

BIOL 200

Diversity of Life

Winter Term (2023)

Calendar Description

This course provides a phylogenetically based overview of biodiversity across the Tree of Life including viruses, archaea, bacteria, algae, fungi, plants, invertebrates and vertebrates. Patterns of organizational complexity and species diversity are explained in the context of evolutionary processes, structure-function relationships and ecology.

NOTE Textbook and onQ course site for distributing reading material.

LEARNING HOURS 120(36L;18T;18O;48P)

RECOMMENDATION BIOL 102/3.0 and BIOL 103/3.0.

EXCLUSION(S) BIOL 201/3.0; BIOL 202/3.0

EQUIVALENCY BIOL 201/3.0 and/or BIOL 202/3.0.

Schedule

Lectures: Mondays 10.30; Wednesdays 9.30; Fridays 8.30

Lecture location: Biosciences 1101

Tutorial location: To be determined

Please refer to SOLUS for the lab schedule.

Instructors	Drs. Paul Grogan and Timothy Birt
Instructor Contact	groganp@queensu.ca – ph 613-533-6152 birtt@queensu.ca – ph 613-533-6000 x77530
Instructor Office Hours	Open door or appointment by e-mail
Program Associate	Dr. Anna Rooke
Program Associate Contact	Phone: 533-6000 x 77439, Bioscience 2321A E-mail: biol200@queensu.ca

Learning Objectives

One of the most wondrous features of Biology is how evolution has developed so many different ways for organisms to grow, survive, and reproduce. The overall course goal is to provide students with the background knowledge and interpretive skills needed to recognize and appreciate the diversity of life and the evolutionary mechanisms that generated it, so that their future studies of individual organisms or biological processes can be set in an appropriate evolutionary and ecological context.

Patterns of organizational complexity and species diversity since life originated are explained throughout the course in the mechanistic context of evolutionary processes and concepts such as adaptive radiation, endosymbiosis, structure-function relationships, horizontal gene transfer, and ecological impacts of changing environments. By the end of the course students will be able to:

1. Describe and discuss the diversity of living organisms across the 'Tree of Life' from both evolutionary and ecological perspectives
2. Explain the primary and secondary mechanisms that generate biological diversity across the 'Tree of Life'
3. Recognise, describe, and compare the principal unique features of a wide range of organisms including bacteria, archaea, algae, fungi, plants, and invertebrate and vertebrate animals
4. Identify the phylogenetic relationships among the major groups of organisms, and distinguish their key characteristics using conventional taxonomic terminology and nomenclature
5. Interpret the relative success and diversity of the major groups organisms in terms of adaptations for growth, survival and reproduction
6. Describe the timelines of major steps in evolution

Learning Hours

<i>Teaching method</i>		<i>Average hours per week</i>	<i>Number of weeks</i>	<i>Total hours</i>
In-class hours	Lecture	3	12	36
	Seminar			
	Laboratory			
	Tutorial	1.5	12	18
	Practicum			
	Group learning			
	Individual instruction			
Other	Online activity	1.5	12	18
	Off-campus activity			
	Private study	4	12	48
Total hours on task				120

Course Outline

1. Introduction to Systematics, and the Diversity of Life
2. Viruses, Bacteria and Archaea
3. Eukaryotes: Structure, Origin and Reproduction
4. Plant-Like Protists - the Red and Green Algae
5. Plants: Origin, Evolution, and Structure
6. Seedless Vascular plants
7. Evolution of the Seed Plants
8. Angiosperms: Origin, Evolution and Reproduction
9. Fungi : Ascomycetes, Basidiomycetes, and symbioses
10. Animal-Like Protists – “Protozoans”
11. Origins of Metazoans
12. Major Invertebrate Phyla: Porifera, Cnidaria & Ctenophora
13. The Worms (various phyla)
14. Mollusca
15. Arthropoda

16. Echinodermata & Hemichordates
17. Vertebrate origins and common characteristics
18. Basic biology and diversity of vertebrates

Textbooks/Readings

First section of the course: Campbell Biology 3rd Canadian edition, Urry et al, 2021 (Textbook sections used in BIOL 200 complement rather than overlap with BIOL 103 and 212).

Second section of the course: Miller's Zoology (Customised version of this textbook will be available via Queen's campus bookstore)

Grading Scheme and Grading Method (provisional plan)

Component	Weight (%)	Date
Midterm exam	25%	End of week 6
Final lecture exam	35%	Formal exam period
In-class quizzes (4)	10%	Ends of weeks 2,4, 8 and 10
Tutorial assignments	30%	TBA

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Location and Timing of Final Examinations

The exam dates for each Term are listed on the Faculty of Arts and Science webpage under "Important Dates." Student exam schedules for the Fall Term are posted via SOLUS immediately prior to the Thanksgiving holiday; for the Winter Term they are posted on the Friday before Reading Week, and for

the Summer Term they are individually noted on the Arts and Science Online syllabi. **Students should delay finalizing any travel plans until after the examination schedule has been posted. Exams will not be moved or deferred to accommodate employment, travel/holiday plans or flight reservations.** Also, as indicated in Academic Regulation 8.3, students must write all final examination in all on-campus courses on the Kingston campus.

Statement on Academic Integrity

Academic Integrity is constituted by the six core fundamental values of honesty, trust, fairness, respect, responsibility and courage (see www.academicintegrity.org). These values are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the Senate Report on Principles and Priorities <http://www.queensu.ca/secretariat/policies/senate/report-principles-and-priorities>).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see Academic Regulation 1 <http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations/regulation-1>), on the Arts and Science website (see <http://www.queensu.ca/artsci/academics/undergraduate/academic-integrity>), and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

Accommodations for Disabilities

Queen's University is committed to achieving full accessibility for people with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. The Senate Policy for Accommodations for Students with Disabilities was approved at Senate in November 2016 (see <https://www.queensu.ca/secretariat/sites/webpublish.queensu.ca.uslclwww/files/files/policies/senateandtrustees/ACADACCOMMPOLICY2016.pdf>). If you are a student with a disability and think you may need academic accommodations, you are strongly encouraged to contact the **Queen's Student Accessibility Services (QSAS)** and register as early as possible. For more information, including important deadlines, please visit the QSAS website at: <http://www.queensu.ca/studentwellness/accessibility-services/>

Academic Consideration for Students with Extenuating Circumstances

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances that are beyond their control and are interfering with their ability to

complete academic requirements related to a course for a short period of time, not to exceed three months. Students receiving academic consideration must meet all essential requirements of a course. The Senate Policy on Academic Consideration for Students in Extenuating Circumstances was approved at Senate in April, 2017 (see

<http://www.queensu.ca/secretariat/sites/webpublish.queensu.ca.uslclwww/files/files/policies/senateandtrustees/Academic%20Considerations%20for%20Extenuating%20Circumstances%20Policy%20Final.pdf>

) Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. Arts and Science undergraduate students can find the Faculty of Arts and Science protocol and the portal where a request can be submitted at: <http://www.queensu.ca/artsci/accommodations>. Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

If you need to request academic consideration for this course, you will be required to provide the name and email address of the instructor/coordinator. Please use the following:

Instructor/Coordinator Name: Dr. Tim Birt

Instructor/Coordinator email address: birtt@queensu.ca

Turnitin Statement

Queen's University has partnered with the third-party application Turnitin to help maintain our standards of excellence in academic integrity. Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading. Submitted files are compared against an extensive database of content, and Turnitin produces a similarity report and a similarity score for each assignment. A similarity score is the percentage of a document that is similar to content held within the database. Turnitin does not determine if an instance of plagiarism has occurred. Instead, it gives instructors the information they need to determine the authenticity of work as a part of a larger process.

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