

# Geological Engineering

## Get to know GEOLOGICAL ENGINEERING

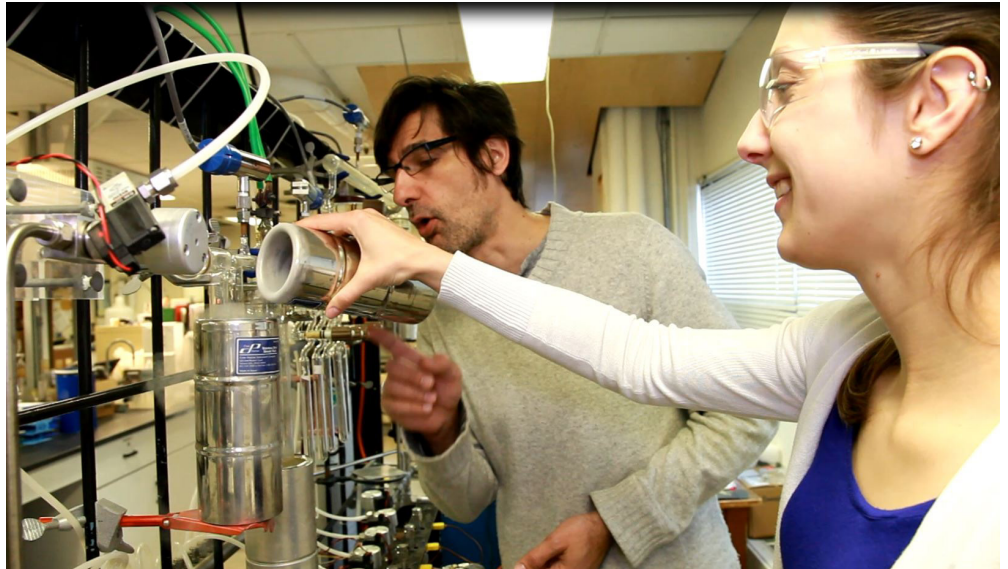
This program applies principles and techniques of the earth sciences to solve engineering challenges such as: building infrastructure (tunnels, caverns, foundations, dams) on, with, or through the materials beneath our feet; locating, evaluating, and sustainably extracting essential mineral and energy 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 Applied 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 our classroom, our work bench, as well as our responsibility.”*

## Queen’s ADMISSIONS

Students apply to Queen’s Engineering (QE) through the OUAC (Ontario University Application Centre) website. Secondary School prerequisites include these five 4U courses, English 4U, Calculus and Vectors 4U, Advanced Functions 4U, Chemistry 4U, and Physics 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

**Acquire Skills. Gain Experience. Go Global.**

That is a degree from Queen’s.

[queensu.ca/geol](http://queensu.ca/geol)

# Geological Engineering MAJOR MAP

BACHELOR OF APPLIED SCIENCE | BACHELOR OF APPLIED SCIENCE WITH PROFESSIONAL INTERNSHIP



CONSIDER A 12-16 MONTH QUIP INTERNSHIP

## 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**

## Where could I go after graduation?

- Engineering Geology
- Geotechnical Engineer
- Groundwater Engineer
- Natural Hazard Mitigation
- Rock Engineering Specialist
- Energy Resource Exploration
- Geomatics and Remote Sensing
- Geo-environmental engineering
- Mineral Resource Exploration
- Coastal & River Engineering
- Resource Management
- Geophysical Specialist
- Environmental Policy
- Mining Engineering
- Space Exploration
- Engineering Law
- Finance

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

### 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.

# Geological Engineering



Get started thinking about the future now – where do you want to go after your degree? Having tentative goals (like careers 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.

Bec Dew, Undergraduate Assistant  
geolugrd@queensu.ca

Larke Zarichny, GARNET Coordinator  
zarichny@queensu.ca



Miller Hall, Bruce Wing  
36 Union Street  
613-533-2597  
[queensu.ca/geol](http://queensu.ca/geol)

# QUIP QUEEN'S UNDERGRADUATE INTERNSHIP PROGRAM

## START DATES

in May, September,  
or January

## POSITIONS

are paid and  
full-time

## WORK TERMS

are 12-16 months  
long

## PROGRAM OVERVIEW

- Graduate with a "Professional Internship" 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.

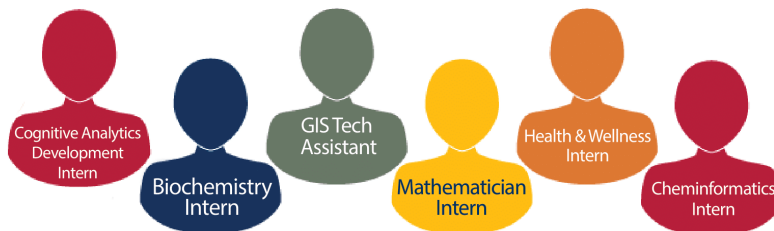
## ELIGIBILITY

- 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 internship.

## SAMPLE PAST INTERNSHIPS



For more information, contact [quip@queensu.ca](mailto:quip@queensu.ca) or visit the [Program Website](#).

