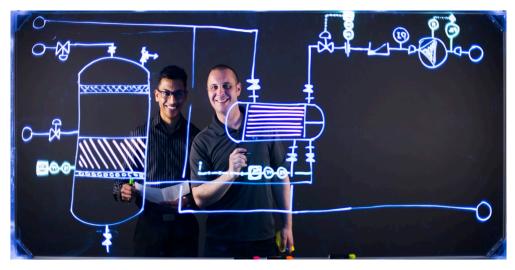
Chemical Engineering

Get to know CHEMICAL ENGINEERING

Society relies daily on products such as fuel, pharmaceuticals, advanced composites, semiconductors, magnetic and optical storage devices, diagnostic devices and systems, 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."

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.

Degree OPTIONS

Bachelor of Applied Science in Engineering

Bachelor of Applied Science in Engineering with Professional Internship

Option in Bioengineering / Process Engineering

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 Unit Operations
- 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

Acquire Skills. Gain Experience. Go Global.

That is a degree from Queen's.

smithengineering.queensu.ca/chee

Chemical Engineering MAJOR MAP

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



1ST YEAR 2ND YEAR **3RD YEAR GET THE** Courses include: Engineering Innovation & Courses include: Analysis of Process Data, **COURSES** Queen's Engineering first year is common -Entrepreneurship, Fluid Phase & Reaction Chemical Processes & Systems, Main **YOU NEED** courses include: Physics, Chemistry, Calculus, Equilibrium, Chemical Reaction Engineering, Group Chemistry, Principles of Chemical Algebra, Graphics, Computing, and Earth Heat & Mass Transfer, Biochemical Engineering, Reactivity, Ordinary Differential Equations, Systems Engineering. Process Dynamics & Control, Design of Unit Thermodynamics of Energy Conversion Systems Operations, Engineering Communications, Process Dynamics & Numerical Methods, Fluid Discipline selection will take place in February! Ethics, and Professionalism, and Mitigation of Mechanics and Applied Organic Chemistry. You will also choose your Sub-Plan: Chemical Industrial Pollution. You will also take the second EDPS course -Process Engineering (CHE1) or Bioengineering You will also take another laboratory projects APSC200, as well as a laboratory project course (CHE2). course, as well as additional courses based on and one additional course based on your option. your option: Environmental Biotechnology and Transport Phenomena Fundamentals (CHE1) or Biomedical Engineering (CHE2) or Industrial Cell Based Engineering Principles (CHE2). Catalysis (CHE1). GET RELEVANT EXPERIENCE Stay during the summer as an assistant to a Join teams or clubs on campus such as the Look into summer jobs by talking to the dept faculty member or apply for an external summer Queen's Solar Design Team and the Fuel Cell or Career Services about work through **SWEP** research opportunity. Consider applying to **NSERC Collaborative Research and Training** Experience (CREATE) Programs such as SERA. Consider entrepreneurial opportunities at See the AMS Clubs Directory or the Queen's programs like the Queen's Founders and Get Involved page for more ideas. Consider applying to do a 12-16 month QUIP Innovators Initiative (QFII). internship between your third and fourth year. **GET ENGAGED** Get involved with the **Engineering Society** Volunteer on- or off-campus with different Do some targeted networking with alumni WITH THE (ENGSOC). community organizations, such as Let's Talk working in careers of interest through COMMUNITY Science (LTS), Queen's Biomedical Innovation Start or continue volunteering with LinkedIn. Team and Women in Science and Engineering. organizations such as **Engineers without** Borders (EWB). Attend conferences like the Go to the Oil and Gas Speakers Series offered Consider joining an intramural sports or an Conference on Industry and Resources Queen's by the department. athletics team. Check out the Athletics & University Engineering (CIRQUE) and the Recreation site. Queen's Engineering Competition. GET ENGAGED Speak to a QUIC advisor or get involved in their Is an exchange in your future? Start thinking Build your intercultural competence by **GLOBALLY** programs, events and training opportunities. getting involved with other cultures or by about where you would like to study abroad. Apply in January for a 3rd year exchange practicing or improving your language skills. Prepare for work or studies in a multi-cultural environment by taking the Intercultural through your faculty's International Office. Awareness Training Certificate hosted by QUIC and Four Directions Indigenous Student Centre, and research possible immigration regulations.

Explore different careers of interest in the

information check out Career Cruising.

Career Services Information Area. For more

4TH OR FINAL YEAR

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

You will also choose 5-6 courses based on your option, which may include research thesis project, multi-disciplinary design projects, or Technology Engineering and Management (TEAM) and you are set to graduate!

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.

Consider joining professional associations like the Canadian Society for Chemical Engineering or the Canadian Society for Chemical Technology.

Join groups on LinkedIn reflecting specific careers or topics of interest in Chemical Engineering.

 α

Z

0

Start focusing on areas of interest. Research

required tests (like the LSAT or GMAT) and get

help thinking about grad school from Career

education requirements for careers of

Services.

interest. If needed, prepare to take any

International students interested in staying in Canada can speak with an International Student Advisor.

Apply to jobs or future education, or make plans for other adventures. Get help from <u>Career Services</u> with job searching, resumes, interviews, grad school applications, or other decisions.

Find impactful work that aligns with your values using the <u>Queen's Career Guide to the UN Sustainable Development Goals.</u>

Knowledge & Workplace 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

Career Possibilities

- Agricultural sciences
- Biochemistry
- Biomedical engineering
- Chemical process engineering
- Cytotechnology
- Environmental management
- Fluid dynamics aerospace
- Finance & financial analysis
- Food industry, nutrition & dietetics
- n dod madding man moma c
- 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. Listed careers are only suggestions.

How to use this map

GET CAREER

READY

Grappling with program decisions? Go to

the Orientation Evenings held by different

Engineering departments and attend the

Get some help deciding by visiting Career

various Career Fairs during the year.

Services.

Chemical Engineering



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.



Faculty of Engineering and Applied Science Dupuis Hall, Room 201 19 Division Street (613) 533-2765 chemeng.queensu.ca

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
- Explore a career path, earn a salary, and build workplace skills

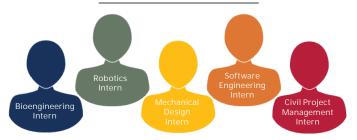
ELIGIBILITY

- Complete 1st year before you register
- Complete 2nd or 3rd year before your internship
- Minimum GPA of 1.9
- Return to Queen's after your internship to finish your degree

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



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

more doser than you think 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 CANADA Oueen's Beijing / 15 hrs - and graduate Dubai / 14 hrs with a degree Calgary / 4 hrs Vancouver / 5 hrs that is globally recognized Halifax / 2 hrs San Francisco / 5.5 hrs Kingston among the Denver/3 hrs best. New York / 1.5 hrs UNITED STATES Dallas / 3.5 hrs

Atlanta / 2 hrs

Bermuda / 2 hrs