Why GRADUATE STUDIES in CHEMICAL ENGINEERING?

As a PhD student in the field of Chemical Engineering, you can play a vital role in future developments in such areas as biological conversion, pollution degradation, tissue engineering, process control and optimization, (bio)chemical sensing, nanocomposites, and many of other areas. Chemical Engineering has a wide range of applications that contribute to modern life and its technologies.

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

Why QUEEN’S?

Queen's University is one of Canada's leading research-intensive universities, with over $14 million in sponsored research funding and almost $5 million in revenues from technology transfer. It consistently ranks as one of the top three medical/doctoral universities in Canada and offers an unparalleled environment to facilitate academic development. Among Queen's goals is to attract and retain students with outstanding potential from across Canada and around the world.

The Department of Chemical Engineering at Queen's University is based in Dupuis Hall and the Biosciences Complex, which are multipurpose facilities with extensive research laboratories, and large- and small-group teaching classrooms.

Areas of intense research in the department include: Biomedical engineering, polymer and reaction engineering, process systems engineering, sustainable energy sources and environmental engineering. Activities range from developing new bio- and polymeric materials and production techniques, to understanding how the dynamic structure of a chemical process limits the performance that can be achieved. Significant collaborations across these fields exist within the department, and faculty members also collaborate extensively with other researchers across Queen's and at other institutions.

RESEARCH Areas

• Biochemical Engineering
• Macromolecular Science and Technology
• Process Analytics, Optimization, and Control
• Microfluidics, Colloids, and Biosensors
• Sustainable energy sources, processes, products, and environmental remediation

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.

Visit the Chemical Engineering Department website to read faculty profiles and learn more about faculty members' research areas.

Program STRUCTURE

PhD (4 years): course work, research thesis, comprehensive exam, and two seminars.

The Chemical Engineering Department offers opportunities to collaborate with scientists in the Human Mobility Research Centre and Computational Science and Engineering, as well as with co-supervising faculty in other departments.
## ACHIEVE YOUR ACADEMIC GOALS

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<td>• Key priorities include forming your committee, coursework, field exams, and language exam.</td>
<td>• Write and defend your thesis proposal.</td>
<td>• Continue to meet regularly with your supervisor, review research progress, and write your dissertation. Check out the SGS Dissertation Boot Camp or Dissertation on the Lake.</td>
<td>• Plan date of thesis submission for examination.</td>
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<td>• Meet early with your supervisor to set expectations and discuss roles, responsibilities, program requirements, resources, research occupational goals, timelines, and any required accommodation plans.</td>
<td>• Embark on your substantive research.</td>
<td>• Use conference presentations to create, discuss, and explore ways to disseminate research findings. Learn from the Expanding Horizons Publishing workshop.</td>
<td>• Present your research to graduate Chem Eng students and faculty or at conferences and work with supervisor to prepare for defence.</td>
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<td>• Look to Student Academic Success Services for a variety of supports.</td>
<td>• Set up regular meetings with your supervisor to discuss progress and obstacles to timely completion.</td>
<td>• Begin discussion of potential thesis defence examiners.</td>
<td>• Review submission and examination guidelines.</td>
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<td>• Attend the Departmental Speaker Series (CHEE 897).</td>
<td>• Find your way through the academic process with help from Expanding Horizons workshops.</td>
<td>• Think about audiences for your research. Think about what you want to communicate.</td>
<td>• Secure necessary oral defence accommodations.</td>
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## MAXIMIZE RESEARCH IMPACT

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<th>YEAR II</th>
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<td>• Think about audiences for your research. Complete CORE online module on research ethics if doing research with human or animal participants.</td>
<td>• Present your work at graduate conferences.</td>
<td>• Continue to present at conferences.</td>
<td>• Connect with scholars in your field and with community partners. Continue to attend conferences, such as the Canadian Chemical Engineering Conference. Speak with your supervisor about options for conferences in your area of research.</td>
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<td>• Apply to NSERC, OGS, and other funding.</td>
<td>• Expand your research audience through social media.</td>
<td>• Consider participating in the 3 Minute Thesis (3MT) competition.</td>
<td>• Continue public outreach through social media and the Queen’s Media Centre.</td>
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<td>• Attend conferences in your field.</td>
<td>• Consider publishing elements of your research. Learn from the Expanding Horizons Publishing workshop.</td>
<td>• 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.</td>
<td>• 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.</td>
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## BUILD SKILLS AND EXPERIENCE

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<th>YEAR II</th>
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<td>• Serve on departmental, faculty or university committees. Talk to the Chemical Engineering, Graduate Student Association (CEGSA) about getting involved.</td>
<td>• Hone skills for non-academic employment by continuing involvement on committees and in community.</td>
<td>• Find opportunities for extra training through CTL, Expanding Horizons, Mitacs, or other sources to boost your skills. Investigate internships from Mitacs and other sources.</td>
<td>• Consider participating in Professional Development and Recognition programs.</td>
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<td>• Consider positions in student services, the SGS, or media outlets like the Queen’s Journal, CRMC, and the SGS Blog. Look in the AMS Clubs Directory.</td>
<td>• Start keeping an eportofolio of your skills, experiences and competencies.</td>
<td>• 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.</td>
<td>• 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.</td>
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<td>• Use a Teaching Assistant or Research Assistant position to develop your skills and experience.</td>
<td>• For help with teaching, get support from the Centre for Teaching and Learning. Enroll in SGS902 or the PSTL certificate for more professional development in teaching and learning.</td>
<td>• 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.</td>
<td>• Consider participating in professional associations like the Canadian Society for Chemical Engineering.</td>
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## ENGAGE WITH YOUR COMMUNITY

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<td>• Consider volunteering with different community organizations.</td>
<td>• Participate in your graduate and professional community through activities such as graduate student outreach programs, organizing conferences, and research groups.</td>
<td>• Do some targeted networking with people working in careers of interest. Through Queen’sConnects on LinkedIn, the Queen’s Alumni Association, professional associations, and at conferences. Get help from a Career Services workshop.</td>
<td>• Consider joining professional associations like the Canadian Society for Chemical Engineering.</td>
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<td>• Connect to broader communities of engineers.</td>
<td>• If pursuing research abroad or outside Kingston, investigate options.</td>
<td>• Consider participating in the Doctoral Field Research Expansion Horizons Publishing workshop.</td>
<td>• Continue targeted networking with people working in careers of interest. Join groups on LinkedIn reflecting specific careers or topics of interest in Chemical Engineering.</td>
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## LAUNCH YOUR CAREER

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<td>• Finding career fit starts with knowing yourself. Take a Career Services career planning 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.</td>
<td>• Start building your teaching portfolio including student evaluations, and seeking mentorship.</td>
<td>• Participate in hiring committees and attend job talks. Research academic careers of interest. Craft your CV and job application materials.</td>
<td>• Build connections with faculty outside of your department. Pursue interviews for faculty positions and apply for post-doc fellowships and positions.</td>
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<td>• Start reading publications like University Affairs and the Chronicle of Higher Education. Browse non-academic labour market websites.</td>
<td>• Explore different careers of interest by reading media outlets like the Chronicle of Higher Education, for advice on various career options.</td>
<td>• Build connections with faculty outside of your department. Pursue interviews for faculty positions and apply for post-doc fellowships and positions.</td>
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<td>• Stay on the lookout for special events like Graduate Student Career Week to explore your career pathways.</td>
<td>• Explore different careers of interest by reading media outlets like the Chronicle of Higher Education, for advice on various career options.</td>
<td>• Build connections with faculty outside of your department. Pursue interviews for faculty positions and apply for post-doc fellowships and positions.</td>
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## WHAT WILL I LEARN?

A graduate degree in Chemical 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
- Perserverance
- 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 Chemical 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 Chemical Engineering PhD program have found careers in:

- Biotechnological Engineering
- Biomedical Engineering
- Environmental Engineering
- Fuel Cells
- Macro-molecular Processes and Products
- Microfluidics & Biosensors
- Process Systems Engineering

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

What do I need to know to APPLY?

ACADEMIC REQUIREMENTS

- Master of Applied Science or Master of Science.
- Grade requirements: minimum cumulative average of B+, with a minimum of 77% in last year of study.

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: There is a constant intake so there is no set deadline for application. If you are international, we recommend that you have completed your application at least 4 months ahead of your admission cycle.

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 $25,000 (Masters and PhD) for 2016-2017. As part of the minimum funding package, you may serve as a Teaching Assistant for at least one term per year.

We encourage all students to apply for external funding from OGS, SSHRC 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.