Get to know

ENGINEERING CHEMISTRY

As the only program of its kind in North America, Engineering Chemistry provides in-depth knowledge of chemistry in addition to the engineering core knowledge. Engineering Chemistry graduates are experts in the chemistry behind industrial processes and combine a strong background in both chemistry and chemical engineering to treat problems of industrial interest. In this program, you will study applied organic chemistry, inorganic chemistry, reactivity principles, methods of determining structure, and you will acquire knowledge of materials at a molecular level. You will be able to apply this core chemical knowledge to design and improve processes and materials, ranging from fuel cells to pharmaceuticals.

Areas of specialization through selection of electives and thesis project include biosciences, environmental, materials science, process chemistry.

“The undergraduate program in Engineering Chemistry has also been accredited by the Canadian Society for Chemistry; therefore, our graduates have this distinction.”

Degree OPTIONS

Bachelor of Applied Science
Bachelor of Applied Science with Professional Internship

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.

Course HIGHLIGHTS

Engineering Chemistry 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:

• Electrochemical Engineering
• Applied Surface and colloid science
• Design of Manufacturing Processes
• Organic Process Development
• Industrial Catalysis
• Quantum Mechanics
• Environmental and Green Chemistry
• Polymer Chemistry

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.
**Engineering Chemistry MAJOR MAP**

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

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**1ST YEAR**

- **GET THE COURSES YOU NEED**
  - Queen's 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!

- **GET RELEVANT EXPERIENCE**
  - Join teams or clubs on campus such as the Solar Design Team (QSDT), Fuel Cell Team (QFCT), or the Queen's Engineering and Commodities Association (QECA).
  - Look for first year positions in ENSGOC such as First Year Project Coordinators (FYPCOs). See the AMS Clubs Directory or the Queen's Get Involved page for ideas.

- **GET CONNECTED WITH THE COMMUNITY**
  - Volunteer on or off campus with different community organizations, such as ENSGOC EngWeek Committees, the, ENSGOC External Relations Committee or a local charity like Martha's Table.

- **GET THINKING GLOBALLY**
  - 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 QUIC's Intercultural Competency 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 deciding by visiting Career Services.

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**2ND YEAR**

- **GET THE COURSES YOU NEED**
  - You will take the second EDPS course – APSC200, plus 9 credits of Complementary Studies which can be taken in 2nd, 3rd, and/or 4th year.

- **GET RELEVANT EXPERIENCE**
  - Look into summer jobs related to electrical engineering by talking to the department or Career Services about work through SWEP or NSERC.
  - Take more responsibility within different clubs or extracurriculars. Consider entrepreneurial opportunities at programs like the Queen's Innovation Connector Summer Initiative (QICSI).

- **GET CONNECTED WITH THE COMMUNITY**
  - Get involved with the Engineering Society (ENSGOC).
  - Attend conferences like the Conference on Industry and Resources Queen's University Engineering and the Queen's Engineering Competition.

- **GET THINKING GLOBALLY**
  - Is an exchange in your future? Start thinking about where you would like to study abroad. Apply in January for a 3rd year exchange through your faculty's International Office.

- **GET READY FOR LIFE AFTER GRADUATION**
  - Explore different careers of interest by reading books in the Career Services Career Advising and Resource Area, such as Nontraditional Careers for Chemists.
  - More information check out Career Cruising or by finding and connecting with alumni on LinkedIn.

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**3RD YEAR**

- **GET THE COURSES YOU NEED**
  - You will also choose 6 units of Electives and must select one of the Engineering Economics courses.

- **GET RELEVANT EXPERIENCE**
  - Stay during the summer as an assistant to a faculty member or apply for an external summer research opportunity.
  - Look for summer jobs related to computer engineering.
  - Consider applying to do a 12-16 month QUIP internship between your third and fourth year.

- **GET CONNECTED WITH THE COMMUNITY**
  - Do some targeted networking with alumni working in careers of interest by joining the LinkedIn group, ENGSOC EngWeek Committee, or a local charity like Martha's Table.

- **GET THINKING GLOBALLY**
  - Assess what experience you're lacking and fill in gaps with volunteering, clubs, or internships – check out Career Services workshops for help.

- **GET READY FOR LIFE AFTER GRADUATION**
  - Investigate requirements for full-time jobs or other opportunities related to careers of interest.
  - Assess what experience you're lacking and fill in gaps with volunteering, clubs, or internships – check out Career Services workshops for help.

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**4TH OR FINAL YEAR**

- **GET THE COURSES YOU NEED**
  - Courses include: Applied Surface & Colloid Science, Design of Manufacturing Processes, and Electrochemical Engineering, plus you must select a course in Biochemical Engineering. Additionally, you will take your 4th year Research and Laboratory Project courses.
  - You will also choose at least 15 units of Electives, and you are set to graduate!

- **GET RELEVANT EXPERIENCE**
  - Investigate requirements for full-time jobs or other opportunities related to careers of interest.
  - Consider applying to do a 12-16 month QUIP internship during the year.

- **GET CONNECTED WITH THE COMMUNITY**
  - Consider joining professional associations like Canadian Society for Chemistry and the Canadian Society for Chemical Engineering.
  - Join groups on LinkedIn reflecting specific careers or topics of interest in Engineering Chemistry.

- **GET THINKING GLOBALLY**
  - Investigate specialties in your field of interest. Go to the Conference on Industry and Resources Queen's University Engineering and the Queen's Engineering Competition.

- **GET READY FOR LIFE AFTER GRADUATION**
  - Investigate requirements for full-time jobs or other opportunities related to careers of interest.
  - Investigate specialties in your field of interest. Go to the Conference on Industry and Resources Queen's University Engineering and the Queen's Engineering Competition.

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**WHERE COULD I GO AFTER GRADUATION?**

- Agricultural sciences
- Alternative energy technology
- Biochemistry
- Biomedical engineering
- Biotechnology
- Business administration and management
- Chemical/process engineering
- Consulting engineers
- Diagnostic medical technology
- Education
- Environmental engineering
- Finance
- Food science and technology
- Forensic science
- Fuels and petrochemicals
- Industrial chemicals
- Manufacturing
- Occupational health and safety
- Oil and Gas
- Patent law
- Pharmaceuticals
- Polymer/rubber/plastic technology
- Public administration
- Public and private research
- Sustainable technologies
- Waste management

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

MAJOR MAP

Succeed in the workplace

What employers want
The Canadian Council of Chief Executives list the top 6 skills sought by employers as:
1. People skills
2. Communication skills
3. Problem-solving skills
4. Analytical abilities
5. Leadership skills
6. Industry-specific knowledge

Take the time to think about the unique skills you have developed at Queen's, starting with the skills list here for ideas. Explaining your strengths with compelling examples will be important for applications to employers and further education. For help, check out Career Services workshops.

What can I learn studying ENGINEERING CHEMISTRY?
• Knowledge of chemistry and materials at a molecular level
• Knowledge of chemical engineering theory and methods
• Problem solving – adopt an analytical approach to problems facing chemists and chemical engineers
• Written and oral communication – communicate research ideas and information in reports and presentations
• Ability to use modern computer software tools for simulating and analyzing chemical processes
• Proficiency in mathematics
• Understanding of scientific research methods and data collection techniques
• Time and resource management
• Ability to work independently and in teams
• Sustainability and impact of engineering on society

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.

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.

DEPARTMENT OF
ENGINEERING
CHEMISTRY

Faculty of Engineering and Applied Science
Dupuis Hall, Room 201
19 Division Street
613.533.2765
chemeng.queensu.ca