Acquire Skills. Gain Experience. Go Global. That is a degree from Queen’s.

Geological Engineering

Major Map

How to use this map
Use the 5 rows of the map to explore possibilities and plan for success in the five overlapping areas of career and academics. The map just offers suggestions—you don’t have to do it all! To make your own custom map, use the My Major Map tool.

Get started thinking about the future now—where do you want to go after your degree? Having tentative goals (like career or grad school) while working through your degree can help with short-term decisions about courses and experiences, but also help you keep motivated for success.

Get the help you need
Queen’s provides you with a broad range of support services from your first point of contact with the university through to graduation. At Queen’s, you are never alone. We have many offices dedicated to helping you learn, think and do.

Ranging from help with academics and careers, to physical, emotional, or spiritual resources—our welcoming living and learning environment offers the programs and services you need to be successful, both academically and personally. Queen’s wants you to succeed! Check out the Student Affairs website for available resources.

Queen’s Undergraduate Internship Program

Start Dates
Start dates in May, September or January.

Positions
Full-time, part-time, and paid.

Work Terms
12-16 months.

Program Overview
- Graduate with “Professional Internship” on your degree.
- Learn about current advances, practices and technologies in business and industry.
- Test drive a career, earn a competitive salary, and get real world experience.

Eligibility
- 2nd or 3rd Year Students
- Minimum GPA of 1.9

Why Quip?
- Gain a year of career-related work experience.
- Build network connections.
- Receive support from Queen’s staff in job search and during internships.

Sample Past Internships
- Bioprocessing Intern
- Engineering & Robotics Intern
- Mechanical Engineering Intern
- Software Engineering Intern
- Process Engineering Intern

For more information, contact quip@queensu.ca or visit the Program Website.

Get to know Geological Engineering

This program applies principles and techniques of the earth sciences to solve engineering challenges such as: building infrastructure (tunnels, caverns, foundations, dams) on, with or through the materials beneath our feet; locating, evaluating and sustainably extracting essential mineral and energy resources; preventing and remediating soil, rock & water contamination; managing natural hazards; and engineering tools and methods to probe into the earth. You will study physics, chemistry, mechanics and applied mathematics as well as natural processes that shape the earth such as earthquakes, volcanoes, tectonics, mountain building, erosion and sedimentation. You will also acquire valuable field skills and training in state-of-the-art geological investigation and geo-engineering analysis and design.

Degree Options
Bachelor of Applied Science in Engineering
Bachelor of Science in Engineering with Professional Internship

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

Admissions
Students apply to Queen’s Engineering (QE) through the OUAC (Ontario University Application Centre) website. Secondary school prerequisites include five 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 Section 900, 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

“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 our classroom, our work bench, as well as our responsibility.”

Debbie Wills, Geological Engineering
**GET THE COURSES YOU NEED**

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!

**GET RELEVANT EXPERIENCE**

Join teams or clubs on campus such as the Environmental Sustainability Team (QUEST) and the Queen’s Project on International Development.

Apply to first year positions such as First Year Project Coordinators (FYPCOs).

See the AMS Clubs Directory or the Queen’s Get community organizations, such as the Volunteer on or off campus with different community organizations, such as the EnWeek Committee or the ENSGOC Committee on Inclusivity.

Get involved with the Engineering Society (ENGSOC).

Volunteer on or off campus with different community organizations, such as the EngWeek Committee or the ENSGOC Committee on Inclusivity.

Look into summer jobs related to Geological Engineering by talking to the department or Career Services about work through SWEP or NSERC.

Take more responsibility within different clubs or extracurriculars. Consider entrepreneurial opportunities at programs like the Queen’s Innovation Connector Summer Initiative (QICSI).

Consider applying to do a 12-16 month QUP internship between your third and fourth year.

Do some targeted networking with alumni working in careers of interest by joining the LinkedIn group Queen’s Connects Career Network.

Attend the annual Prospector’s and Developer’s Conference in Toronto and network with the stars of the resource industry.

Consider joining professional associations like the Canadian Geotechnical Society, the International Association of Hydrogeologists, the Tunneling Association of Canada and the National Ground Water Association. Join groups on LinkedIn reflecting specific careers or topics of interest in Geological Engineering.

Visit careers.queensu.ca/majormap/s for help.

**GET CONNECTED WITH THE COMMUNITY**

Get involved with the Engineering Society (ENGSOC).

Volunteer on or off campus with different community organizations, such as the EngWeek Committee or the ENSGOC Committee on Inclusivity.

Speak to a QUC advisor or get involved in their programs, events and training opportunities.

Prepare for work or studies in a multi-cultural environment by taking QUC’s Intercultural Competency Certificate, and research possible immigration regulations.

Is an exchange in your future? Start thinking about where you would like to study abroad.

Build your intercultural competence by getting involved with other cultures or by practicing or improving your language skills.

**GET THINKING GLOBALLY**

Grappling with program decisions? Go to the Orientation Evenings held by different Engineering departments and attend the various Career Fairs during the year.

Get some help deciding by visiting Career.

Explore different careers of interest by reading books in the Career Services Career Advising and Resource Area, such as Career Opportunities in Engineering. For more information check out Career, Counselling or by finding and connecting with alumni on LinkedIn.

Start focusing on areas of interest. Research education requirements for careers of interest. If needed, prepare to take any required tests like the LSAT or GMAT and get help thinking about grad school applications.

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**GET READY FOR LIFE AFTER GRADUATION**


In addition to 3 Complementary Studies courses, you will also take 4 Technical Electives in 3rd and 4th year to specialize or diversify in Geological Engineering. You would typically take 2 of these electives in 3rd year.

Investigate requirements for full-time jobs or other opportunities related to careers of interest. Engage in your 4th year design project - a real world example of the work that Geological Engineers do!

Assess what experience you’re lacking and fill in gaps with volunteering, clubs, or internships – check out Career Services workshops for help.

**CONSIDER A 12-16 MONTH QUP INTERNSHIP**

Start focusing on areas of interest. Research education requirements for careers of interest. If needed, prepare to take any required tests like the LSAT or GMAT and get help thinking about grad school applications.

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**WHERE COULD I GO AFTER GRADUATION?**

• Assay Specialist
• Architecture
• Climatology & meteorology
• Coastal and river engineering
• Environmental engineering
• Excavation design
• Geological Science
• Law
• Mining engineering
• Natural hazard mitigation
• Oceanography
• Paleontology
• Toxicology

Taking time to explore career options, build experience, and network can help you have a smoother transition to the world of work after graduation.

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**EMPLOYABILITY SKILLS**

Your time at Queen’s will give you valuable skills to boost your employability, including:

• Knowledge of principles and techniques of the earth sciences
• Practical applications of geological science techniques to engineering design
• Understanding of the variability and change of earth materials over space and time - their history controls their future as engineering materials
• 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 exploration tools, analysis tools, hi-tech equipment and industry leading 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 skills

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