

Communities and Ecosystems Syllabus

Department of Biology

BIOL 3061 Fall 2023

Dalhousie University acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people.

Dalhousie University also acknowledges the histories, contributions, and legacies of African Nova Scotians, who have been here for over 400 years.

Course Instructor(s)

Name	Email	Office Hours
Christopher Course	ch608098@dal.ca	By Appointment on Brightspace Collaborate
Markers	Email	
Kathleen McVittie	kathleen.mcvittie@dal.ca	
Kayla Doucette	kayla.doucette@dal.ca	

Course Description

Part 1 includes ecosystem history and theory, species interactions, modelling, complex systems theory, systems ecology, quantitative approaches such as computer simulation and qualitative approaches such as loop analysis.

Part 2 discusses food webs, ecological networks, trophic cascades, ecological complexity and stability, regime shifts, and ecosystem-based management.

Course Prerequisites

BIOL 2060.03 (or BIOA 3001.03) or INTD 2001.03 or INTD 2002.03 or OCEA 2000X/Y.06

Student Resources

Email-class messages, reminders, and announcements will be sent to all students via Brightspace. The discussion group and is meant to address course material, but should a student need to contact me directly, please email Dr. Course (ch608098@dal.ca) to set up a virtual meeting.

Student Accessibility Centre (https://www.dal.ca/campus_life/academic-support/accessibility.html)

Mental Health concerns (general): Student Health and Wellness (<https://dalu.sharepoint.com/sites/shw>)

Course Structure

Course Delivery

This course relies on the scientific literature and the use of the class website on Brightspace. Each week beginning on **Sunday**, there is an on-line study module with readings, websites & videos, activities, and study questions that expand the lectures.

There will be an online synchronous weekly open discussion group to address any questions. This is an ungraded component and is meant to assist students with class material as a group. The sessions will be posted on Brightspace afterwards.

Lectures

Weekly video lectures (Panopto) will be posted on the Brightspace page. These are captioned.

Course Materials

You will need a computer to access website and course materials and also a camera and microphone for online meetings.

- Required textbook(s): none
- e-journal articles involving research literature available online from the Dalhousie Library
- Brightspace Collaborate for one-on-one meetings.
- A student should email the Teaching Assistants directly to ask a question about the marking of a quiz or assignment.

Assessment

Assignments

Component	Weight (% of final grade)	Date Due
10 Quizzes on Modules @ 6 pts each	60%	Sept 10, 17, 24, Oct 1, 8, 15, 22, Oct 29, Nov 12, Nov 26
Assignment 1-Critique of a Scientific Paper	10%	Oct 5
Assignment 2-50 Questions, Ecosystem Field Observations, Modelling & Report	20%	Nov 12
Assignment 3-Critique of an Ecosystem-Based Management Plan	10%	Dec 5
Total	100%	

Assignments 1, 2 and 3 as well as Quizzes 1-10 will be typed and submitted online to check for originality by 11:59 pm on the date dues listed above.

Other course requirements

List any non-graded components that are required to pass the course (e.g., participation, attendance at synchronous sessions, completion of all labs, out of class field trip, non-graded presentation, etc.).

Conversion of numerical grades to final letter grades follows the

[Dalhousie Grade Scale](#)

A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (0-49)
A- (80-84)	B- (70-72)	C- (55-59)	

Grading and Marking

You will not receive a letter grade lower than what is indicated for your final point value listed above, although the professor reserves the right to give you a higher grade. Because the scale is generous for A's and B's (30 points) as compared to C's and D's (20 points), individual marks will only be rounded up if the student has more than 0.50 above the maximum value for a particular letter grade. For example, if you received 79.51 points, you would receive an A- in the class and not a B+. If you received 79.49 points, you

would receive a B+ and not an A-. The final grade that you receive in a class is the sum of the work that you did and the knowledge that you gained. A grade is something that you earn. If you require a final grade at a particular level for an honours degree, job, graduate or professional school, or other purpose, you should ensure that you put the time and effort in during the term to earn that grade. The Professor is willing to give you extra help and study assignments if you believe that you are not achieving a satisfactory level of proficiency in the class. Please do not come at the end of the term requesting a higher grade because you need it to fulfil a requirement, enter graduate school, you worked hard, or because you paid your tuition. These are not satisfactory reasons. It is unfair to the other students in the class who have done the work, and to the university, which needs to maintain fair and high standards of academic achievement. Although assignments will have a detailed point distribution for marking, the Teaching Assistant has discretionary power to deduct additional points (up to 10%) for overall sloppy writing, poor grammar and spelling, messy format, inadequate referencing, and overall inferior quality of the assignment. All assignments are to be typed and spell & grammar-checked before submission.

Course Policies on Missed or Late Academic Requirements

Absences and Missed Work

Use the Student Declaration of Absence online form for missed academic requirements in this course if you are ill for more than 3 consecutive days (not 3 class days) as per university policy. A submission site for your declaration is given on the class website on Brightspace. Two submissions are permitted per term. The possibility of making up late work is at the discretion of the professor. "Students experiencing recurring long-term absences are strongly encouraged to meet with a Faculty or Declared Major Advisor, or Faculty Program Coordinator and refer to the University's Student Accommodation Policy." We do not have the possibility of offering alternative assignments or changes in weighting of points per requirement.

Late Assignments and Extensions:

Any material submitted for evaluation after the designated deadline will have marks deducted at the rate of 10% per day late including weekends. Extensions without the mark penalty will be given only with a valid Student Declaration of Absence or other excuse as approved by the professor. If you file a Student Declaration for a short-term absence from class, you need to follow-up with Dr. Course on when the missed work is due.

Course Policies related to Academic Integrity

Individual Work and Plagiarism

All work in this class is to be done individually. Do not collaborate on assignments or tests; they will also be checked for originality through Brightspace software. **DO NOT SHOW ANYONE YOUR WORK.** All instances of suspected plagiarism will be reported promptly to the Academic Integrity Officer of the Faculty of Science.

Learning Objectives

1. Read scientific literature critically, evaluate the logic flow from assumptions to conclusions, and identify any shortcomings.
2. Write insightful and well-organized scientific reports.
3. Design and conduct an independent field investigation and provide your results in a well-reasoned report.
4. Learn how to ask interesting questions about an ecosystem and provide ways to obtain answers to your questions.
5. Understand systems and why ecosystems are systems in more than name only.
6. Compare qualitative versus quantitative approaches and models for ecosystems.
7. Analyse the main types of two-species biological interactions and their role in community structure.
8. Understand different types of food web models and evaluate their usefulness.
9. Model a real-world ecosystem using loop analysis.
10. Understand trophic cascades and escalades, and their effects in food webs and ecological networks.
11. Distinguish ecological complexity and ecological complication.
12. Understand the concept of ecological stability by contrasting different types of change in ecosystems and their alternative steady states.
13. Explain if ecosystems are chimeras, what does this mean for ecosystem evolution?
14. Translate what you have learned about ecosystem theory to issues in ecosystem-based management.

Course Content

Week	Date	Lesson Topic(s)	Assessment/Reading
1	Sep 5 - 9	What is a system and are ecosystems systems or random assemblages?	Work on Module 1
2	Sep 10 - 16	What is a model & why do we use them in ecology?	Quiz Module 1 due Sept 10
3	Sep 17 - 23	Why are two-species interactions often misleading at the community level?	Quiz Module 2 due Sept 17
4	Sep 24-30	How are food webs and ecological networks useful for characterizing ecosystems?	Quiz Module 3 due Sept 24
5	Oct 1 - 7	ABC's of loop analysis	Quiz Module 4 due Oct 1 & Assignment 1 due Oct 5
6	Oct 8 - 14	Do trophic cascades or trophic escalades act as controllers in food webs?	Quiz Module 5 due Oct 8
7	Oct 15-21	Are food webs controlled internally or externally and what does this mean for ecosystem stability?	Quiz Module 6 due Oct 15
8	Oct 22 - 28	Are ecosystems complex or complicated?	Quiz Module 7 due Oct 22
9	Oct 29 – Nov 4	Do ecosystems function as Chimeras and how do they evolve at the ecosystem level?	Quiz Module 8 due Oct 29
10	Nov 5 – Nov 12		Quiz Module 9 due Nov 5 & Assignment 2 due Nov 12
11	Nov 13 - 17	READING WEEK	
12	Nov 19 - 25	Can ecosystems be managed and what is 'Ecosystem – based management'?	
13	Nov 26 – Dec 2		Quiz Module 10 due Nov 26/ Work on Assignment 3
14	Dec 3 – Dec 5		Assignment 3 due Dec 5

University Policies and Statements

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit or e-mail the Indigenous Student Centre at 1321 Edward St or elders@dal.ca. Additional information regarding the Indigenous Student Centre can be found at: https://www.dal.ca/campus_life/communities/indigenous.html

Internationalization

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." Additional internationalization information can be found at: <https://www.dal.ca/about-dal/internationalization.html>

Academic Integrity

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, you are required to demonstrate these values in all the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. Additional academic integrity information can be found at: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion, please contact the Student Accessibility Centre (https://www.dal.ca/campus_life/academic-support/accessibility.html) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (<https://www.dal.ca/about-dal/agricultural-campus/student-success-centre.html>)

Conduct in the Classroom – Culture of Respect

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2). Additional diversity and inclusion information can be found at: <http://www.dal.ca/cultureofrespect.html>

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner - perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution. The full Code of Student Conduct can be found at:

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

Fair Dealing Policy

The Dalhousie University Fair Dealing Policy provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It is intended to provide a balance between the rights of creators and the rights of users at Dalhousie. Additional information regarding the Fair Dealing Policy can be found at: https://www.dal.ca/dept/university_secretariat/policies/academic/fair-dealing-policy-.html

Originality Checking Software

The course instructor may use Dalhousie's approved originality checking software and Google to check the originality of any work submitted for credit, in accordance with the Student Submission of Assignments and Use of Originality Checking Software Policy. Students are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work and must inform the instructor no later than the last day to add/drop classes of their intent to choose an alternate method. Additional information regarding Originality Checking Software can be found at:

https://www.dal.ca/dept/university_secretariat/policies/academic/student-submission-of-assignments-and-use-of-originality-checking-software-policy-.html

Student Use of Course Materials

Course materials are designed for use as part of this course at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading to a commercial third-party website) may lead to a violation of Copyright law.