

# Geological Engineering

## PhD Map

Applying to and Navigating Graduate Studies



GRAD MAP FOR PhD STUDENTS →

### Why GRADUATE STUDIES in GEOLOGICAL ENGINEERING?

Geological Engineering is the application of geological knowledge to working with earth materials – whether for sustainable development of resources including water, oil, gas and minerals; for construction of projects on, in or of soil and rock; or to safeguard the public from geohazards. At Queen's, students in these fields will be exposed to geology from the field to the laboratory scale, and to analysis and decision-making in Earth Sciences, enjoying multiple field trips, and utilizing world-class labs for chemical and physical characterization of Earth materials, and numerical modelling of their behaviour.

Graduate students and their work are an important part of an ongoing research process that provides the community with ways of understanding natural, cultural, imaginative, social and technological phenomena.

### Why QUEEN'S?

As a PhD student in Geological Engineering at Queen's you are part of one of the most research intensive universities in Canada. Our research program is internationally renowned with a wide range of research activities in all of the major specialization areas of geological engineering.

The Department of Geological Sciences and Geological Engineering provides opportunities for advanced studies and research in the Earth Sciences. Faculty interests span disciplines in Applied Geoenvironmental Sciences and Geotechnique, Geophysics and Geochronology, Economic Geology and Mineral Exploration, Petrology and Structural Geology, Sedimentology, Sedimentary Geochemistry and Paleobiology often in a multi-disciplinary fashion and including applications to economic and environmental problems.

Our students come from countries all over the world, such as Brazil, Chile, Greece, and China. At Queen's, graduate students from all disciplines learn and discover in a close-knit intellectual community.



*"I wanted a challenge and saw geomechanical engineering as the answer; it would provide that challenge while simultaneously providing me an opportunity to use my structural engineering background. I came to Queen's for my Masters, which developed into a PhD candidacy, and I haven't looked back since."*

— Jeffrey Oke, PhD

### Program STRUCTURE

PhD (4 years): Required to take a minimum of four term length graduate courses (or equivalent) beyond the Master's degree course requirement and thesis.

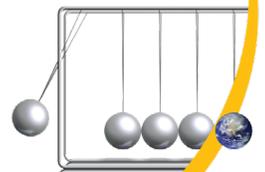
### RESEARCH Areas

With high-tech geochemistry and geophysics labs, geomechanics computing tools and Queen's Facility for Isotope Research lab, our students have the opportunity to engage in cutting-edge geoscience and geoengineering research. As well, students collaborate with industrial partners, government laboratories and surveys, academic institutions worldwide and engage in extensive fieldwork on six continents, making our program truly a world-class experience. Students can avail themselves of opportunities to collaborate with other departments at Queen's, including the GeoEngineering Centre at Queen's and RMC, Mining, Environmental Studies and Civil Engineering.

We suggest that you review the specific research projects currently being investigated by [faculty members](#) to identify a potential supervisor. Please note, however, that contacting a faculty member does not guarantee acceptance and you will need to submit your full application in order to be considered.



School of Graduate Studies  
Create an impact  
[www.queensu.ca/sgs](http://www.queensu.ca/sgs)



# Geological Engineering PhD Map\*

DOCTOR OF PHILOSOPHY (PhD)

## YEAR I

## YEAR II

## YEAR III

YEAR IV  
& TRANSITIONINGACHIEVE YOUR  
ACADEMIC  
GOALS

- Key priorities include your relationship with your supervisor, forming your research committee, coursework and comprehensive exams.
- Meet early with your supervisor to set expectations and discuss roles, responsibilities, program requirements, resources, research/occupational goals, timelines, and any required accommodation plans.
- Look to [Student Academic Success Services](#) for a variety of supports.

- Priorities include completing your comprehensive examination and pursuing substantive research.
- Set up regular meetings with your supervisor to discuss progress and obstacles to timely completion.
- Find your way through the academic process with the help of [Expanding Horizons](#) and the [SGS website](#).
- Seek experiential/professional development opportunities.

- Continue to meet regularly with your supervisor, review research progress, and write your dissertation. Check out the [SGS writing camps](#), like Dissertation on the Lake.
- Use conference presentations to create, discuss, and explore ways to disseminate research findings. Learn from the Expanding Horizons publishing workshop.
- Begin discussion of potential thesis defence examiners.

- Plan date of thesis submission for examination.
- Present your research at conferences and work with supervisor to prepare for defence.
- Review submission and examination guidelines.
- Secure necessary oral defence accommodations.
- Discuss career pathways, references letters, and publication options with your supervisor.

MAXIMIZE  
RESEARCH  
IMPACT

- Think about audiences for your research.
- Complete CORE online module on research ethics if doing research regarding sensitive topics.
- Apply to NSERC, OGS, and other funding.
- Apply for the Graduate [Dean's Travel Grant for Doctoral Field Research](#).

- Attend or present at a graduate conference such as the [Advances in Earth Science Research Conference](#).
- Expand your research audience through social media such as Twitter or a blog.
- Consider publishing elements of your research. Learn from the Expanding Horizons publishing workshop.

- Continue to present at conferences.
- Consider participating in the [3 Minute Thesis \(3MT\)](#) competition.
- Contact the [Queen's Media Centre](#) for guidance on speaking to news outlets about your work. List yourself on the [Faculty of Engineering and Applied Science research website](#).

- Continue to attend conferences and connect with scholars in your field and with community partners.
- Continue public outreach through social media and the Queen's Media Centre.
- Attend a major conference in your field, such as [Canadian Geotechnical Society Annual Meeting](#).

BUILD  
SKILLS AND  
EXPERIENCE

- Serve on faculty or university committees. Talk to the [Society of Graduate and Professional Students \(SGPS\)](#) for tips on getting involved.
- Consider positions in student services, the SGPS, or media outlets like the Queen's Journal, CFRC, and the SGS Blog. Look in the [AMS Club Directory](#).
- Use a Teaching Assistant or Research Assistant position to develop your skills and experience.

- Hone skills for non-academic employment by continuing involvement on committees and in community.
- Start keeping an eportfolio of your skills, experiences and competencies.
- For help with teaching, get support from the [Centre for Teaching and Learning](#). Enroll in SGS902 or the PUTL Certificate for more professional development in teaching and learning.

- Investigate internships from [MITACS](#) and other sources.
- Find opportunities for extra training through CTL, Expanding Horizons, MITACS, or other sources to boost your skills.
- Prepare for work or studies in a multi-cultural environment by taking the Intercultural Awareness Training Certificate hosted by QUIC and FDISC.

- Practice articulating the skills you have been developing in settings outside the university, such as casual conversation, networking, and interviews. Get help from a Career Services workshop.

ENGAGE  
WITH YOUR  
COMMUNITY

- Consider volunteering with different community organizations, such as [Sustainable Kingston](#).
- Connect to broader communities of engineers by joining an [Engineering Society Design Team](#).

- Participate in your graduate and professional community through activities such as graduate student outreach programs, organizing conferences, and research groups.
- Consider signing up for the PhD-Community Initiative program run by the SGS.

- Do some targeted networking with people working in careers of interest, through [Queens Connects](#) on LinkedIn, the [Queen's Alumni Association](#), professional associations, and at conferences. Get help from a Career Services workshop.

- Consider joining professional associations like the [Canadian Geotechnical Society](#).
- Join groups on LinkedIn reflecting specific careers or topics of interest.

LAUNCH YOUR  
CAREER

- Finding a career fit starts with knowing yourself. Take a [Career Services workshop](#) or meet with a career counsellor for help. Check out books like *So What Are You Going to do With That?* for advice on various career options.
- Start reading publications like [University Affairs](#) and the [Chronicle of Higher Education](#). Browse non-academic labour market websites.
- Stay on the lookout for special events like School of Graduate Studies Career Week to explore your career pathways.

- Start building your teaching portfolio including student evaluations, and seeking mentorship.
- Explore different careers of interest by using [Queens Connects](#) on LinkedIn to connect with Queen's alumni. For more information check out [Career Cruising](#).
- Investigate requirements for professional positions or other opportunities related to careers of interest.

- Participate in hiring committees and attend job talks. Research academic careers of interest. Craft your CV and job application materials.
- Start focusing on non-academic areas of interest. Research organizations of interest and start putting together your industry resume and begin your job search plan.

- Build connections with faculty outside of your department. Pursue interviews for faculty positions and apply for post-doc fellowships and positions.
- Apply to jobs or make plans for other adventures. Get help from Career Services with job searching, resumes, and interviews.
- If considering jobs abroad, research possible immigration regulations. If you are an international student interested in staying in Canada, consider speaking with an [International Student Advisor](#).

## WHAT WILL I LEARN?

A graduate degree in Geological Engineering can equip you with valuable and versatile skills, such as:

- **Knowledge and technical skills**
- Effective **communication skills** in multiple forms for diverse audiences
- **Information management:** prioritize, organize and synthesize large amounts of information
- **Time management:** meet deadlines and manage responsibilities despite competing demands
- **Project management:** develop ideas, gather information, analyze, critically appraise findings, draw and act on conclusions
- **Creativity and innovation**
- **Perseverance**
- **Independence** and experience as a **collaborative** worker
- **Awareness**, an understanding of sound **ethical practices, social responsibility, responsible research and cultural sensitivity**
- **Professionalism** in all aspects of work, research, and interactions
- **Leadership:** initiative and vision leading people and discussion

## WHERE CAN I GO?

A PhD in Geological Engineering can take your career in many directions. In Canada, less than 40% of all PhDs will work in post-secondary education – the majority will work in industry, government, or non-profits. Graduates from the Geological Engineering PhD program have found careers within:

- Academia and Research
- Consulting
- Mineral and oil exploration
- Mining and hydrocarbon extraction
- Policy analysis
- Surface and underground construction
- Environment assessment
- Protection and rehabilitation
- Resource management

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

# Graduate Studies FAQs

## How do I make the most of my time at Queen's?

Use the Grad Map to plan for success in five overlapping areas of your career and academic life. Everyone's journey is different - the ideas on the maps are just suggestions to help you explore possibilities. For more support with your professional development, take advantage of the SGS professional development framework and the new [Individual Development Plan \(IDP\)](#) process to set customized goals to help you get career ready when you graduate.

## Where can I get help?

Queen's provides you with a broad range of support services from your first point of contact with the university through to graduation. Ranging from help with academics and careers, to physical, emotional, or spiritual resources – our welcoming environment offers the programs and services you need to be successful, both academically and personally. Check out the [SGS website](#) for available resources.

## What is the community like?

At Queen's, graduate students from all disciplines learn and discover in a close-knit intellectual community. You will find friends, peers and support among the graduate students enrolled in Queen's more than 130 graduate programs within 50+ departments & research centres. With the world's best scholars, prize-winning professional development opportunities, excellent funding packages and life in the affordable, historic waterfront city of Kingston, Queen's offers a wonderful environment for graduate studies. Queen's is an integral part of the Kingston community, with the campus nestled in the core of the city, only a 10-minute walk to downtown with its shopping, dining and waterfront. For more about Kingston's history and culture, see Queen's University's [Discover Kingston](#) page.

# Application FAQs

## What do I need to know to APPLY?

### ACADEMIC REQUIREMENTS

- Master's degree in Geological Sciences or Geological Engineering, Mining Engineering, or Civil Engineering are acceptable. Degrees in related fields such as Biology, Chemistry, Physics, Environmental Sciences or Geography are considered, but may require additional Geology courses.

### ADDITIONAL REQUIREMENTS

- If English is not a native language, prospective students must meet the [English language proficiency requirements](#) in writing, speaking, reading, and listening. The following minimum scores are required: (1) TOEFL iBT: Writing (24/30); Speaking (22/30); Reading (22/30); Listening (20/30). Applicants must have the minimum score in each test as well as the minimum overall score, or (2) IELTS: 7.0 (academic module overall band score and a 7.0 for each test band), or (3) PTE Academics: 65, or (4) CAEL CE -70 (minimum overall score).

### KEY DATES & DEADLINES

- **Application deadline:** February 1 for September admission.
- **Notification of acceptance:** Typically, 4 weeks after the full application has been received.

Before you start your application, please review the [Graduate studies application process](#).

## What about FUNDING?

The level of financial support consequently varies among graduate students in the Department, with a guaranteed minimum level of \$23,000 for PhD students. As part of the minimum funding package, you may serve as a Teaching Assistant.

You are encouraged to apply for external funding from OGS, NSERC and other sources. Queen's will automatically issue a one time \$10,000 award to incoming PhD students who have won federal government tri-council awards. For more information, see the School of Graduate Studies' information on [awards and scholarships](#).



**Queen's**  
UNIVERSITY

DEPARTMENT OF  
GEOLOGICAL SCIENCES &  
GEOLOGICAL ENGINEERING

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