Biology

Get to know BIOLOGY

There has never been a more exciting time to study Biology, with subjects ranging as broadly as climate change and the conservation of biodiversity, the origin and evolution of life, the form and function of organisms, and the ongoing “omics” revolution at the molecular level. Reflecting this diversity, Queen’s Biology students have an extraordinary range of courses to choose from. The program emphasizes interactive learning with hands-on laboratories, small senior seminar modules and field courses. Our department also offers opportunities for field study around the globe — from Argentina to Africa.

New to Biology is the Biotechnology program that works with living organisms and other biological systems to help us improve our lives by discovering new drugs, improving crop production, and helping to develop novel forms of sustainable energy. Recognizing the interdisciplinary nature of biotechnology, the program will encourage students to take courses from several departments at Queen’s, everything from law to civil engineering to chemistry to biomechanical and molecular sciences. There is also an option to combine this degree with a diploma in Biotechnology from St. Lawrence College. The program will have a strong emphasis on laboratory-based learning during both the diploma and degree portions of the program. Combined with the technical training of a college diploma, these will give students a unique set of skills.

Queen’s ADMISSIONS

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

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.

Degree OPTIONS

Bachelor of Science (Honours)
- Major / Minor / Specialization in Biology, Specialization in Biology and Psychology, Specialization in Mathematical Biology, Specialization in Biotechnology
Bachelor of Science (General)

Course HIGHLIGHTS

The courses in Biology are very diverse from Ecology and Evolution, Animal and Plant Physiology to Biotechnology. Those interested in understanding biology at the cellular level can choose courses in Cell Biology, Genetics, Comparative Biochemistry and Analytical Genomics. If understanding whole ecosystems is your interest, we have courses in Population and Evolutionary Ecology, Conservation Genetics, Limnology and Aquatic Ecology and several field courses in Canada and abroad. If you are primarily interested in more human focused topics we have Human Genetics and Evolution, Plants for People, Evolution and Human Affairs, and Evolutionary Medicine.

That is a degree from Queen’s.
quartssci.com
**1ST YEAR**

**GET THE COURSES YOU NEED**
- Take BIOL 102, 103, CHEM 112 and MATH 120 or 121. Interested in the Biology and Psychology Specialization? Take PSYC 100. Interested in the Biology and Mathematics Specialization? Take MATH 110 or 111. For details on plan requirements or thresholds, see the Arts and Science website.

**GET RELEVANT EXPERIENCE**
- Join teams or clubs on campus such as Queen’s First Aid, Queen’s Association for Technology in Medicine and Biology (QATMB), Queen’s Genetically Engineered Machine Team (QGEM) and Queen’s Synthetic Biology Organization (QSYNBIO).

**GET CONNECTED WITH THE COMMUNITY**
- Volunteer on-or off campus with different community organizations such as Queen’s Health Outreach, Let’s Talk Science, and Women in Science & Engineering at Queen’s University (WISE).

**GET THINKING GLOBALLY**
- The Queen’s University International Centre is your first stop to learn how to internationalize your degree or to leverage your existing cross-cultural experience.
  - Speak to a QUIC advisor or get involved in their programs, events and training opportunities.

**GET READY FOR LIFE AFTER GRADUATION**
- Grappling with program decisions? Go to Majors Night for ideas on choosing your courses.
  - Explore different careers of interest by reading books in the Career Services Information Area, such as Opportunities in Biotechnology Careers. For more information check out Career Cruising or by finding and applying to research opportunities at Queen’s University Biological Station or through the Biology Undergraduate Summer awards.

**2ND YEAR**

**GET THE COURSES YOU NEED**
- In second year you can enroll in the Biology Honours Plan, Biology General Plan, or one of our three specialized Plans (Biology and Psychology, Biology and Mathematics or Biotechnology).

**GET RELEVANT EXPERIENCE**
- Volunteering is a great way to get practical experience and build your CV towards getting Biology jobs during your degree.
  - Look into summer jobs by talking to the department or Career Services about work through SWEPh or NSERC.

**GET CONNECTED WITH THE COMMUNITY**
- Get involved with the Departmental Student Council (DSC). Start or continue volunteering with organizations.
  - If interested, attend conferences and talks like the Canadian Undergraduate Conference on Healthcare (CUCOH).

**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 your faculty’s International Office. If exchange isn’t for you, come talk to QUIC about other options. Look into a BIOL 307/317 Field Biology International Exchange.

**GET READY FOR LIFE AFTER GRADUATION**
- Explore different careers of interest by reading books in the Career Services Information Area, such as Opportunities in Biotechnology Careers. For more information check out Career Cruising or by finding and connecting with alumni on LinkedIn.

**3RD OR FINAL YEAR**

**GET THE COURSES YOU NEED**
- Take core courses in Ecology (BIOL 302 or BIOL 303), Physiology (BIOL 341 or BIOL 339), and Cell Biology (BIOL 310).

**GET RELEVANT EXPERIENCE**
- You can focus your study into thematic areas; view suggested courses online. Check out our field courses (BIOL 307, 308, 317 and 327).

**GET CONNECTED WITH THE COMMUNITY**
- Consider applying to research opportunities at Queen’s University Biological Station or through the Biology Undergraduate Summer awards.
  - Consider applying to do a 12-16 month QUID internship between your third and fourth year.

**GET THINKING GLOBALLY**
- Consider applying to a 12-16 month QUIP internship between your third and fourth year.

**GET READY FOR LIFE AFTER GRADUATION**
- Build your intercultural competence. Include opportunities for gap years in your CV and before you enter the workforce.
  - Consider applying to research opportunities at Queen’s University Biological Station or through the Biology Undergraduate Summer awards.

**4TH OR FINAL YEAR**

**GET THE COURSES YOU NEED**
- Thinking about graduate programs? Check out our Honours Thesis courses (BIOL 537 or BIOL 541) and Research Mentorship courses (BIOL 538-540). You’re looking for a unique study experience, check out our Honours Seminar courses (BIOL 501-536) and 4th year labs (BiOL 401-404).

**GET RELEVANT EXPERIENCE**
- Apply to graduate in SOLUS.

**GET CONNECTED WITH THE COMMUNITY**
- 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.

**GET THINKING GLOBALLY**
- Participate in Inquiry @ Queen’s undergraduate student conference.

**GET READY FOR LIFE AFTER GRADUATION**
- Consider joining professional associations such as Canadian Society for Molecular Biosciences, BIOTECanada, and the Canadian Society for Ecology and Evolution. Join groups on LinkedIn reflecting specific careers or topics of interest in Biology.

**CONSIDER A 12-16 MONTH QUIP INTERNSHIP**
- Prepare for work or studies in a multi-cultural environment by taking QUIC’s Intercultural Competency Certificate, and research possible immigration regulations.

**CONSIDER A 12-16 MONTH QUIP INTERNSHIP**
- International students interested in staying in Canada after graduation?
  - 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 BIOLOGY AT QUEEN’S?

• Knowledge of biological functions
• Use laboratory equipment and instruments
• Hands-on experience studying biology in the field
• Comply with quality control and safety regulations
• Collect and preserve organisms
• Design experimental studies
• Present literature and research findings in posters and seminars
• Observe and make measurements
• Write, review, and summarize reports/scientific writing
• Analyze and evaluate information
• Statistical analysis of biological data
• Solve quantitative problems

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.

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