Biochemistry

Queens ARTS AND SCIENCE

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 priciples 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 workplace. 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.



"A comprehensive 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 selfexploration, 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 at Queen's will be a great experience.

Course **HIGHLIGHTS**

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.

Degree **OPTIONS**

Bachelor of Science (Honours) *Major / Minor / Specialization in Biochemistry* Bachelor of Science (General) Internship option available

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.

Acquire Skills. Gain Experience. Go Global. That is a degree from Queen's. quartsci.com

2016 - 2017 Biochemistry MAJOR MAP

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

	1ST YEAR	2ND YEAR	3RD YEAR	4TH OR FI
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GET THE COURSES YOU NEED	In first year take BIOL 102, 103, CHEM 112, MATH 120 or 121, PHYS 106 or 104 or 117.	In second year take BCHM 218, CHEM 211, 212, 222, 223, STAT 263.	Complete all Plan requirements/core courses. Meet the minimum grade requirements for fourth year BCHM courses.	Specialization s 421, 422, 432, 4 432, 441.
	Each Science Plan will have several required first-year courses, including minors. For details see the Arts and Science Academic Calendar.	Biochemistry students must meet minimum GPA requirements in their core courses to proceed to 4th year courses, which are listed on the unit website.	Take BCHM 313, 315, 316, 317. Specialization students must also take 3.0 units from another 300-level lab.	By fourth year y remaining optio map your mino
	Want to enhance your degree? Consider a certificate in Academic Writing or explore other certificates available.	Please see the Academic Calendar to ensure you are taking the correct courses.	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.	Apply to gradua
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.	Consider taking more responsibility within different clubs or extracurriculars, like Queen's LifeBeat 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).	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 unique 8 month biochemistry co-op program or to a 12-16 month QUIP internship between your third and fourth year.	 Investigate requirements opportunities reprint opportunities requirements Assess what exprime gaps with volum out the Career S Participate in Independent on the student conference
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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.	Go to conferences such as the Queen's Undergraduate Conference on Healthcare if interested.	Consider joining Canadian Societ Biology and the
WITH THE		with professors at socials or attend speaker events. Start or continue volunteering with organizations such as Médecins Sans Frontières (Doctors Without	Conference on Healthcare if interested. Do targeted networking with alumni working in careers of interest by joining the LinkedIn group	Consider joining Canadian Societ Biology and the and Molecular B
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FINAL YEAR

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equirements for full-time jobs or other related to careers of interest. experience you're lacking and fill in lunteering, clubs, or internships – check r Services skills workshop for help. Inquiry @ Queen's undergraduate erence.

ing professional associations like the iety for Biochemistry and Molecular the International Union of Biochemistry r Biology.

on LinkedIn reflecting specific careers or rest in Biochemistry.

vork or studies in a multi-cultural t by taking QUIC's Intercultural Certificate, and research possible regulations.

I students interested in staying in Canada ith an International Student Advisor.

or future education, or make plans entures. Get help from Career Services ching, resumes, interviews, grad school or other decisions. Attend Town Hall ered by the Associate Dean and provide Program.

Where could I go after graduation?

Oueen's

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

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.

A balanced approach leads to long-term success. While you will learn a lot from your studies, taking time to get relevant experience outside of the classroom, build your network, and gain international experience, will position you to be more competitive in your job search or grad school applications.

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 <u>Student Affairs website</u> for available resources.

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

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 labratory environment and ability to troubleshoot labratory equipment and instruments
- Knowledge of quality control and safety regulations
- Quantitative skills to solve quantitative problems
- Oral and written commuication to write and summarize reports, along with giving oral presentations
- Time and resource management





LIFE SCIENCES AND BIOCHEMISTRY

Faculty of Arts and Science Botterell Hall, Room 813 18 Stuart Street 613-533-2900 healthsci.queensu.ca/liscbchm

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.