Biochemistry

Get to know
BIOCHEMISTRY

Biochemistry in the 21st century will continue to uncover the biochemical basis for life. Emerging knowledge in biochemistry will help to unravel the molecular basis for diseases such as cancer and hypertension, and in turn lead to the development of new tools for disease detection and new therapies for treatments and cures.

The biochemist applies the basic principles of chemistry, mathematics, physics, and biology to the study of cellular processes; thus a good grounding in these subjects is an integral part of the program. Biochemistry at Queen’s offers a wide scope of diverse topics ranging from molecular genetics and structural biology to the functional basis of enzymes, hormones, and vitamins. These biochemistry courses incorporate an understanding of specific organisms, as well as organ systems such as musculoskeletal and cardiovascular.

The cooperative program in Biochemistry is an option that provides paid work placements totalling 12 months in industry, business, research institutes or government labs providing contacts and experience in the work place. Participating in the cooperative program requires up to an additional year of study. Biochemistry students in the Specialization plan will undertake 4th year research projects in topics as diverse as protein structure and enzyme function, along with supporting courses.

Degree OPTIONS
Bachelor of Science (Honours)
Major / Minor / Specialization in Biochemistry
Bachelor of Science (General)

“...program with a modern experimental approach to science.”

A Common START

Students in our Faculty are admitted into Arts, Science or Computing but the focus is on a common first year. Through self-exploration, and while you settle into university life, you have the opportunity to work with our advisors and faculty to discover your real interests and identify opportunities for success. Sometimes that discovery happens fairly quickly, and for other students it takes some work and time before the “ah-ha!” happens – either way your first year will be a great experience at Queen’s.

Queen’s ADMISSIONS

Students apply to Queen’s Science (QS) through the OUAC (Ontario University Application Centre) website. Secondary School prerequisites include English 4U, Advanced Functions 4U, Calculus and Vectors 4U, plus two of Biology 4U, Chemistry 4U, or Physics 4U.

Course HIGHLIGHTS

The first two years of study in the Biochemistry program involve courses in general chemistry, organic chemistry, mathematics and biology, the latter giving also a first introduction to biochemical themes. The first full complement of courses in biochemistry are offered in the third year program, together with an extensive laboratory course. The fourth year is devoted almost entirely to biochemistry, covering some of the latest advances, and including a large proportion of advanced laboratory experience.

That is a degree from Queen’s.
quartsci.com
## Biochemistry MAJOR MAP

**BACHELOR OF SCIENCE HONOURS (SPECIALIZATION, MAJOR, MINOR) | BACHELOR OF SCIENCE (GENERAL) | BACHELOR OF ARTS HONOURS (MINOR)**

### 2ND YEAR

#### Get the Courses You Need

- Take BIOC 102, 103, CHEM 112, MATH 120 or 121, PHYS 106 or 104 or 117.

#### Get Relevant Experience

- Consider taking more responsibility within different clubs or extracurriculars, like Queen's Lifeboat Newspaper. Look into summer jobs by talking to the department or Career Services about work through SWEP or NSERC. Consider entrepreneurial opportunities via programs like the Queen's Innovation Connector Summer Initiative (QICSI).

### 3RD OR FINAL YEAR

#### Get the Courses You Need

- Biochemistry students must meet minimum GPA requirements in their core courses to proceed to 4th year courses, which are listed on the Department website.

#### Get Relevant Experience

- Stay during the summer as an assistant to a faculty member or apply for an external summer research opportunity. Contact the Life Sciences and Biochemistry Program Office for information. Consider applying to our 12 month biochemistry co-op program or to a 12-16 month QUIP internship between your third and fourth year.

### 4TH OR FINAL YEAR

#### Get the Courses You Need

- Specializations must take BCHM 410, 411, 421, 422, 432, 441. Majors must take BCHM 410, 411, 432, 441.

#### Get Relevant Experience

- 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 the Career Services skills workshop for help. Participate in Inquiry @ Queen’s undergraduate student conference.

### Consider a 12-16 Month QUIP Internship

- Prepare for work or studies in a multi-cultural environment by taking QUIC’s Interultural Competency Certificate, and research possible immigration regulations.

- 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 Career Services with job searching, resumes, interviews, grad school applications, or other decisions.

## Where could I go after graduation?

- Academia
- Agricultural sciences
- Biomedical engineering
- Biotechnology
- Business
- Dentistry
- Education
- Epidemiology
- Food science and technology
- Forensic science
- Forestry
- Genetics
- Graduate studies
- Journalism
- Medicine
- Nutrition & dietetics
- Law
- Pharmacy
- Pharmaceuticals
- Public health
- Medical research
- Sales, retail and wholesale
- Textile industry
- Veterinary medicine

*Some careers may require additional training*

Visit careers.queensu.ca/majormaps.html for the online version with links!
How to use this map

• Got questions about careers and classes?
• Feeling a little lost or overwhelmed by choices?
• Wondering what you are “supposed” to be doing?

Use this map to plan for success in five overlapping areas of career and academic life. Each map helps you explore possibilities, set goals and track your accomplishments. To make your own custom map, use the My Major Map tool.

Don’t stress if you haven’t done all of the suggested activities. The map is not a prescription – it’s a tool for finding your own way at Queen’s.

Getting what you need to succeed in the workplace

WHAT DO EMPLOYERS WANT?

In a recent survey from the Canadian Council of Chief Executives the top 6 skills sought by employers were:

1 People skills
2 Communication skills
3 Problem-solving skills
4 Analytical abilities
5 Leadership skills
6 Industry-specific knowledge

HOW DO I GET THE SKILLS I NEED?

It is important to develop a balanced skill set – many of which you will develop during your studies. To stand out, take advantage of experiential learning through the multitude of clubs and activities in and around Queen’s. Check out the Get Relevant Experience section of this map.

WHAT CAN I LEARN STUDYING BIOCHEMISTRY AT QUEEN’S?

• Knowledge of the chemical and biological processes within the human body and other organisms
• Understanding of organic, analytical and physical chemistry and biology (genetics)
• Understanding of general physics and mathematics
• Ability to use statistics and computer programs for data processing
• Familiarity with a laboratory environment and ability to troubleshoot laboratory equipment and instruments
• Knowledge of quality control and safety regulations
• Quantitative skills - solve quantitative problems
• Oral and written communications - write and summarize reports and give oral presentations
• Time and resource management

WHAT MAKES ME SPECIAL?

No one will get exactly the same experience as you. Take the time to think about what skills you have developed to be able to best explain them with compelling examples in future applications to employers and further education. For help with this, check out the Career Services skills workshop.