

# BIOLOGY

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## Departmental Notes

*Subject Code for Biology:* **BIOL**

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## Overview

Queen's Biology students have the opportunity to explore the full breadth of biology: the inner workings of cells; the integrative biology of organisms; the interactions between organisms in ecological communities; and the central roles of genetics and evolution in shaping the diversity of life. Hands-on laboratory exercises, field courses offered locally at our renowned Queen's University Biological Station (<https://qubs.ca/home/>) and around the world, and independent research opportunities in professors' laboratories on selected topics are hallmarks of a Degree Plan in Biology. The mission of Queen's Biology is to prepare graduating students to be engaged, independent, and critically thinking citizens, well-prepared for further study and with a variety of career options.

## Departmental Policies

Academic policies of the Department of Biology are outlined on the Department's website (<https://biology.queensu.ca/>) and course syllabi. Some Biology courses may require students to cover costs such as laboratory manuals and field trips. Laboratory manuals may contain important information on issues specific to the course of study such as laboratory safety, the ethical use of animals, and academic integrity. All students are expected to read and follow these departmental policies, which complement the Code of Conduct and Academic Regulations (<https://queensu-ca-public.courseleaf.com/arts-science/academic-regulations/>) described elsewhere in this *Calendar* and on the Biology website.

## Advice to Students

Students have some flexibility in selecting courses that can be credited toward biology concentrations. However, judicious planning is required in order to avoid conflicts. For example, physics is optional for B.Sc. degree plans but is recommended in specific areas of biology. To avoid course conflicts in upper years, students are advised to plan their course of study in consultation with an Academic Adviser in the Department of Biology upon admission, and again at the beginning of second year. Academic Advisers are available for consultation and program approval.

To assist students in designing a Biology degree Plan, planners for four different course streams are described on the departmental website. These streams are

1. Genetics and Molecular Biology,
2. Plant Biology,
3. Integrative Animal Biology, and
4. Ecology and Evolutionary Biology,

each representing a sub-discipline within biology corresponding to teaching and research specializations of faculty within the Department of Biology. Students who wish to cater their degree Plan and specialize in one of these areas are encouraged to use the appropriate planner to help in mapping out course selections. Suggestions are given for courses to select from Biology as well as supporting courses that are offered by other departments. Course streams are not formal degree Plan options in Biology, and some students may prefer to sample broadly from across all four areas.

Students wishing to take a single elective course in Biology are advised to take BIOL 110/3.0, BIOL 111/3.0, or BIOL 350/3.0. Those wishing to take more elective courses



in Biology are advised to consider that most courses have prerequisites, which include the core courses described in the following Plans.

## Special Study Opportunities

### Admission to 400- and 500-level Biology Courses

Admission to 400- and 500-level Biology courses requires a minimum cumulative GPA of 2.0 in any previously taken courses from the **Biological Foundations List (BIOL\_FNDS)** regardless of Degree Plan. Requests for special consideration must be submitted to the Chair of Undergraduate Studies (groganp@queensu.ca).

#### BIOL\_FNDS

Code	Title	Units
BIOL 102	Fundamentals of Biology: Molecular and Cell Biology	3.00
BIOL 103	Fundamentals of Biology: Organisms to Ecosystems	3.00
BIOL 200	Diversity of Life	3.00
BIOL 205	Mendelian and Molecular Genetics	3.00
BIOL 206	Evolutionary Genetics	3.00
BIOL 212	Scientific Methods in Biology	3.00
BIOL 300	Ecology	3.00
BIOL 330	Cell Biology	3.00
BIOL 334	Comparative Biochemistry	3.00
BIOL 339	Animal Physiology	3.00
BIOL 341	Plant Physiology	3.00

## Advanced Honours Seminars

### BIOL 501 – BIOL 535

Biology offers a series of advanced 3.00 unit seminars with emphases on reading primary literature, writing, presentation skills, and experimental enquiry. Small class sizes and extensive interaction with faculty help promote an independent, discovery-based learning experience. Topics and course numberings for seminar offerings vary from year to year and are listed each spring for third-year students to consider. Normally, due to enrolment restrictions, students taking BIOL 537 will be permitted to take only one of these seminar courses and all other fourth-year students will be permitted to take a maximum of two. Preferred access will be given to students at Level 4 and registered in a B.Sc.(Hons.) program with a BIOL Plan.

## Honours Thesis

### BIOL 537

The thesis course in Biology is a 12.00-unit, two-semester immersion in research that provides ideal preparation for graduate studies and research. Students follow the main

steps of a graduate degree on a compressed schedule, from conception and proposal of a project to its execution, presentation in the form of a poster and public talk, a written thesis and a formal defense. Third-year students should consult the Biology website for further information on the faculty members offering BIOL 537 placements, the specific projects available, and details on the application process.

## Research Mentorship

### BIOL 538, BIOL 539, BIOL 540

This family of courses offers students the opportunity to arrange, with a Biology faculty member and permission of the Department, a placement in a laboratory and literature-based research project of either 3.00 or 6.00 units. Students undertaking a Research Mentorship gain the hands-on experience of contributing to an active research laboratory and interacting with the researchers, as well as undertaking a customized independent study that compliments the laboratory's research program.

## Field Studies in Biology

### BIOL 307, BIOL 317, BIOL 327

The Department of Biology is an active participant in the Ontario Universities' Program in Field Biology (OUPFB) and a leader among Canadian universities in providing unique learning experiences via one- and two-week modules locally and around the globe. Superb resources are available close to Kingston at our Queen's University Biological Station and the Elbow Lake Environmental Education Centre, and recent courses have touched every continent except for Antarctica.