as:</td>
<td></td>
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<tr>
<td>Geochemistry</td>
<td>Bureau of Mines</td>
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<tr>
<td>Economic Geology</td>
<td>Office of Surface Mining</td>
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<tr>
<td>Geomorphology</td>
<td>Bureau of Land Management</td>
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<tr>
<td>Paleontology</td>
<td>Coal companies</td>
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<tr>
<td>Stratigraphy</td>
<td>Well services and drilling companies</td>
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<tr>
<td>Sedimentology</td>
<td>Construction firms</td>
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<tr>
<td>Crystallography</td>
<td>Quarries</td>
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<td>Railroad companies</td>
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<tr>
<td><strong>LANDSCAPE</strong></td>
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<tr>
<td>Environmental Geology</td>
<td>Federal government agencies such as:</td>
<td>Geologists in this category may focus on studying, protecting, and reclaiming the environment.</td>
</tr>
<tr>
<td>Sedimentology</td>
<td>Environmental Protection Agency</td>
<td>Obtain a great deal of lab experience.</td>
</tr>
<tr>
<td>Hydrology</td>
<td>Forest Service</td>
<td>Consider obtaining a double major in physics because of the geophysical nature of this concentration area.</td>
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<tr>
<td>Geomagnetism</td>
<td>Army Corps of Engineers</td>
<td>Develop excellent written and public speaking skills.</td>
</tr>
<tr>
<td>Earth Surface Dynamics</td>
<td>US Geological Survey</td>
<td>Gain a thorough understanding of federal and state government guidelines for the management of solid, liquid, and gaseous waste.</td>
</tr>
<tr>
<td>Coastal &amp; Marine Geology</td>
<td>Bureau of Land Management</td>
<td>Consider a law degree for work with land-use laws and legal matters.</td>
</tr>
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<td></td>
<td>Department of Defense</td>
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| Geologists interested in geologic mapping collect, process, analyze, translate, and disseminate earth-science information through geologic maps. |
| Obtain excellent computer and technical skills because much mapping is now digitized. |
| Gain experience in surveying through internships or academic opportunities. |

| **Geologic Mapping**                       | Federal government agencies such as:                                     |                                                                                                                                                                                                                       |
|                                            | US Geological Survey                                                     | Geologists interested in geologic mapping collect, process, analyze, translate, and disseminate earth-science information through geologic maps.                                                                   |
|                                            | Department of Defense                                                    | Obtain excellent computer and technical skills because much mapping is now digitized.                                                                                                                                |
|                                            | Private companies                                                        | Gain experience in surveying through internships or academic opportunities.                                                                                                                                          |

| **Astrogeology & Space Sciences**          | Federal government agencies such as:                                     | Geologists involved in astrogeology may participate in processing and analyzing data from various missions to planetary bodies in our solar system, assisting in finding potential landing sites for exploration vehicles, mapping our neighboring planets and their moons, and conducting research to better understand the origins, evolutions, and geologic processes operating on these bodies. |
|                                            | National Aeronautics and Space Association (NASA)                        | Work in this area often requires many years of experience and developed research. A PhD is often required.                                                                                                          |
|                                            | US Geological Survey                                                     | Develop extraordinary analytical writing skills for grant writing and research.                                                                                                                                        |

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| **HAZARDS** *(Earthquakes, Volcanoes, Landslides, Floods)*  
Seismology  
Tectonophysics  
Geomagnetism  
Global Seismic Networks | Federal government agencies including:  
National Oceanic and Atmospheric Administration  
US Geological Survey  
Department of Defense  
Private research groups and foundations | **Geologists involved in this area focus on the detection of hazards and the effects of hazards on the landscape.**  
Gain experience in technical mapping such as digital terrain modeling.  
Consider an additional major in physics or take additional geophysics courses.  
Gain some knowledge in engineering.  
Develop presentation and writing skills. |

| **EDUCATION** | Elementary/secondary public or private schools  
Colleges and universities  
Museums | Obtain certification/licensing for public school teaching.  
Obtain Ph.D. for higher education teaching and/or advanced research and administrative positions.  
Develop grant writing skills.  
Become familiar with Geographic Information Systems (GIS). |

**GENERAL INFORMATION**
- Within the many facets of geology, there is often overlap of job functions. However, many geologists find advantage in becoming more specialized.
- Gaining experience is very important and there are many opportunities for students to obtain volunteer, part-time, summer, internship, and/or co-op experiences in different geological fields.
- A bachelor's degree may be sufficient for entry-level industry positions.
- A master's degree is often preferred for state survey work and advancement in industry and government.
- Employment prospects are best for those with master's degrees, familiarity with advanced technologies such as computer modeling, and willingness to relocate.
- Plan on completing a state exam to become a registered geologist.
- Obtain experience in mapping and surveying. Develop skills with measuring equipment as well as laboratory equipment and processes.
- Obtain a business background to help in managing projects and assessing economic costs and benefits.
- Have a love of the outdoors, an interest in nature, and a desire to travel.
- Join groups directed toward improvement of natural resources, environment, and pollution control.
- Develop exceptional computer skills.
- Join the student branch of the professional organization(s) related to interest area(s).
- Learn a foreign language since work may often be done in other countries.
- Develop physical stamina to work and do research in remote areas under various conditions.
- Excellent verbal and written communication skills are essential. The ability to market your skills and write proposals is necessary to maintain steady work. The ability to obtain grants may be necessary to continue a project.