Get to know
CHEMICAL ENGINEERING

Society relies daily on products such as fuel, pharmaceuticals, advanced composites, semiconductors, magnetic and optical storage devices, agricultural products, light-weight materials, coatings, synthetic fibers and personal care products. Chemical Engineers develop new advanced materials and design the processes that convert raw materials into value-added products.

Chemical Engineering is a broadly based engineering discipline, which combines the study of mathematics, chemistry, physics and biology, with engineering science, design, and economics. You will learn how to design safe, efficient, environmentally-friendly and economical processes. You will also acquire direct experience with pilot-scale chemical process equipment and simulators. Queen’s Chemical Engineering offers options in Chemical Process Engineering and in Biochemical Engineering.

Areas of specialization through choice of electives: biochemical, biomedical, environmental, process systems engineering, energy, and materials.

“Semiconductor production, microchips, metals, mineral processing, paper products, petroleum and petrochemicals, plastics, forest products, pharmaceuticals and foods are just some of the sectors in which chemical engineers work.”

Degree OPTIONS

Bachelor of Applied Science in Engineering
Bachelor of Applied Science in Engineering with Professional Internship
Option in Bioengineering / Process Engineering

Queen’s 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

Chemical 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:

- Design of Manufacturing processes,
- Technology, Engineering and Management
- Process Dynamics and Control
- Mitigation of Industrial Pollution
- Engineering Innovation & Entrepreneurship
- Biomedical Engineering
- Pharmaceutical Technology
- Bioremediation
- Polymer Formulations and Processing Technology

That is a degree from Queen’s.
chemeng.queensu.ca
### 1ST YEAR

Queens 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! You will also choose your Sub-Plan: Chemical Process Engineering (CHE1) or Bioengineering (CHE2).

### 2ND YEAR


### 3RD YEAR


### 4TH OR FINAL YEAR

Courses include: Strategies for Process Investigations, Design of Manufacturing Processes, and Transport Phenomena.

### GET THE COURSES YOU NEED

- **Chemical Engineering (CHE1) or Bioengineering (CHE2).**

### GET RELEVANT EXPERIENCE

- Join teams or clubs on campus such as the Queen's Solar Design Team, Fuel Cell Team or the Chemical Engineering Club.
- See the AMS Clubs Directory or the Queen's Get Involved page for more ideas.

### GET CONNECTED WITH THE COMMUNITY

- Volunteer on or off campus with different community organizations, such as Let's Talk Science (LTS) and Women in Science and Engineering.
- Consider joining an intramural sports or an athletics team. Check out the Athletics & Recreation site.

### GET THINKING GLOBALY

- Speak to a QUIC advisor or get involved in their programs, events and training opportunities.
- Prepare for work or studies in a multi-cultural environment by taking the QUC and Four Directions: Aboriginal Student Centre’s Training Certificate, and research possible immigration regulations.

### GET READY FOR LIFE AFTER GRADUATION

- 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 wondering about career options from Career Services.

### Employability skills

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

- Knowledge of chemical engineering theory and methods
- Proficiency in mathematics
- Ability to apply physics, chemistry and biology principles to practical engineering projects
- Experience working on hands-on engineering projects
- Technical knowledge - use software to create mathematical models and analyze data
- Research skills - conduct research and collect data
- Complex problem solving - approach problems from various perspectives
- Ability to work independently and in teams
- Written and oral communication - write reports and give presentations to a knowledgeable audience
- Time and resource management
- Sustainability and the impact of engineering on society

### Where could I go after graduation?

- Agricultural sciences
- Biochemistry
- Biomedical engineering
- Chemical process engineering
- Cytotechnology
- Environmental management
- Fluid dynamics - aerospase
- Finance & financial analysis
- Food industry, nutrition & dietetics
- Mineral processing
- Nanotechnology
- Patent law
- Pharmaceutical engineering
- Planning - urban and regional
- Polymer/rubber/plastic technology
- Radiology
- 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.

*some careers may require additional training. Listened careers are only suggestions.

Visit careers.queensu.ca/majormaps for the online version with links!
Chemical 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 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, and Queen’s wants you to succeed! Check out the Student Affairs website for available resources.

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 “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 internship.

SAMPLE PAST INTERNSHIPS

Biotechnology Intern
Engineering & Applied Science Intern
Geothermal Engineering Intern
Fuel Cell Production Intern
Mechatronics Intern

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

Why study in Kingston?

For 175 years, our community has been more than a collection of bright minds – Queen’s has attracted students with an ambitious spirit. Queen’s has the highest retention rates, the highest graduation rates, and one of the highest employment rates among recent graduates. We are a research intensive university focused on the undergraduate experience. The BBC has identified us as one of the GREATEST UNIVERSITY TOWNS in the world – and is often awarded the safest city in Canada. We are a university city at the core; just a quick drive to Toronto, Montreal, Ottawa and even New York. A university with more clubs per capita than any other university in Canada, and a city with more restaurants per capita than any other city in North America – you will have the experience of a lifetime at Queen’s – and graduate with a degree that is globally recognized among the best.