Get to know

GEOLOGICAL ENGINEERING

This program applies principles and techniques of the earth sciences to solve engineering challenges such as extracting mineral and energy resources, preventing soil and water contamination, managing natural hazards, and building infrastructure with, or within, earth materials. You will study physics, chemistry, applied mathematics and natural processes such as earthquakes, volcanoes, continental drift and mountain formation. You will also acquire field skills and training in state-of-the-art geological investigation and engineering analysis tools.

Degree OPTIONS

Bachelor of Science in Engineering

Bachelor of Science in Engineering with Professional Internship

Specializations in Geotechnical, Geoenvironmental, Resource Engineering, and Applied Geophysics

“Geological Engineering is the practical application of principles, concepts and techniques of the geological sciences to provide sustainable engineered solutions to human needs. The Earth is your classroom.”

Queen’s ADMISSIONS

Students apply to Queen’s Engineering (QE) through the OUAC (Ontario University Application Centre) website. Secondary School prerequisites include six 4U and 4M courses, one of which must be English 4U. Calculus and Vectors 4U, Chemistry 4U, and Physics 4U are all required along with one of Advanced Functions 4U, Biology 4U, Data Management 4U, Computer Science 4U, Earth and Space Science 4U. A final grade of 70% must be obtained in English 4U. Applicants outside of Ontario may have additional requirements.

A Common START

Queen’s is unique in offering a common First Year along with an open discipline choice. When you do choose your program, you don’t have to worry about caps or quotas. Provided you pass all of your First Year courses, you are guaranteed a place in your engineering program of choice. Queen’s also offers J-Section, a special extended program for students struggling with First Year courses. Take things at a slower pace and recover in time for Second Year.

Course HIGHLIGHTS

Geological Engineering students have the opportunity to take a wide range of technical courses to help prepare them for the many possible career destinations available. Such courses include:

- Engineering Geology
- Geological Engineering Field School
- History of Life and Earth Dynamics
- Resource Geoscience and Engineering
- Geotechnical (Rock & Soil) Engineering
- Hydrogeology and Groundwater
- Pure and Applied Geophysics
- Exploration and Environmental Geochemistry

That is a degree from Queen’s.

queensu.ca/geol
1ST YEAR
Queen's Engineering first year is common – courses include: Physics, Chemistry, Calculus, Algebra, Graphics, Computing and Earth Systems Engineering. Also APSC100, the entry level course in our Engineering Design and Practice Sequence (EDPS), focusing on problem solving, experimentation principles and finishing off with a team-based engineering project. Discipline selection will take place in February!

2ND YEAR
Courses include: Process Data, Solid Mechanics, Field Methodology, Mineralogy, Surficial Process, Sedimentation & Stratigraphy, Earth Systems, Engineering Economics, Solid Earth Materials, Geophysical Characterization of the Earth, and Differential Equations. You will also take the second EDPS course – APSC200. Following 2nd year in the spring, you will take a Geological Engineering Field School course.

3RD YEAR
Courses include: Rock Structures, Applied Hydrogeology, Applied Quantitative Analysis, Resource Engineering, Applied Geophysics, Site Investigation & Case Histories, Terrain Evaluation and Geophysical Characterization of the Earth. In addition to 3 Complementary Studies courses, you will also take 5 Technical Electives in 3rd and 4th year to specialize or diversify in Geological Engineering.

4TH OR FINAL YEAR
Courses include: History of Life, Geoarchaeology & Rock Engineering, as well as your 4th year Design Project courses. You will also take a Geological Engineering Field School course prior to the Fall term.

GET THE COURSES YOU NEED

GET RELEVANT EXPERIENCE

GET CONNECTED WITH THE COMMUNITY

GET THINKING GLOBALLY

GET READY FOR LIFE AFTER GRADUATION

Caution: *This map is meant as a guide to provide suggestions throughout your university career. The activities, resources, and careers mentioned are possibilities – you are not restricted to them and you don’t have to follow this exact timeline. Every person (including you!) will find their own unique path through their degree at Queen’s and beyond.

Visit careers.queensu.ca/majormap.html for the online version with links!
How to use this map

• Got questions about careers and classes?
• Feeling a little lost or overwhelmed by choices?
• Wondering what you are “supposed” to be doing?

Use this map to plan for success in five overlapping areas of career and academic life. Each map helps you explore possibilities, set goals and track your accomplishments. To make your own custom map, use the My Major Map tool.

Don’t stress if you haven’t done all of the suggested activities. The map is not a prescription – it’s a tool for finding your own way at Queen’s.

Getting what you need to succeed in the workplace

WHAT DO EMPLOYERS WANT?
In a recent survey from the Canadian Council of Chief Executives the top 6 skills sought by employers were:
1. People skills
2. Communication skills
3. Problem-solving skills
4. Analytical abilities
5. Leadership skills
6. Industry-specific knowledge

WHAT CAN I LEARN STUDYING GEOLOGICAL ENGINEERING AT QUEEN’S?
• Knowledge of principles and techniques of the earth sciences
• Practical applications of geological science techniques to engineering design
• Understanding of the variability of earth materials and their changes with time
• Ability to think spatially and analyze in 4 dimensions
• Fieldwork skills – design and carry out site investigations to solve problems
• Technical skills – use up-to-date geological analysis tools, equipment and software
• Research skills – conduct scientific research and analyze quantitative information, develop multiple working hypotheses
• Management and leadership skills - confidence and independence in new situations, group work strategies, time and resource management
• Oral and written communication

WHAT MAKES ME SPECIAL?
No one will get exactly the same experience as you. Take the time to think about what skills you have developed to be able to best explain them with compelling examples in future applications to employers and further education. For help with this, check out the Career Services skills workshop.