# Mining Engineering PhD Map

*Applying to and Navigating Graduate Studies*

GRAD MAP FOR PhD STUDENTS

## Why **GRADUATE STUDIES in MINING ENGINEERING?**

Mining is the foundation of industrial civilization. It is the process of extracting minerals like gold, silver, copper, nickel and uranium (metallic) and salt, potash, coal, limestone aggregate and oil (non-metallic) formations that concentrate naturally in the earth. It may surprise you, but other than agricultural products, the raw ingredients for everything else in our modern lives comes from mining.

Mining Engineering is one part technical design and one part business management. Mining engineers are responsible for deciding how valuable a mineral deposit is and how best to mine it, for planning the day-to-day schedule and path of mining to maximize extraction and profit, and for ensuring the safety of people and equipment through applications in areas such as mine ventilation and rock mechanics.

Check out **whygradstudies.ca** for more reasons to choose graduate studies in engineering.

## Why **QUEEN'S?**

As a PhD student in Mining 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 mining engineering.

As technology evolves and the global economy changes, our students and researchers play a key role in defining the state of the art in mining. In close collaboration with industry partners, our faculty and students work to make mining operations safer, more efficient, more productive, less impactful on the natural environment, and more cost effective.

Our students come from all over the world. At Queen's, graduate students from all disciplines learn and discover in a close-knit intellectual community.

## **RESEARCH** Areas

- Mining Engineering
- Mine-Mechanical
- Mineral Processing
- Geomechanics, Seismicity, Geodynamics
- Blasting, Mine to Downstream Operations
- Ventilation
- Hydrometallurgy, Biohydrometallurgy, Environmental
- Pyrometallurgy, Microwaves in metal extraction
- Mineral Processing
- Geostatistics, Geometallurgy
- Data analytics
- Reliability, Maintenance and Risk Assessment
- Health and Safety
- Social Risk and Community Relations t

We encourage you to identify an area of research interest and contact a potential supervisor before applying.

Visit the **Mining Engineering website** to read faculty profiles and learn more about faculty members' research areas. When you find a faculty member with similar research interests to yours, contact him/her and tell them about your interest in graduate work and related experience. You can also find out if the faculty member is accepting new graduate students to supervise by meeting your potential supervisor at departmental events for prospective students.

School of Graduate Studies
Create an impact
www.queensu.ca/sgs

2020-2021

# Mining Engineering PhD MAP *

*DOCTOR OF PHILOSOPHY (PhD)*

**The coronavirus pandemic may impact how some activities are delivered in 2020-2021. Please check directly with the host of any activity on the map for the latest information.**

Queen's University

| | YEAR I | YEAR II | YEAR III | YEAR IV & TRANSITIONING |
|---|---|---|---|---|
| **ACHIEVE YOUR ACADEMIC GOALS** | • Key priorities include forming your research committee, coursework and comprehensive exams.<br>• Meet early with your supervisor to set expectations and discuss roles, responsibilities, program requirements, resources, research/occupational goals, timelines, and any required accommodation plans.<br>• Look to **Student Academic Success Services** and **Expanding Horizons** for supports and workshops.<br>• Complete the laboratory safety course (CHEM 801) or (MINE 862). | • Write and defend your thesis proposal.<br>• Embark on your substantive research.<br>• Present your research in a seminar to Mining Engineering graduate students and faculty (MINE 897).<br>• Complete your PhD comprehensive exam within 4-18 months after registering.<br>• Set up regular meetings with your supervisor to discuss progress and obstacles to timely completion.<br>• 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**, such as Dissertation Boot Camp or Dissertation on the Lake.<br>• Use conference presentations to create, discuss, and explore ways to disseminate research findings. Learn from the Expanding Horizon publishing workshop.<br>• Begin discussion of potential thesis defence examiners. | • Complete and defend your research thesis (MINE 999).<br>• Present your research at conferences and work with your supervisor to prepare for defence.<br>• Review submission and examination guidelines.<br>• Secure necessary oral defence accommodations.<br>• Discuss career pathways, reference letters, and publication options with your supervisor. |
| **MAXIMIZE RESEARCH IMPACT** | • Think about audiences for your research.<br>• Complete **CORE online module** on research ethics if doing research with regarding sensitive topics.<br>• Apply to NSERC, OGS, and other funding.<br>• Apply for the Graduate Dean's Travel Grant for Doctoral Research. | • Attend or present at a graduate conference such as the **Canadian Institute of Mining (CIM)** Annual Meeting.<br>• Expand your research audience through social media such as Twitter or a blog.<br>• Consider publishing elements of your research. Learn from the Expanding Horizons publishing workshop. | • Continue to present at conferences.<br>• Consider participating in the **3 Minute Thesis (3MT)** competition.<br>• 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.<br>• Continue public outreach through social media and the Queen's Media Centre.<br>• Set up a meeting with the School of Graduate Studies for a **Grad Chat** to discuss your research interests. |
| **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.<br>• Consider positions in student services, the SGPS, or media outlets like the Queen's Journal, CFRC, and the SGS Blog. Look in the **AMS Clubs Directory**.<br>• 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.<br>• Start keeping an eportfolio of your skills, experiences and competencies.<br>• 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.<br>• Find opportunities for extra training through CTL, Expanding Horizons, MITACS, or other sources to boost your skills.<br>• Take part in the various international, multidisciplinary opportunities, and collaborate with other departments, such as Geological, Mechanical, Chemical and Civil Engineering. | • 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.<br>• Prepare for work or studies in a multi-cultural environment by taking the Intercultural Awareness Training Certificate hosted by QUIC and Four Directions Indigenous Student Centre. |
| **ENGAGE WITH YOUR COMMUNITY** | • Consider volunteering with different community organizations.<br>• 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. | • 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 **Mining Association of Canada (MAC)**, the **Canadian Institute of Mining (CIM)** and the **International Society of Mining Engineers (SME)**.<br>• 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.<br>• Start reading publications like **University Affairs** and the **Chronicle of Higher Education**. Browse non-academic labour market websites.<br>• 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.<br>• Explore different careers of interest by using **Queens Connects** on LinkedIn to connect with Queen's alumni. For more information check out Career Cruising.<br>• 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.<br>• 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.<br>• Apply to jobs or make plans for other adventures. Get help from Career Services with job searching, resumes, and interviews.<br>• 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 Mining Engineering can equip you with:

- **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 responsiblity**, 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 Mining 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-governmnet organizations.

Graduates from the Mining Engineering PhD program have found careers within:

- Academia and Research
- Consulting
- Mining Companies
- Mining Equipment and Technology Providers
- Non-Governmental Organizations
- Financial Institutions

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

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Visit careers.queensu.ca/gradmaps for the online version with links!

* This map is intended to provide suggestions for activities and careers, but everyone's abilities, experiences, and constraints are different. Build your own Grad Map using our online **My Grad Map** tool.

# Graduate Studies FAQs

## How do I use this map?

Whether you are considering or have embarked on graduate studies at Queen's, use this map to plan for success in five overlapping areas of your career and academic life. The map helps you explore possibilities, set goals and track your individual accomplishments. Everyone's journey is different – the guide offers options for finding your way at Queen's and setting the foundation for your future. To make your own customized map, use the online My Grad Map tool.

## 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 Habitat 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**

- A Master's degree in Mining Engineering. Applicants with a Master's degree in a cognate science may be admitted.

**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 School of Graduate Studies requires the following minimum scores: TOEFL (paper-based): 550, (2) TOEFL iBT: Writing (24/30); Speaking (22/30); Reading (22/30); Listening (20/30), for a total of 88/120 (applicants must have the minimum score in each test as well as the minimum overall score), or (3) IELTS: 7.0 (academic module overall band score), or (4) PTE Academics: 65.

**KEY DATES & DEADLINES**

- **Application deadline:** March 1st.
- **Notification of acceptance:** April 30th.

Before you start your application, please review the **Graduate studies application process.**

## What about FUNDING?

The level of financial is at a guaranteed minimum level of $18,000 for PhD students. As part of the minimum funding package, you may also serve as a Teaching Assistant and gain additional pay for this service.

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 Doctoral 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 MINING

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