

Faculty of Science Course Syllabus

Department of Biology

BIOL 1011.03

Principles of Biology Part II

Winter 2023

Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all beneficiaries of the Peace & Friendship Treaties. We support all Indigenous students in pursuit of their treaty rights.

We acknowledge the histories, contributions, and legacies of the African Nova Scotian people and communities who have been here for over 400 years.

We strive to make this course, and the sciences in general, a field of study where all peoples of various faiths, genders, race, and abilities are encouraged to understand and contribute to the pursuit of scientific knowledge.

Instructor	Office	Email	Role
A. Schofield	LSC 2122	a.schofield@dal.ca	Plant Biology Lectures
D. Tittensor	LSC 7060	derek.tittensor@dal.ca	Ecology Lectures
M. Cooper	LSC 4014	mhcooper@dal.ca	Animal Biology Lectures
G. Gass	LSC 2116	gillian.gass@dal.ca	Course Coordinator, Lab Instructor
T. Bishop	LSC 2089	todd.bishop@dal.ca	Lab Instructor

Please note that information contained in this syllabus is subject to change due to the ongoing pandemic. Where possible, any modifications will benefit the majority of students.

Lectures: Tuesdays and Thursdays 1:05-2:25 p.m. (section 01) or 2:35-3:55 p.m. (section 02)
Ondaatje Auditorium

Laboratories: Eight laboratory sessions, each 110 minutes

Course Description

Biology 1011 broadens the background laid down in BIOL 1010 to include plant and fungi form and function, ecology, and animal form and function.

Course Prerequisites

Knowledge of high school mathematics, chemistry and biology is recommended.

Course Objectives/Learning Outcomes

Learning outcomes are provided to you as a rough guide to the most important concepts in the course.

Upon completing this course, students should be able to:

Plant Biology

1. Understand the features that allowed plants to transition from aquatic to terrestrial environments.
2. Understand plant sexual reproduction and how it differs among the major groups.
3. Know the life cycles of major plant groups.
4. Describe the major plant cell, tissue and organ types.
5. Understand how land plants grow in length and diameter.
6. Understand how land plants transport fluids within the body.
7. Describe the components of photosynthesis and the main steps and products of each component.
8. Understand how plant hormones allow plants to respond to environmental cues.
9. Know basic features of the major groups of fungi, including structure, growth and life cycles.
10. Understand fungal ecological roles, relationships with humans and uses by humans.

Ecology

1. Explain exponential population growth and intraspecific competition.
2. Use simple models to describe unlimited (exponential) and limited (logistic) population growth.
3. Provide examples of how biological interactions (competition, predation, mutualism) structure communities.
4. Explain why community or food web structure is likely to change if a top predator is removed.
5. Explain how humans are altering the global nitrogen (biogeochemical) cycle.
6. Interpret animal social behaviour in the light of natural selection (costs and benefits).
7. Provide an example of a life history trade-off.
8. Explain why small population size is of concern to conservation biologists.

Animal Biology

1. Explain core biological concepts in the context of animal biology, using appropriate examples.
2. Define an animal using the shared characteristics of animals.
3. Describe basic animal body plans, and relate different tissue types to their functions.
4. Define homeostasis and explain its maintenance through negative feedback mechanisms, using appropriate examples.
5. Describe early developmental processes in model animals (sea urchins, frogs).
6. Compare and contrast signaling in the nervous and endocrine systems, and explain how the mechanisms allow for body-wide communication and coordination of a variety of functions.
7. Describe mechanisms used by animals to obtain energy and nutrients, highlighting form and function in digestive systems of a variety of animals.
8. Describe mechanisms used by animals to exchange gases with their external environment, highlighting form and function in respiratory systems of a variety of animals.
9. Describe the long distance transport of materials within animal bodies, highlighting form and function in circulatory systems of a variety of animals.
10. Describe mechanisms of osmoregulation and thermoregulation in a variety of animals.
11. Describe basic elements of immune systems and how they function to protect animals from pathogens.
12. Describe skeletal muscle structure and function; describe various forms of locomotion with respect to their biomechanics and energetics.
13. Provide examples of the interconnected functioning of multiple organ systems.

Laboratory

1. Identify the design elements of an existing experiment, with particular attention to the role of controls.
2. Collect both quantitative and qualitative data through careful observations.
3. Use and know when to make use of common biological research tools such as compound microscopes, pipettors, balances, and enzyme assays.
4. Present data using written descriptions, graphs, tables, and sketches; and interpret published visual representations of biological data.
5. Write a properly formatted CSE-style (Council of Science Editors) citation for a website, article or book; quote from and/or cite published material as appropriate.
6. Read and interpret a recent primary research article from a scientific journal and discuss its content with classmates, understanding the role of each major section of a scientific article (Introduction, Methods, Results, Discussion).
7. Analyze data using basic statistical concepts (mean, standard deviation, standard error, n, 95% confidence interval).
8. Use mathematical analysis to evaluate the effects of interspecific competition and to determine population size and growth patterns.
9. Interpret data (e.g., graphs and tables) to assess hypotheses and generate conclusions.

Course Materials

Textbook

The textbook for this course is called *Campbell Biology, 3rd Canadian Edition, 2017* by Urry et al. (Pearson Benjamin Cummings, Menlo Park, CA), and is available at the Dalhousie University Bookstore. Second-hand copies of the textbook are suitable for the class. We will also provide page numbers for readings from the previous edition of the textbook (8th, 9th or Dalhousie edition of Campbell Biology). A few copies of the text are on reserve in the Killam Library. Please plan to make regular use of the textbook. We do not use the Mastering Biology online resource that comes with new copies of the textbook for any class assignments although you are welcome to use it as an additional resource for studying.

BIOL 1011 Brightspace site

The Brightspace site is accessible at via dal.ca. Login using the same information that you use to access your Dalhousie e-mail. This site provides lecture information, study aids, Powerpoint presentations from lectures, marks for labs and exams, and important announcements. You are expected to check Brightspace, as well as your Dalhousie e-mail, frequently.

Course Assessment

The exams in this course are multiple choice format and they evaluate several skills, including knowledge, comprehension, application, and analysis of information. Success in the course requires that you both remember and understand the class material. Most professors will provide practice questions, and other questions and problems are also available at the end of each chapter in the textbook.

Of the 100 marks available in BIOL 1011, 60 are allotted to the lecture component and 40 to the laboratory as follows:

Midterm exam	February 8, 2023	20%
Final Exam	Scheduled by Registrar	40%
Laboratory *	Ongoing during term	40% for lab assignments and pre-lab quizzes

* The distribution of laboratory marks is described in the laboratory manual, which must be purchased from the campus bookstore prior to your first laboratory session.

You must bring your Student ID card to all final exams. All electronic devices, including calculators, cell phones, and electronic translators, are prohibited at exams. If English is not your first language and you require a dictionary, you may bring with you to exams a paper language-to-language translation dictionary, which must be approved by an instructor prior to use. The midterm exam only covers lecture material from the Plant Biology unit (I), while the final exam only covers lecture material from the Ecology (II) and Animal Biology (III) units.

The Registrar's Office has scheduled the final examination period from April 13-25, 2023. The dates, times and locations of the final exam are arranged by the Registrar's Office, and posted well in advance of the end of term. It is very important that you not make arrangements for travel during that time. Dalhousie's policy on alternative final exam times is as follows:

“A student requesting an alternative time for a final examination will be granted that request only in exceptional circumstances. Such circumstances include illness (with medical certificate) or other mitigating circumstances outside the control of the student. Elective arrangements (such as travel plans) are not considered acceptable grounds for granting an alternative examination time... This policy may also be applied at the discretion of the instructor to tests and examinations other than final examinations.” (Undergraduate Calendar, 2011-12, p. 19)

Other course requirements

Laboratories are held most weeks; please check the schedule in your lab manual. There are 30 students in each laboratory with one Learning Assistant (LA) who answers questions and instructs students on how to conduct laboratory exercises; as well, an Instructor is supervising three lab rooms at any one time. You must attend the laboratory in your scheduled room and time slot. There are quizzes and assignments to be completed throughout the term. Assignments must be handed in at the end of the laboratory period; but if you find it difficult to finish laboratories in the allotted time, please speak to a lab instructor.

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale:

A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (<50)
A- (80-84)	B- (70-72)	C- (55-59)	

Please note: a grade of C or better in BIOL 1011 is required for entry into the second year biology classes BIOL 2003 and BIOL 2060. A C or better in both of BIOL 1010 and 1011 is required for entry into the second year biology class BIOL 2004. Please note that this has changed from the previous requirement of C+ (65%).

Course Policies

Make-up Examinations

Make-up exams will take place after the scheduled exam, with time and location of make-up exams announced on the course Brightspace site. Make-up exams are intended for students who miss a scheduled exam **because of illness or some other legitimate reason**. They are not available to students who do poorly on the regular examination and want to improve their mark. Students must provide appropriate documentation to the Course Coordinator within one week of the scheduled exam in order to write the make-up exam. Students who miss the make-up final exam due to ongoing illness may write a make-up during the first week of winter term.

Absences

It is the responsibility of students who are absent from lectures and laboratories to ascertain what was missed, including announcements of tests and other information. If you miss one or more lectures for medical reasons, contact the course coordinator to discuss options for catching up on missed lecture material. Absence from a lab at which a quiz or assignment is due requires that you contact Todd or Gillian within 48 hours of your absence to avoid losing marks.



OUTLINE OF LECTURES			
Unit	Date	Topic	Lecturer
PLANT BIOLOGY	Jan. 10	Introduction; Plants and the Colonization of Land	A. Schofield
	Jan. 12	Major Groups of Land Plants; Plant Reproduction	
	Jan. 17	Plant Reproduction, Structure, and Growth	
	Jan. 19	Primary Growth, Secondary Growth, and Transport	
	Jan. 24	Transport II; Photosynthesis	
	Jan. 26	Photosynthesis II; Control Systems	
	Jan. 31	Fungi	
	Feb. 2	Plants Review Class	
ECOLOGY	Feb. 7	Terrestrial Communities and Population Growth	D. Tittensor
	February 8: midterm test (details to be announced)		
	Feb. 9	Limits to Growth	
	Feb. 14	Aquatic Communities and Competition	
	Feb. 16	Community Dynamics and Predation	
	February 20-24: Study break (no classes)		
	Feb. 28	Ecosystem Dynamics	
	Mar. 2	Behavioural Ecology	
	Mar. 7	Conservation Biology	
	ANIMAL BIOLOGY	Mar. 9	
Mar. 14		Animal Development	
Mar. 16		Communication and Coordination Systems	
Mar. 21		Nutrition and Energetics	
Mar. 23		Circulation and Gas Exchange	
Mar. 28		Regulation of Temperature and Solutes	
Mar. 30		Immune System	
Apr. 4		Locomotion	

Final exam to be scheduled by Registrar.

ACCESS

Students may request accommodation as a result of barriers related to disability, religious obligation, or any characteristic protected under Canadian Human Rights legislation. The full text of Dalhousie's Student Accommodation Policy can be accessed here:

http://www.dal.ca/dept/university_secretariat/policies/academic/student-accommodation-policy-wef-sep-1-2014.html

Students who require accommodation for classroom participation or the writing of tests and exams should make their request to the **Advising and Access Services Centre (AASC)** prior to or at the outset of the regular academic year. More information and the **Request for Accommodation** form are available at www.dal.ca/access.

Please do not hesitate to access any of your approved accommodations. If you had adaptations or accommodations in high school, or if you have not previously had accommodations but are encountering barriers to learning, it's worth a chat with an Access advisor to find out what might be set up for your university learning. You don't need to have documentation to get the process started, and creating an access plan can take some time, so it's a good idea to talk with an Access advisor even if you're still waiting for, or aren't sure what's required as, documentation.

ACADEMIC INTEGRITY

Academic integrity, with its embodied values, is seen as a foundation of Dalhousie University. It is the responsibility of all students to be familiar with behaviours and practices associated with academic integrity. Instructors are required to forward any suspected cases of plagiarism or other forms of academic cheating to the Academic Integrity Officer for their Faculty.

The Academic Integrity website (<http://academicintegrity.dal.ca>) provides students and faculty with information on plagiarism and other forms of academic dishonesty, and has resources to help students succeed honestly. The full text of Dalhousie's **Policy on Intellectual Honesty** and **Faculty Discipline Procedures** is available here:

http://www.dal.ca/dept/university_secretariat/academic-integrity/academic-policies.html

STUDENT CODE OF CONDUCT

Dalhousie University has a student code of conduct, and it is expected that students will adhere to the code during their participation in lectures and other activities associated with this course. In general:

“The University treats students as adults free to organize their own personal lives, behaviour and associations subject only to the law, and to University regulations that are necessary to protect

- the integrity and proper functioning of the academic and non – academic programs and activities of the University or its faculties, schools or departments;
- the peaceful and safe enjoyment of University facilities by other members of the University and the public;



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- the freedom of members of the University to participate reasonably in the programs of the University and in activities on the University's premises;
- the property of the University or its members.”

The full text of the code can be found here:

http://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

FREQUENTLY ASKED QUESTIONS

1. I am having trouble accessing the Brightspace site. How do I get help?

Contact the Killam Help Desk at 494-2376 or HelpDesk@dal.ca or find them in person at the South Learning Commons of the Killam Library.

2. I missed my laboratory. What should I do?

You should talk to either Todd or Gillian as soon as possible to explain your absence in order to avoid losing marks.

3. I missed an exam because I was sick. What should I do about writing the make-up exam? Do I need a doctor's note?

You should contact Gillian concerning permission to write the make-up exam. A Dr's note is NOT required.

4. My team is playing a game out of town the day of the mid-term exam. What should I do about writing the make-up exam?

You should contact Gillian for permission to write the make-up exam. You will need a signed note from your coach to verify the reason for your absence.

5. I have questions about the lecture material. How do I get help?

You should contact the person giving the lectures for that unit.

6. I'm not sure what material will be on the lecture exam. How do I get this information?

You should contact the person giving the lectures for that unit.

7. I have trouble with multiple choice exams. What should I do?

You may wish to attend a Study Skills Workshop on "Writing Multiple Choice Exams" offered through the Studying for Success program (www.dal.ca/sfs). Students sometimes find certain types of multiple choice questions more difficult than others. By reviewing your BIOL 1011 midterm exam, you can determine whether you tend to get a particular type of question wrong more often than other types. If so, then you should make an effort to get as much practice as possible with that form of question (e.g. do questions at the end of text chapters, talk to the professor teaching the unit regarding sample exam questions, work with friends and create practice questions).

10. May I make an audio recording of the lectures?

In-person lectures are recorded and posted to Brightspace approximately one week after the lecture.

11. I'm not satisfied with my grade in the course. Can I do an extra assignment to get more marks?

No. The labs, quizzes and exams are the only graded material in the course, so do your best work on each assignment throughout the term.

SERVICES AVAILABLE TO STUDENTS

The following campus services are available to help students develop skills in library research, scientific writing, and effective study habits. The services are available to all Dalhousie students and, unless noted otherwise, are free.

Service	Support Provided	Location	Contact
General Academic Advising	Help with <ul style="list-style-type: none"> - understanding degree requirements and academic regulations - choosing your major - achieving your educational or career goals - dealing with academic or other difficulties 	Killam Library Ground floor Rm G28 Bissett Centre for Academic Success	In person: Killam Library Rm G28 By appointment: <ul style="list-style-type: none"> - e-mail: advising@dal.ca - Phone: (902) 494-3077 - Book online through MyDal
Dalhousie Libraries	Help to find books and articles for assignments Help with citing sources in the text of your paper and preparation of bibliography	Killam Library Ground floor Librarian offices	In person: Service Point (Ground floor) By appointment: Identify your subject librarian (URL below) and contact by email or phone to arrange a time: http://dal.beta.libguides.com/sb.php?subject_id=34328
Studying for Success (SFS)	Help to develop essential study skills through small group workshops or one-on-one coaching sessions Match to a tutor for help in course-specific content (for a reasonable fee)	Killam Library 3rd floor Coordinator Rm 3104 Study Coaches Rm 3103	To make an appointment: <ul style="list-style-type: none"> - Visit main office (Killam Library main floor, Rm G28) - Call (902) 494-3077 - email Coordinator at: sfs@dal.ca or - Simply drop in to see us during posted office hours All information can be found on our website: www.dal.ca/sfs
Writing Centre	Meet with coach/tutor to discuss writing assignments (e.g., lab report, research paper, thesis, poster) <ul style="list-style-type: none"> - Learn to integrate source material into your own work appropriately - Learn about disciplinary writing from a peer or staff member in your field 	Killam Library Ground floor Learning Commons & Rm G25	To make an appointment: <ul style="list-style-type: none"> - Visit the Centre (Rm G25) and book an appointment - Call (902) 494-1963 - email writingcentre@dal.ca - Book online through MyDal We are open six days a week See our website: writingcentre.dal.ca