What can I do with a major in...
**Geoengineering**

Geological engineering 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, 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, on, and in 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
- City/county municipalities
- Civil engineering firms
- Consulting
- Energy
- Environmental
- Federal government
- Hazardous waste
- Mining
- Petroleum
- Physiography
- Research and development

### EMPLOYERS
- American Engineering Testing, Inc.
- Antea Group
- Arcadis
- Barr Engineering
- Bay West LLC
- Braun Intertec
- Carlson McCain
- Cliffs Natural Resources
- CNA Consulting Engineers
- ExxonMobil
- Metropolitan Council
- MN Pollution Control Agency
- Northern Technologies, Inc.
- Pace Analytical Services
- Schlumberger
- WSB & Associates

### TECHNICAL SKILLS
- ChemDraw
- Excel
- Field skills
- Laboratory skills
- LoggerPro
- Mathematica
- MATLAB

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**CSE Career Outcomes**

**Average Starting Salary:**

**Post-graduation Outcomes:**

**Grad School: 20%**

**Employed: 80%**

**cohort size too small to report data due to privacy regulations**
POSSIBLE POSITIONS

- **Consultant:** Offer professional soil engineering and consulting services to homeowners and businesses.
- **Environmental scientist:** Perform research in water supply issues, conduct assessment of groundwater and surface water supplies, assist water utilities, and review plans and projects proposed and conducted by the public and private sectors to assist in the development and implementation of water resource management policies.
- **Geological engineering technician:** Investigate and collect information leading to the possible discovery of new metallic ore, minerals, gas, coal, or petroleum deposits.
- **Geological project manager:** Oversee and manage the team members to ensure that minerals are extracted from mines, pits and quarries in such a way that maximum profit is obtained with as little damage to the environment as possible.
- **Geomechanical engineer:** Apply the principles of engineering and geology to the study of geological materials, including soil, ground water, and rock foundations.
- **Geotechnical engineer:** Spend time in the field, monitor field explorations and construction projects, collect field data and document site conditions. Perform geotechnical analysis, such as slope stability, bearing capacity, settlement, deep foundation design, and seismic evaluation.
- **Hydrogeologist:** Conduct a range of field activities, including drilling, monitoring well installation, sampling, and oversight of contractors. 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.**

GET INVOLVED

- Active Energy Club
- American Society of Civil Engineers
- CSE K-12 Outreach
- CSE Ambassadors
- CSE International Ambassadors
- Engineers Without Borders
- National Society of Black Engineers
- Plumb Bob Honorary Leadership Society
- Science and Engineering Student Board
- Society for Mining, Metallurgy, and Exploration
- Society of Asian Scientists and Engineers
- Society of Hispanic Professional Engineers
- Society of Women Engineers
- Solar Vehicle Project
- Tau Beta Pi
- TeslaWorks
- Theta Tau

RESOURCES

- American Academy of Environmental Engineers and Scientists: [aaees.org](http://aaees.org)
- Association of Environmental and Engineering Geologists: [aegweb.org](http://aegweb.org)
- Department Website: [cege.umn.edu](http://cege.umn.edu)
- Environment Career Opportunities: [ecojobs.com](http://ecojobs.com)
- Environmental and Engineering Geophysical Society: [eegs.org](http://eegs.org)
- Environmental Career Center: [environmentalcareer.com](http://environmentalcareer.com)
- Federal Government Jobs: [usajobs.gov](http://usajobs.gov)
- Geological Society of America: [geosociety.org](http://geosociety.org)
- The Civil Engineer: [thecivilengineer.org](http://thecivilengineer.org)

*Salary and Career Outcomes gathered from the 2016-2017 CSE Graduation Survey
Post-graduation outcomes reflect the percentage of students who were employed full-time in their field or were enrolled in a graduate program.
For detailed starting salary information see the CSE Career Center website.*