

# 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 co-operative education option in the Biochemistry program at Queen's offers students an experience that integrates on-campus academic study with relevant work experience in industry, government, or a research institute. The work experience enhances the students' intellectual, professional and personal development by providing opportunities for applying academic theories and knowledge, evaluating and adjusting career directions, and developing skills in working with people. The co-operative education program opens doors to a diverse set of employers throughout Canada and the United States, which allows students to build professional networks outside of Queen's University.



*A comprehensive program with a modern experimental approach to science and discovery.*

## 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.

## 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 a first introduction to biochemical themes. The first full course in biochemistry is offered in the second year of the program. In the third year, students will vastly expand their experience in biochemistry by exploring detailed structures and functions of proteins and biological molecules, the molecular basis of diseases, and modern biochemical research methods. They will also participate in an intensive 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.

## Queen's ADMISSION

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

## Degree PLANS

Bachelor of Science (Honours)  
Major / Minor / Specialization in Biochemistry  
Internship option available  
Co-op option available

**Acquire Skills. Gain Experience. Go Global.**  
That is a degree from Queen's. [QUartsci.com](http://QUartsci.com)

# 2017 - 2018 Biochemistry MAJOR MAP

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



In ARTS?  
Add Biochemistry  
as your MINOR.



CONSIDER A 12-16 MONTH QUIP INTERNSHIP

- 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

\*This map is intended to provide suggestions for potential activities and career paths, but everyone's abilities, experience, and constraints are different. Build your own map using our online [My Major Map](#) tool.

Visit [careers.queensu.ca/majormaps.html](https://careers.queensu.ca/majormaps.html) for the online version with links!

# Biochemistry

## MAJOR MAP



### 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.



#### LIFE SCIENCES AND BIOCHEMISTRY

Faculty of Arts and Science  
Botterell Hall, Room 650  
18 Stuart Street  
613-533-6527  
[healthsci.queensu.ca/liscbchm](http://healthsci.queensu.ca/liscbchm)

# 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 the [Career Services skills workshop](#).

## What can I learn studying BIOCHEMISTRY?

- 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 to solve quantitative problems
- Oral and written communication to write and summarize reports, along with giving oral presentations
- Time and resource management
- Work experience to help identify careers of interest (through co-op program)

## 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'.

*We're closer than you think.*

