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). 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 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

That is a degree from Queen’s.

QUartsci.com
Biochemistry MAJOR MAP

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

1ST YEAR
- In first year take BIOL 102, 103, CHEM 112, MATH 120 or 121, PHYS 106 or 104 or 117.
- 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
- In second year take BCHM 218, CHEM 211, 212, 222, 223, STAT 263. Please see the Academic Calendar to ensure you are taking the correct courses.
- Biochemistry students must meet minimum GPA requirements in their core courses to proceed to 4th year courses, which are listed on the unit website.
- Want to enhance your degree? Consider the co-operative education option, a certificate, Employment Relations or explore other certificates available.

3RD YEAR
- Complete all Plan requirements/core courses. Meet the minimum grade requirements for fourth year BCHM courses.
- Take BCHM 313, 315, 316, 317. Specialization students must also take 3.0 units from another 300-level lab.
- 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.

4TH OR FINAL YEAR
- Specialization students must take BCHM 410, 411, 421, 422, 432, 442. Majors must take BCHM 410, 411, 432, 441.
- By fourth year you should be working on your remaining option and elective courses. Make sure to map your minor and / or certificate(s) as well.
- Apply to graduate in SOLUS.

GET THE COURSES YOU NEED

GET RELEVANT EXPERIENCE
- Join teams or clubs on campus such as Let’s Talk Science and Queen’s First Aid.
- 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 different community organizations, such as Science Rendezvous and the Queen’s Synthetic Biology Organization.
- Get involved with the BCHM Student Council. Connect with professors at socials or attend speaker events.

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

GET READY FOR LIFE AFTER GRADUATION
- Grappling with program decisions? Go to Majors Night or get some help considering career options from Career Services. Attend Biochemistry Information Night in October and Q & A Night in March offered by the DSC. Attend Information Sessions in November and January offered by the Associate Dean.
- Explore different careers of interest by reading books in the Career Services Information Area, such as Opportunities in Medical Technology Careers. For more information check out Career Cruising or by finding and connecting with alumni on LinkedIn.
- Attend Canadian Studies Medicine Abroad offered by the Associate Dean, Life Sciences and Biochemistry.

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!
Biochemistry

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

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 a Career Services 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.