Engineering Chemistry

Get to know ENGINEERING CHEMISTRY

In existence since 1895, the Engineering Chemistry program is renowned for producing graduates that have a firm grasp of fundamental science as well as the engineering tools that are needed to put this knowledge into practice. Accreditation by the Canadian Engineering Accreditation Board (CEAB) as an engineering program, and the Canadian Society for Chemistry (CSC) as a chemistry program, allows graduates to pursue professional careers in both disciplines – a truly unique benefit of an Engineering Chemistry degree.

The curriculum will provide you with the in-depth understanding of organic, physical, and analytical chemistry that is needed for early-stage design activities, when knowledge of basic principles is needed to create and/or advance new technology. The extensive training you acquire in core engineering principles such as fluid mechanics, thermodynamics, and engineering economics will ensure that you can contribute equally well to late-stage design activities that involve detailed equipment specifications and financial analyses.

"Trained in both pure and applied chemical sciences, Engineering Chemists are well positioned to address some of societies most important technological challenges."

Degree OPTIONS

Bachelor of Applied Science in Engineering

Bachelor of Applied Science in Engineering 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 these five 4U courses, English 4U, Calculus and Vectors 4U, Advanced Functions 4U, Chemistry 4U, and Physics 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

The Engineering Chemistry curriculum combines chemistry and applied science courses, several of which are designed specifically for the program. These include:

- Thermodynamics of Energy Conversion Systems
- Electrochemical Engineering
- Applied Surface and colloid science
- Design of Manufacturing Processes
- Organic Process Development
- Quantum Mechanics
- ChemEtronics
- 4th Year Independent Research Thesis

Acquire Skills. Gain Experience. Go Global.

That is a degree from Queen's.

chemeng.queensu.ca

2023-2024

Engineering Chemistry MAJOR MAP

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

Queen's UNIVERSITY

	1ST YEAR	2ND YEAR	3RD YEAR	4TH OR FINAL 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!	Courses include: Analysis of Process Data, Chemical Processes & Systems, ChemEtronics, Main Group Chemistry, Principles of Chemical Reactivity, Ordinary Differential Equations, Thermodynamic Properties of Fluids, Process Dynamics & Numerical Methods, Fluid Mechanics, Methods of Structure Determination Methods, and Applied Organic Chemistry. You will take the second EDPS course – APSC200.	Courses include: Fluid Phase & Reaction Equilibrium, Chemical Reaction Engineering, Biochemical Engineering, Heat & Mass Transfer, Introduction to Chemical Analysis, Transition Metal Chemistry, Experimental Chemistry, Industrial Catalysis, Design of Unit Operations, Engineering Communications, Ethics and Professionalism, and Organic Process Development. You will also choose 3 units of Electives and take the Engineering Economics APSC 221 course.	Courses include: Applied Surface & Colloid Science, Quantum Mechanics, Design of Manufacturing Processes, and Electrochemical Engineering. Additionally, you will take a laboratory projects course and your 4th year Research Project course. You will also choose at least 15 units of electives, and you are set to graduate!
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 ENGSOC such as First Year Project Coordinators (FYPCOs). See the AMS Clubs Directory or the Queen's Get Involved page for ideas.	Look into summer jobs related to engineering chemistry 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).	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.	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.
GET ENGAGED WITH THE COMMUNITY	Volunteer on- or off-campus with different community organizations, such as ENGSOC External Relations Committee or a local charity like Martha's Table.	Get involved with the Engineering Society (ENGSOC). Attend conferences like the Conference on Industry and Resources Queen's University Engineering and the Queen's Engineering Competition.	Do some targeted networking with alumni working in careers of interest by joining the LinkedIn group Queen's Connects Career Network.	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 ENGAGED 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 the Intercultural Awareness Training Certificate hosted by QUIC and FDISC and research possible immigration regulations.	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.	Build your intercultural competence by getting involved with other cultures or by practicing or improving your language skills.	International students interested in staying in Canada can speak with an International Student Advisor.
GET CAREER READY	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.	Explore different careers of interest in the Career Services Career Advising and Resource Area. For more information check out Career Cruising.	Start focusing on areas of interest. Research education requirements for careers of interest. If needed, prepare to take any required tests (like the LSAT or GMAT) and get help thinking about grad school from Career Service.	Apply to jobs or future education, or make plans for other adventures. Get help from Career Services with job searching, resumes, interviews, grad school applications, or other decisions.

CONSIDER A 12-16 MONTH QUIP INTERNSHIP

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.

Knowledge & Workplace Skills

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

- **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

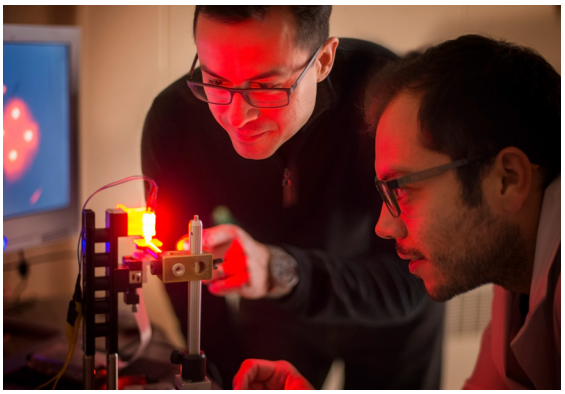
Career Possibilities

- Agricultural sciences
- Alternative energy technology
- Biomedical engineering
- Chemical/process engineering
- Consulting engineers
- Environmental engineering
- Food science and technology
- Forensic science
- Fuels and petrochemicals
- Mineral Processing
- Occupational health and safety
- Patent law
- Pharmaceuticals
- Polymer/rubber/plastic technology
- Public and private research

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. Listed careers are only suggestions.

Engineering Chemistry



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. Queen's wants you to succeed! Check out the Student Affairs website for available resources.

SMITH ENGINEERING
Queen's University

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

QUIP QUEEN'S UNDERGRADUATE INTERNSHIP PROGRAM

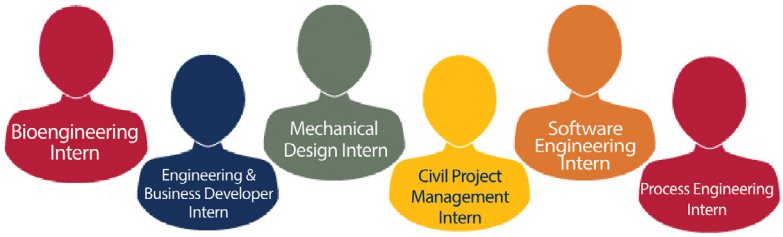
START DATES	POSITIONS	WORK TERMS
in May, September, or January	are paid and full-time	are 12-16 months long

PROGRAM OVERVIEW
- Graduate with a "Professional Internship" 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



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

Why study in Kingston?

Since 1841, 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 Kingston as one of the GREATEST UNIVERSITY TOWNS in the world – and it is often identified as the safest city in Canada. It is a university city at the core; just a quick drive to Toronto, Montreal, Ottawa and even New York. At a university with more clubs per capita than any other university in Canada, and in 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.