



Geological Engineer

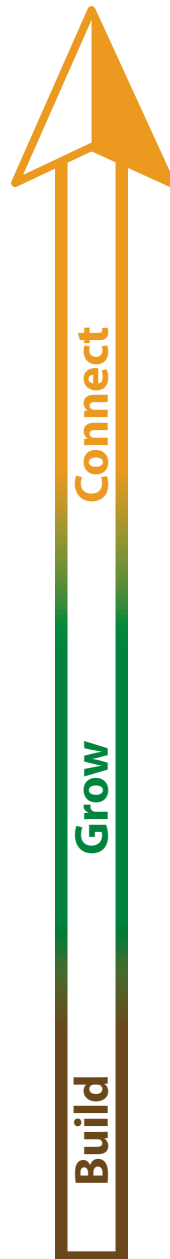


Career Compass Geosciences

Job Summary

Geological engineers play an important role in identifying and mitigating human-made and natural hazards that pose a threat to civil structures, infrastructure, or people. These engineers apply earth sciences to human problems such as transportation, water and resource supply. Specialty areas include geotechnical site studies of rock and soil slope stability for projects; environmental studies and planning for construction sites; groundwater studies; hazard investigations; and finding fossil fuel and mineral deposits. Many of these work in offices or consult for engineering or environmental firms. Many are employed by highway departments, environmental protection agencies, forest services, and hydro operations.

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This career compass provides options, tips, suggestions, and strategies for how a student can obtain critical skills, experiences, and competencies in order to launch their geoscience career based on their academic standing. The content herein is based on data from the U.S. Bureau of Labor Statistics, interviews with personnel in the occupation, and research on available student opportunities.

Undergraduate

- Geoscience or engineering professional society conference
- Clubs, student government, or professional societies
- Hone skills through public speaking or science communication courses or conference presentations
- Events, activities, and technical sessions or short courses at professional society conference
- Volunteer with local K-12 organizations (Scouts, 4H) to promote engineering.
- Also applicable at Graduate and Ph.D. level
- For-profit organization or company, research institution, or federal agency.
- First Aid/ AED/CPR training
- MSHA certification
- Geologist in Training Certification or Professional Geologist license (ASBOG Fundamentals of Geology Exam and/or the Practice of Geology Exam)
- Fundamentals of Engineering exam (administered by the National Council of Examiners for Engineering and Surveying (NCEES) if considering licensure)
- Also applicable at Graduate and Ph.D. level
- Society for Mining, Metallurgy and Exploration (SME) scholarships for undergraduates, Prospectors & Developers Association of Canada (PDAC) scholarships and prizes
- Degree in geological engineering or a related degree in civil or environmental engineering or geosciences
- Course work in math, chemistry, physics, engineering, surveying, applied geology, soil and rock mechanics, and courses as required by program
- Field experiences
- Research, capstone project and/or instrument experiences
- Write a senior thesis

Graduate/Master's

- Departmental committee, campus club, geoscience or engineering professional society
- Also applicable at Ph.D. level
- Present research at conference
- Publish research
- Fundamentals of Engineering exam or Professional Engineering exam after meeting work experience requirements; also administered by NCEES)
- SME scholarships, PDAC geoscience award
- Degree in geological engineering or geosciences
- Resource optimization modeling, environmental simulation and modeling, geospatial modeling
- Also applicable at Ph.D. level
- Master's research project or independent study project may be required in addition to course work
- Coursework in advanced math, physics, engineering, etc. may be required
- Public speaking or science communication courses
- Write a thesis or report

Ph.D./Post-doc

- Develop interpersonal skills
- Also applicable at Ph.D. level
- Present complex scientific concepts to nontechnical audiences
- Also applicable at Ph.D. level
- SME Ph.D. Fellowship Program
- Dissertation topic(s) related to the field
- Coursework in advanced math, engineering and computation is required.
- Write a dissertation

Symbol Key

- Attend
- Communicate
- Network
- Participate
- Leadership
- Internship
- Scholarship
- Fellowship
- Academics