

BIOLOGY 5XX LEVEL ADVANCED HONOURS SEMINAR COURSES

Application Form – 2024-25

Name: _____ Student #: _____ E-mail address: _____

Program: BIOL-M-BSH BTEC-P-BSH BIPS-P-BSH BIMA-P-BSH EBIO-P-BSH

HAVE YOU PREVIOUSLY COMPLETED A BIOL 5XX SEMINAR COURSE? Yes No

ARE YOU ENROLLING IN, OR HAVE YOU PREVIOUSLY TAKEN BIOL 537? Yes No

From the course descriptions, choose the topics which interest you most. We will endeavour to satisfy those applicants who have not previously taken a BIOL 5XX course or BIOL 537 with their first or second choice. The enrolment is normally limited to 16 students per course. Students taking BIOL 537 may take one advanced honours seminar course if space allows. Preference will be given to students who require an advanced Honours seminar course(s) for their degree program (i.e. students not doing a BIOL537 thesis project).

The requirement for the MAJ BIOL degree plans is 6.0 units in BIOL @400 or above. There may be room for some students to be registered in two seminar courses.

Do you wish to register for one (3.0 unit) seminar course _____ or two (6.0 units) _____

PLEASE INDICATE THREE CHOICES FROM EACH TERM (in order of preference), type a '1', '2', or '3' in the first column/line beside the courses you want. *Please make sure you have (or will have) the prerequisites/corequisites*

Students without the prerequisites/corequisites will not be placed in the course.

FALL TERM 2024

Choice Order	BIOL	Title	Instructor	PRE/COREQ COMPLETED?
	501	Recent Research in Molecular Biology	Bendena	
	502	Plant Cellular Responses to Environmental Stress	TBA	
	510	The Biology of Sustainability	Grogan	
	535	Drug development and career opportunities in biotechnology	diCenzo	

Students without the prerequisites/corequisites will not be placed in the course.

WINTER TERM 2025

Choice Order	BIOL	Title	Instructor	PRE/COREQ COMPLETED?
	505	Cell Signaling in Development and Disease	Chin-Sang	
	507	Biotechnology	Aristizabal	
	509	Limnological Environmental Studies	Arnott	
	527	Paleolimnology and Global Environmental Change	Smol	

Student Comment/Note:

Make your selections using this form and forward to **Rachel Batson by e-mail (ug.biology@queensu.ca) no later than **Friday May 10, 2024****. Decisions will be made in June and will be available on **Solus** when you register for your courses. **A reminder** to make sure that you have the prerequisites/corequisites for the courses you pick.

Purpose Statement: The personal information collected on this form is collected under the legal authority of the Royal Charter of 1841, as amended. The information collected will be kept in your file. This information will form part of your departmental student record and may be shared with academic advisors, Undergraduate Chair, Dept. Head, and the Faculty of Arts and Science (if required for degree assessment). This information will be retained until you complete your degree program. If you have any questions or concerns about the information collected or how it will be used, please contact either the Biology Undergraduate Assistant or the Biology Undergraduate Chair.

Biological Foundations List: BIOL 102/3.0; BIOL 103/3.0; BIOL 200/3.0; *BIOL 201/3.0*; *BIOL 202/3.0*; BIOL 205/3.0; BIOL 206/3.0; BIOL 212/3.0; BIOL 300/3.0; BIOL 330/3.0; BIOL 334/3.0; BIOL 339/3.0; BIOL 341/3.0; *BIOL 302/3.0*; *BIOL 303/3.0*.

FALL TERM

BIOL 501 (3.0) → Recent Research in Molecular Biology

This course will focus on how molecular biology is used in basic and medical research to dissect the mechanisms involved in a large variety of biological problems. Students in the course will explore molecular literature and techniques that are relevant to their interest through seminar presentations, writing critiques, scientific reviews.

LEARNING HOURS: 120 (36S;84P)

RECOMMENDATION: BIOL 430/3.0.

PREREQUISITE: Level 4 and registration in a Biology Honours Plan (BIOL-M-BSH, BIMA-P-BSH, BIPS-P-BSH, BTEC-P-BSH, EBIO-P-BSH) and a minimum GPA of 2.0 in the Biological Foundations List or permission of the Department.

BIOL 502 (3.0) → Plant Cellular Responses to Environmental Stress

This course will dissect signal transduction pathways and molecular responses in plants exposed to environmental stresses such as pathogen infection, drought, or temperature fluctuations. Emphasis is on understanding techniques used to investigate changes in gene expression, protein-protein interactions, sub-cellular localization, as well as the analysis of mutant and transgenic plant lines.

LEARNING HOURS: 120 (36S;84P)

PREREQUISITE: Level 4 and registration in a Biology Honours Plan (BIOL-M-BSH, BIMA-P-BSH, BIPS-P-BSH, BTEC-P-BSH, EBIO-P-BSH) and a minimum GPA of 2.0 in the Biological Foundations List and (BIOL 330/3.0 or BIOL 334/3.0 or BIOL 341/3.0 or BIOL 430/3.0) or permission of the Department.

BIOL 510 (3.0) → The Biology of Sustainability

The ecology course will identify and critique potential mechanisms by which our civilization could most effectively move toward more sustainable living. The topic incorporates many fundamental aspects of biology, and each course iteration may include biogeochemical, ecological, economic, social, genetic, philosophical, and behavioral components.

LEARNING HOURS: 120 (36S;12T;12G;36I;12O;12P)

RECOMMENDATION: BIOL 300/3.0 or (*BIOL 302/3.0* and *BIOL 303/3.0*).

PREREQUISITE: Level 4 and registration in a Biology Honours Plan (BIOL-M-BSH, BIMA-P-BSH, BIPS-P-BSH, BTEC-P-BSH, EBIO-P-BSH) and a minimum GPA of 2.0 in the Biological Foundations List or permission of the Department.

BIOL 535 (3.0) → Drug development and career opportunities in biotechnology

Over the last century biotechnology has had a profound impact on health care by enabling novel innovative approaches to pharmaceutical development. New exciting breakthroughs and life-saving treatments emerge every year. Your degree in Biology is a potential launchpad into more than 100 distinct career opportunities in biotech. This course will be grounded on drug development and various areas of agricultural biotech, focusing on the challenges that leaders in these industries face and how their background and career trajectory prepared them to face those challenges. Beyond R&D, there is a wealth of career paths tied to clinical development, business development, executive management, marketing, regulatory affairs, law, sales, IT, and many other areas. Through a mix of lectures, student-guided discussions, and direct conversations with key opinion leaders, you will be exposed to the breadth of possibilities that your Biology degree sets up for you.

LEARNING HOURS: 120 (36S;84P)

PREREQUISITE: Level 4 and registration in a Biology Honours Plan (BIOL-M-BSH, BIMA-P-BSH, BIPS-P-BSH, BTEC-P-BSH, EBIO-P-BSH) and a minimum GPA of 2.0 in the Biological Foundations List and (BIOL 330/3.0 or BIOL 334/3.0 or BIOL 341/3.0 or BIOL 430/3.0) or permission of the Department.

Biological Foundations List: BIOL 102/3.0; BIOL 103/3.0; BIOL 200/3.0; *BIOL 201/3.0; BIOL 202/3.0; BIOL 205/3.0; BIOL 206/3.0; BIOL 212/3.0; BIOL 300/3.0; BIOL 330/3.0; BIOL 334/3.0; BIOL 339/3.0; BIOL 341/3.0; BIOL 302/3.0; BIOL 303/3.0.*

WINTER TERM

BIOL 505 (3.0) → Cell Signaling in Development and Disease

Organisms arise from a single cell into functional tissues, patterns, and structures by orchestrating cell behaviors, such as cell divisions, cell differentiation, pattern formations, cell shape changes and cell movements. This course will focus on the genetic and molecular analyses of how these cell behaviors occur. NOTE No textbook is required. The course website will be used to provide lecture notes and assigned readings from scientific books, journals and selected websites.

LEARNING HOURS: 120 (24L;12S;12I;24O;48P)

PREREQUISITE: Level 4 and registration in a Biology Honours Plan (BIOL-M-BSH, BIOL-P-BSH, BIMA-P-BSH, BIPS-P-BSH, BTEC-P-BSH, EBIO-P-BSH) and (a minimum GPA of 2.0 in the Biological Foundations List) and BIOL 330/3.0 or permission of Department.

EXCLUSION(S) BIOL 535/3.0.

BIOL 507 (3.0) → Biotechnology

This course covers the ethical, societal and environmental impacts of biotechnology. There will be critical analysis of public policy and the value of biotechnologies to science and the public. Topics will likely include synthetic biology, human cloning, xenotransplants, stem cells, nanomaterials, marine biotechnology, eugenics, patenting, GMOs and the release of biotech products to the environment.

LEARNING HOURS: 120 (36S;84P)

PREREQUISITE: Level 4 and registration in a Biology Honours Plan (BIOL-M-BSH, BIMA-P-BSH, BIPS-P-BSH, BTEC-P-BSH, EBIO-P-BSH) and a minimum GPA of 2.0 in the Biological Foundations List or permission of the Department.

ONE-WAY EXCLUSION. May not be taken with or after BIOL 441/3.0.

BIOL 509 (3.0) → Limnological Environmental Studies

This course will explore ecological and evolutionary aspects of species invasions, with an emphasis on aquatic invaders. Course discussions will include such topics as invasive species and factors that influence their arrival, establishment, and spread, as well as management strategies that can be employed to reduce the arrival, establishment, and spread of invasive species.

LEARNING HOURS: 120 (9L;9S;18G;84P)

RECOMMENDATION: BIOL 335/3.0.

PREREQUISITE: Level 4 and registration in a Biology Honours Plan (BIOL-M-BSH, BIMA-P-BSH, BIPS-P-BSH, BTEC-P-BSH, EBIO-P-BSH) and a minimum GPA of 2.0 in the Biological Foundations List or permission of the Department.

BIOL 527 (3.0) → Paleolimnology and Global Environmental Change

This course is mainly to provide students with a background in studies of long-term environmental change, with a focus on research that is especially relevant to today's environmental problems. Key topics include: climatic change, lake pollution, atmospheric deposition of contaminants and related topics.

LEARNING HOURS: 132 (21L;15S;96P)

RECOMMENDATION: BIOL 335/3.0.

PREREQUISITE: Level 4 and registration in a Biology Honours Plan (BIOL-M-BSH, BIMA-P-BSH, BIPS-P-BSH,

BTEC-P-BSH, EBIO-P-BSH) and a minimum GPA of 2.0 in the Biological Foundations List or permission of the Department.