What can I do with a major in...

Geoengineering

**ACTIVITIES GEOENGINEERING MAJORS DO:**
Geoengineering is the application of the earth sciences to human problems that relate to the earth and earth systems. It is a broad, interdisciplinary field with many specialty areas such as: geotechnical site investigation for a variety of projects, rock and soil slope stability, environmental site characterization and planning, hydrogeology, groundwater studies and engineering, natural and manmade hazard investigations, and exploration and development of fossil fuel and mineral deposits. Geological engineers carry out site investigations for dams, plants, roads, railways, housing projects, mines, quarries, pipelines, petroleum production, forestry operations, and more. They interact with civil engineers to design essential parts of projects. They are responsible for environmental assessments or clean-up activities where pollution has occurred. They prospect for minerals, building material resources and drinking water. They carry out hazard and risk assessments and mapping for landslides and earthquakes. Geological engineers solve engineering problems and design engineering systems with geological materials, while at the same time protecting the environment. For example, they learn how to evaluate a site on which a tunnel, dam, or road might be built. They learn about geologic hazards, such as earthquakes and volcanoes, and how to best protect people from them. They examine ways to search for and harvest energy resources. They also discover ways to protect the earth while still exploiting it through careful industrial practices.

Some specializations include: geoenvironmental engineering (preserving the environment through managing pollution) and geomechanical engineering (interpreting the geological variables in structural foundations and evaluating of natural geological hazards).

**INDUSTRIES GEOENGINEERING MAJORS WORK IN (SAMPLE LISTING):**

<table>
<thead>
<tr>
<th>Civil engineering firms</th>
<th>Mining</th>
<th>Research and development</th>
<th>Petroleum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Minerals</td>
<td>Federal Government</td>
<td>Hazardous waste</td>
</tr>
<tr>
<td>Consulting</td>
<td>Physiography</td>
<td>City/county municipalities</td>
<td>Environmental</td>
</tr>
</tbody>
</table>

**EMPLOYERS WHO HIRE GEOENGINEERING MAJORS (SAMPLE LISTING):**

- Schlumberger
- BP
- Cities and municipalities
- Esri
- US Compliance Corp.
- Accenture
- Epic Systems
- U.S. Steel
- WSP Environment and Energy
- FM Global
- Federal Highway Administration
- ExxonMobil
- Monsanto
- Minnesota Builders Exchange
- Cliffs Natural Resources, Inc
- Honeywell
- Alliant Energy
- General Electric
- Barr Engineering Company
- Exponent
- MN Department of Transportation

**TYPES OF POSITIONS FOR GEOENGINEERING MAJORS (SAMPLE LISTING):**

- **Environmental scientist:** Performs research in water supply issues, conducting assessment of groundwater and surface water supplies, assisting water utilities, and reviewing plans and projects proposed and conducted by the public and private sectors to assist in the development and implementation of water resource management policies.

- **Geomechanical engineers:** Applies the principles of engineering and geology to the study of geological materials, including soil, ground water, and rock foundations.

- **Hydrogeologist:** Conducts a range of field activities, including drilling, monitoring well installation, sampling, and oversight of contractors. Hydrogeologists evaluate and interpret field and sampling data, develop conclusions concerning site conditions based on data analysis, and prepare written plans and reports related to site investigation and remediation activities.

**Some of these positions may require an advanced degree.**
USEFUL WEBSITES FOR GEOENGINEERING MAJORS:
Department of Civil, Environmental, and Geoengineering  cege.umn.edu
Federal Government Jobs  usajobs.gov
Environmental Career Center  environmentalcareer.com
Environmental Career Opportunities  ecojobs.com
The Civil Engineer  thecivilengineer.org

USEFUL WEBSITES FOR ENGINEERING MAJORS:
Engineer.net  engineer.net
Engineer Jobs  engineerjobs.com
Engineering Central  engcen.com
Graduating Engineer  graduatingengineer.com
ThinkJobs.com  thinkjobs.com
Engineering.com  engineering.com
Engineer Info  engineer.info

PROFESSIONAL ORGANIZATIONS:
Association of Environmental and Engineering Geologists  aegweb.org
American Academy of Environmental Engineers and Scientists  aaees.org
Environmental and Engineering Geophysical Society  eegs.org
Geological Society of America  geosociety.org
U.S. Geological Survey  usgs.gov
Association for Women Geoscientists  awg.org
American Association of Petroleum Geologists  aapg.org
National Mining Association  nma.org
The Society of Exploration Geophysicists  seg.org
Society of Economic Geologists  segweb.org
American Council of Engineering Companies-MN chapter  acecmn.org
National Society of Professional Engineers  nspe.org
Minnesota Society of Professional Engineers  mnspe.org
Society of Women Engineers  swe.org

*Additional job/internship search websites and resources can be found at cse.umn.edu/career.

Information on this page was compiled from the “Careers in Science”, University of Minnesota departmental website, student-reported data, Sloan Career Cornerstone Center, “College Majors Handbook”, and various Internet Resources.