Chemistry

Get to know CHEMISTRY

Chemistry explores the composition, structure and transformation of matter. Frequently called the central science, it provides the basis for studies in many other disciplines ranging from biology to materials science, in addition to being a booming discipline of its own, of course.

Located in Chernoff Hall, Queen’s Department of Chemistry is regarded as one of the best in Canada for both teaching and research. Our aim is to offer a stimulating learning environment for undergraduate students, primarily through participating in engaging, practical laboratory work. In upper years, depending on your interests, you can specialize in one of the more fundamental branches of the discipline, such as analytical, inorganic, organic, physical, or theoretical chemistry. You can also choose to explore interdisciplinary applications, such as environmental, materials, biological, computational, or polymer chemistry.

Professional chemists play major roles in such diverse and important areas as the design and synthesis of pharmaceuticals and materials, the development of alternative energy sources, and the protection of the environment.

One of the top Chemistry teaching and research departments in Canada with accreditation by the Canadian Society of Chemistry.

A Year to CHOOSE

We often say that our students are like explorers. In Arts and Science, your first year is all about making choices and exploring new paths. Whether you are in Arts, Science or Computing, you will choose your courses from a wide variety of subjects as you settle into university life and become familiar with new styles of learning. By the end of your first year, you will have discovered your areas of interest, passion and success, and will then declare your major. Your first year, whether you consider it to be undeclared, undecided or simply a time for exploration, is bound to be a year full of adventure.

Queen’s ADMISSION

Students apply to Queen’s Science (QS) through the OUAC (Ontario Universities’ Application Centre) website (ouac.on.ca). Secondary School prerequisites include English 4U, Calculus and Vectors 4U, Advanced Functions 4U and two of Chemistry 4U, Biology 4U or 4U Physics. Visit queensu.ca/admission for additional information regarding requirements and admission to Queen’s.

Degree PLANS

Bachelor of Science (Honours)
Major / Minor in Chemistry
Specialization in Chemistry, Environmental Chemistry
Internship option available

Course HIGHLIGHTS

The first year course in Chemistry is a survey of modern chemistry covering molecular structure, bonding, phases of matter, thermodynamics, electrochemistry, equilibrium, kinetics, polymers, organic and biochemistry with extensive lab participation. Some popular upper year courses include Synthetic Organic Chemistry, Biological Chemistry, Polymer Chemistry, Environmental and Green Chemistry and Quantum Mechanics.

That is a degree from Queen’s.
QUartsci.com
**Chemistry MAJOR MAP**

**BACHELOR OF SCIENCE (HONOURS): SPECIALIZATION, MAJOR, MINOR**

### 1ST YEAR

**GET THE COURSES YOU NEED**
- In first year take CHEM 112, PHYS 106 (or 104, 117), MATH 121 (or 120), MATH 112 (or 110, 111).
- Each Science Plan will have several required first-year courses, including minors. For details see the Arts and Science Academic Calendar.
- Build your transferable skills in time management, problem-solving, writing and more with Student Academic Success Services.

### 2ND YEAR

**GET RELEVANT EXPERIENCE**
- Join clubs on campus such as Let’s Talk Science, Women in Science and Engineering or the Undergraduate Science Case Competition.
- 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 community organizations such as Science Rendezvous.
- Consider joining an intramural sports or an athletics team. Check out the Athletics and Recreation site.

**GET THINKING GLOBALLY**
- Prepare for work or studies in a multi-cultural environment by taking QUC’s Intercultural Competency Certificates, and research possible immigration regulations.
- Speak to a QUC advisor to get involved in their programs, events, and training opportunities.

### 3RD YEAR

**GET THE COURSES YOU NEED**
- If you are registered in a Chemistry Major or Specialization Plan, then you will take CHEM 211, 212, and 213 in the fall term, and CHEM 221, 222, and 223 in the winter term, along with other courses outlined in the Academic Calendar.
- Complete the required MATH and PHYS courses if you did not do so in 1st year.
- Want to enhance your degree? Consider a certificate in Employment Relations or explore other certificates available.

**GET RELEVANT EXPERIENCE**
- Look into summer jobs by talking to the dept. or Career Services about work through SWEP, NSERC-USRA or Work-Study.
- Consider entrepreneurial opportunities via programs like the Queen’s Innovation Connector Summer Initiative (QICSI).

**GET CONNECTED WITH THE COMMUNITY**
- Get involved with the Departmental Student Council (DSCI). Connect with professors at socials or attend speaker events. Start or continue volunteering.

**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 the International Programs Office.
- Build your intercultural competence by getting involved with other cultures or by practicing or improving your language skills.

### 4TH OR FINAL YEAR

**GET THE COURSES YOU NEED**
- Try to complete all of the 3rd year core Chemistry course requirements (CHEM 311, 312, 313, and 397 in the fall term, and 321, 322, 323, and 397 in the Winter term). For the Specialization Plan in Chemistry, 90.0 core/option units are required and planning for the extra 3rd and 4th year Chemistry courses is needed.
- Need help mapping all of your core, option, supporting and elective courses (including those not listed above) to make sure you will have what you need to complete your degree? Use the Course Mapping Tool on the Arts and Science website.

**GET RELEVANT EXPERIENCE**
- Consider applying to do a 12-16 month QUIP internship between your third and fourth year.
- Consider presenting and publishing your work through Inquiry@Queen’s.

**GET CONNECTED WITH THE COMMUNITY**
- Do some targeted networking with alumni working in careers of interest by joining the LinkedIn group Queen’s Connects. Check out Career Services networking workshops. Participate in meetings with the Queen’s Chemistry Innovation Council (QIOC).
- Consider joining associations like the Chemical Institute of Canada or the Association of the Chemical Profession of Ontario.

**GET THINKING GLOBALLY**
- Consider joining the Undergraduate Student Chemistry Conference in the Spring or at Inquiry@Queen’s.
- International students interested in staying in Canada can speak with an International Student Advisor.

### CONSIDER A 12-16 MONTH QUIP INTERNSHIP
- Investigate requirements for full-time jobs, graduate studies, or other opportunities. Assess what you’re lacking and fill in gaps – check out the Career Services skills workshop for help. Consider presenting your research results at the Southern Ontario Undergraduate Student Chemistry Conference in the Spring or at Inquiry@Queen’s.

### Where could I go after graduation?

- Agricultural sciences
- Art Conservation
- Biomedical engineering
- Botany
- Dentistry
- Ecology
- Education and teaching
- Epidemiology and community health
- Environmental research
- Food science and technology
- Forensic science
- Genetics
- Industrial processes
- Journalism
- Management (business and health administration)
- Manufacturing
- Marketing
- Materials science
- Medical laboratories
- Medicine
- Natural resource management
- Nutrition and dietetics
- Patent law
- Pharmaceuticals
- Pharmacy
- Public health
- Public or private research
- Quality control
- Safety assessment and design
- Sustainability design
- Toxicology
- Veterinary medicine

Some careers may require additional training.

Visit careers.queensu.ca/majormaps.html for the online version with links!
What can I learn studying CHEMISTRY?

- Academic and technical skills to conduct research, understand scientific journal articles, trouble-shooting, clearly explain and interpret research data
- Organizational skills to compile, organize and maintain accurate records
- Ability to operate laboratory equipment and to employ appropriate scientific lab techniques
- Proficiency in mathematical and logical analysis
- Sensitivity to the health and safety of others - safe handling, storage and disposal of hazardous chemicals
- Written and oral communication skills to prepare and present reports from research ideas and information using current technology
- Observation and decision making skills
- Resource and time management
- Team working in a multidisciplinary context
- Practical and fundamental knowledge of all subdisciplines of chemistry

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 a Career Services workshop.

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.

Why study in Kingston?

For over 175 years, the Kingston community has been a collection of bright minds. We are proud that our city was named one of the top Intelligent Communities across the globe, an accolade largely due to the thousands of students who study here every single year. In fact, the BBC has identified Kingston as one of the GREATEST UNIVERSITY TOWNS in the world, which might be why Instagram named the city ‘the happiest place on the planet’. Just a quick drive to Toronto, Montreal, Ottawa and even New York, Kingston is a safe and liveable city. Not only are we known as the freshwater sailing capital of the world, Kingston is arguably the birthplace of hockey. Wondering what to do while you’re attending school? Queen’s has more clubs per capita than any other university in Canada, and Kingston has more restaurants per capita than any other city in North America; your time here is guaranteed to be ‘fresh made daily’.

Queens University
Faculty of Arts and Science
Chernoff Hall
90 Bader Lane
613-533-2616
chem.queensu.ca