

# BIOL 3061 Communities and Ecosystems Syllabus

Department of Biology

BIOL 10335 Fall 2024

*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
Dr. Patricia Lane/Professor	patricia.lane@dal.ca	Online, as requested
Dr. Christopher Course Teaching Assistant	ch608098@dal.ca	Online, as requested
Kobi Shapero Marker	kshapero@dal.ca	Communicate by email

## Course Description

Life exists and evolves in ecosystems which are complex systems. This class studies ecosystems and their food webs from a systems theory approach with an emphasis on network theory and qualitative analysis. Life itself is a networked process. Ecosystems are approached holistically to discover a new set of system properties.

### Course Prerequisites

PREREQUISITES: [BIOL 2060.03](#) (or [BIOA 3001.03](#)) or [INTD 2001.03](#) or [INTD 2002.03](#)

RESTRICTIONS: E1, E2

10335	01	Lec			C/D	Online-ASYNCHRONOUS SESSION
14256	T01	Tut	T		1305-1355	Online-SYNCHRONOUS SESSION
14257	T02	Tut		W	1305-1355	Online-SYNCHRONOUS SESSION

## Student Resources

The Teaching staff are available to you online during business hours. In addition, you will be online synchronously with Dr. Course for a one hour tutorial each week. Our Brightspace also includes two Discussion Boards, where you can submit questions under your name to Dr. Lane on overall course content and to Dr. Course on tutorial content. Our website also contains websites and documents with additional Information to help you understand the course content.

## Course Structure

### ***Course Delivery***

The course is blended with synchronous online for 7 tutorials and asynchronous online for the rest of the course content. Tutorials will be recorded, attendance taken, and participation marked. Tutorial 2 will occur on either Tuesday or Wednesday at 1305-1355 pm beginning September 10<sup>th</sup> or 11<sup>th</sup> in the second week of class. Although no parts of the class require on campus attendance, those students connecting to online resources from outside Canada are responsible for ensuring awareness and compliance with any applicable laws in the country from which they are connecting. There will be one online test November 2<sup>nd</sup> and students must be available to complete the test during the assigned hours-see Course Outline and put the date and time in your schedule at the beginning of term. Dr. Course is the 'go-to' person for technology issues in the course.

***Lectures***-lectures are online and asynchronous.

***Tutorials***-are held synchronously on Tuesdays and Wednesdays at 1305-1355 pm beginning September 9, 2024 as per the Course Schedule below. Attend the tutorial you are registered for. Check our Brightspace website and watch the Introduction to each tutorial by Dr. Course before attending it. Also review the tutorial activities and questions on Brightspace prior to attending your tutorial.

### ***Course Materials***

- ❖ Two textbooks are required for the class. (1) A New Ecology, Systems Perspective (2<sup>nd</sup> Ed.) by Soren Nors Nielson, Brian D. Fath, et al. (2020) for lectures and as main course material; and (2) How to Do Ecology (3<sup>rd</sup> Ed.) by Richard Karban, et al. (2023) for tutorials. Both texts are available at the Dalhousie Bookstore. Use only these editions.
- ❖ See course Brightspace page under Content tab for Panopto lectures. Slides are posted separately.
- ❖ You will need a computer with camera & microphone to participate in online tutorials.
- ❖ e-journal articles from Dalhousie Library
- ❖ Any online platforms outside Brightspace-Microsoft Teams: Office 365 for meetings.

- ❖ Email-class messages, reminders, discussion board questions, and announcements will be sent to all students via Brightspace.
- ❖ A student should post only to the discussion board to ask a question about class content or procedures. Course content questions will not be answered via Dr. Lane's personal email and you will be directed back to the Discussion Board.
- ❖ A student should request a virtual meeting by contacting Dr. Lane at [Patricia.Lane@Dal.Ca](mailto:Patricia.Lane@Dal.Ca) or to communicate any emergency or personal issue regarding the course.
- ❖ Contact our Teaching Assistant, Dr. Christopher Course at [ch608098@dal.ca](mailto:ch608098@dal.ca) for questions concerning tutorials and all marking. If you are not satisfied after first discussing your issue with the Teaching Assistant, then discuss it with Dr. Lane but you must speak with the TA first.
- ❖ A student should also email Dr. Course at [ch608098@dal.ca](mailto:ch608098@dal.ca) directly to ask a question about a technical or Brightspace issue.

## Assessment

<i>Component</i>	<i>Weight (% of final grade)</i>	<i>Date Due</i>
<i>Assignment 1</i>	<i>10</i>	<i>Sept. 21, Saturday</i>
<i>Assignment 2</i>	<i>25</i>	<i>October 26, Saturday</i>
<i>Assignment 3</i>	<i>10</i>	<i>November 30, Saturday</i>
<i>Test (multiple choice)</i>	<i>25</i>	<i>November 2, Saturday</i>
<i>10 Tutorials @ 3 pts each (1 pt for attendance and 2 pts for participation)</i>	<i>30</i>	<i>Weeks 2,3,4,5,6,7,8,10,11,12 as per the day and time you registered for</i>
<i>Total</i>	<i>100</i>	

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

### **Scale**

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

### **Test Conflict**

If you have a conflict for the scheduled online test on November 2, 2024, please let the Dr. Lane know at least 4 weeks in advance to make earlier accommodations. Later accommodations after November 2 will not be possible. The online test will be given from 1:30-3:30 pm on Saturday, November 2, 2024 and is to be completed individually. The test is multiple choice with four possible answers per question on Weeks 1-8 material including tutorials. There are 54 questions that will be randomly generated from a large bank of questions for each individual test. Thus, each student will have a different test. Each right answer earns 0.5 points for a total of 27 points. You will have 1 minute to answer the question and then a new question will appear. You will not be able to return to a previous question so

give your best answer within the time limit. There is no penalty for guessing or wrong answers. No online proctoring software will be used. More instructions will be posted on our Brightspace website. **The course does not have a final examination.**

### **Course Policies on Missed or Late Academic Requirements**

Use the Student Declaration of Absence (SDA) form for missed academic requirements in this course if you are ill for more than 3 consecutive days (not 3 class days) or have extenuating circumstances as per university policy. A submission site for your SDA is on the class website on Brightspace. Two SDA submissions are permitted per term. **The possibility of making up late work is at the discretion of the Professor but for each SDA you will have one week automatically from the original due date to submit the assignment without penalty. SDAs cannot be used to miss tests.** Any material submitted for evaluation after the designated deadline or the SDA for one week 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 SDA or other excuse as approved by Dr. Lane. If you file a SDA for a short-term absence from class, you need to follow-up with Dr. Lane if you will not submit within one week. **We do not have the possibility of offering alternative assignments or changes in weighting of points for requirements-please do not ask for special treatment that is not fair to everyone.** “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”.

### **Course Policies related to Academic Integrity**

**ALL WORK IN THIS CLASS IS TO BE DONE INDIVIDUALLY** except the online-tutorial discussions you may have with your tutorial members and Teaching Assistant on the readings. Do not collaborate on the 3 assignments; they will be checked for originality using plagiarism software. **DO NOT SHOW ANYONE YOUR WORK** or you too can be charged with plagiarism. All instances of suspected plagiarism will be reported promptly to the Academic Integrity Officer of the Faculty of Science. **YOU ARE NOT ALLOWED TO USE GENERATIVE AI AND LARGE LANGUAGE MODELS (e.g., ChatGPT)** in preparing Assignments 1-3; they must be totally original. You can quote other authors using their name(s), year, and page number of a publication referenced in your bibliography, but overall quoted passages should not exceed 5-7% of your assignments. Points will be deducted if you exceed this limit.

### **Course Policies Related to 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 total 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 Marker 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.

### **Learning Objectives**

At the end of this class, students will be able to:

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. Understand systems and why ecosystems are systems in more than name only.
4. Compare qualitative versus quantitative approaches and models for ecosystems.
5. Understand different types of food web models and evaluate their usefulness.
6. Be able to perform loop analysis calculations.
7. Understand trophic cascades and escalades, and their effects in food webs and ecological networks.
8. Distinguish ecological complexity and ecological complication.
9. Understand the concept of ecological stability by contrasting different types of change in ecosystems and their alternative steady states.
10. Explain if ecosystems are chimeras, what does this mean for ecosystem evolution?
11. Translate what you have learned about ecosystem theory to issues in ecosystem-based management.

**Course Content and Schedule (blue=tutorials, red = assignment/test dates)**

WEEK	TOPIC/ASSIGNMENT	ASSIGNMENTS
1 Sept 3-7	Topic 1-Introduction to Ecosystems No Tutorial This Week	Text: Chap. 1-2
2 Sept 8-14	Topic 2- Ecosystem Openness Tutorial 2-Formulating a Good Question and Approach	Text: Chap. 3 Tutorial Book: Chap. 1-2
3 Sept 15-21	Topic 3-Networks/Food Webs and Their Properties Tutorial 3-Testing Ecological Hypotheses	Text: Chap. 4 Tutorial Book: Chap. 3 Assignment 1 Due September 21, Saturday Online at midnight
4 Sept 22-28	Topic 4-Hierarchies and Self-Organization Tutorial 4-Using Statistics	Text: Chap. 5 Tutorial Book: Chap. 4
5 Sept 29- Oct 5	Topic 5-Qualitative Networks-Loop Analysis Tutorial 5-Discussion of Assignment 2-What is Expected and Patterns (Note: Sept 30, Monday, is National Day for Truth and Reconciliation-University Holiday)	Text: no reading Reading 5: Loop Papers Tutorial Book: Chap. 5
6 Oct 6-12	Topic 6- Ecosystem as Chimera Tutorial 6-How to Do Loop Analysis-bring your questions and there will be additional examples to do	Text: Chap. 6 Tutorial: ABC's of Loop Analysis
7 Oct 13-19	Topic 7- Ecosystem Evolution Tutorial 7-Brainstorming (Note: October 14, Monday, is Thanksgiving Day)	Text: Chap. 7 Tutorial Book: Chap. 6
8 Oct 20-26	Topic 8-Disturbance and Adaptability Tutorial 8- Working in Ecology	Text: Chap. 8 Tutorial Book: Chap. 7 Assignment 2 Due October 26, Saturday Online at Midnight
9 Oct 27-Nov 2	Test Week No New Material	Test Online Saturday, November 2 1:30-3:30 pm
10 Nov 3-9	Topic 10-Ecosystem Principles Tutorial 10-Discussion of Assignment 2 Sharing Main Questions and Models	Text: Chap. 9 Reading: More System
<b>STUDY WEEK-Nov 11-16 -NO NEW MATERIAL (Note: Nov 11 is Remembrance Day)</b>		
11 Nov 17-Nov 23	Topic 11-Ecosystem Management Tutorial 11-Communicating Your Results	Text: Chap. 10-11 Reading: More System Tutorial Book: Chap. 8
12 Nov 24-Dec 3	Topic 12-Conclusions Tutorial 12-Conclusions	Text: Chap. 12 Tutorial Book: Chap. 9 Assignment 3 Due Nov 30 Saturday Online at midnight

## 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](mailto:elders@dal.ca). Additional information regarding the Indigenous Student Centre can be found at: [https://www.dal.ca/campus\\_life/communities/indigenous.html](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](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](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](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](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/about/leadership-governance/academic-integrity/faculty-resources/ouriginal-plagiarism-detection.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.