

**Faculty of Science Course Syllabus (Section A)**  
**Department of Biology**  
**BIOL 3061 Communities and Ecosystems**  
**Fall 2021**

*Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.*

**Instructor:** Patricia Lane; E-mail: [patricia.lane@dal.ca](mailto:patricia.lane@dal.ca)

**TAs: (1) Amélié Paulin (Marking 3 Assignments, Loop Analysis, and Computer-Brightspace Help)**  
E-mail: [amelie.paulin@dal.ca](mailto:amelie.paulin@dal.ca)

**(2) Corinne Harrison-Rasenberg (Marking 10 Quizzes) E-mail: [corinne.rasenberg@dal.ca](mailto:corinne.rasenberg@dal.ca)**

**Office hours by appointment on Microsoft Teams**

**Lectures: asynchronous, lectures and slides posted on Brightspace**

---

**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

**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. 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 Materials and Communications

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.

- Required textbook(s): none
- Course Brightspace page with Panopto (video lectures). These are captioned.
- e-journal articles involving research literature available online from the Dalhousie Library
- Online platform outside Brightspace-Microsoft Teams – Office 365 for one-on-one meetings.
- Email-class messages, reminders, and announcements will be sent to all students via Brightspace but a student should email Dr. Lane (patricia.lane@dal.ca) to ask a question directly, set up a virtual meeting, etc.
- A student should email the Teaching Assistants directly to ask a question about the marking of a quiz or assignment.

### Online Delivery and Other Course Requirements:

1. You will need a computer to access website and course materials and also a camera and microphone for online meetings There are no synchronous components and no ungraded components.
2. Assignments 1, 2 and 3 as well as quizzes 1-10 will be typed and submitted online for Urkund checking by 11:59 pm on the date dues listed below.

### Course Assessment

Component	Weight (% of final grade)	Date Due
10 Quizzes on Modules @ 6 pts each	60%	Sept 12, 19, 26, Oct 3, 10, 17, 24, Oct 31, Nov 14, Nov 21
Assignment 1-Critique of a Scientific Paper	10%	Oct 6
Assignment 2-50 Questions, Ecosystem Field Observations, Modelling & Report	20%	Nov 4
Assignment 3-Critique of an Ecosystem-Based Management Plan	10%	Dec 4
Total	100%	

### 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)	

**BIOL 3061 2020 CLASS SCHEDULE\*Module quizzes due each week at 11:59 pm Atlantic Standard (AST) on first Sunday6 after end of week as listed below. Assignment due dates as indicated below.**

<b>Module /Week</b>	<b>Assignments Due</b>	<b>Module Topic and Question (Q.)</b>
<b>1 Sept 7-11</b>		Q1: What Is a System and Are Ecosystems Systems or Random Assemblages of Species?
<b>2 Sept 12-18</b>	Quiz Module 1 due Sept 12	Q2: What Is a Model & Why Do We Use Them in Ecology? (Comparing a Conceptual Model & a Math Model).
<b>3 Sept 19-25</b>	Quiz Module 2 due Sept 19	Q3: Why are Two-Species Interactions Often Misleading and Inadequate at the Community Level?
<b>4 Sept 26 Oct 2</b>	Quiz Module 3 due Sept 26	Q4: How Are Food Webs and Ecological Networks Useful for Characterizing Ecosystems?
<b>5 Oct 3-9</b>	Quiz Module 4 due Oct 3 Assignment 1 Due by 11:59 AST on Oct 7	Q5: ABC's of Loop Analysis TA 1: Video on Loop Analysis Modelling Submission
<b>6 Oct 10-16</b>	Quiz Module 5 due Oct 10	Q6: Do Trophic Cascades or Trophic Escalades Act as Controllers in Food Webs?
<b>7 Oct 17-23</b>	Quiz Module 6 due Oct 17	Q7: Are Food Webs Controlled Internally or Externally and What Does This Mean for Ecosystem Stability?
<b>8 Oct 24-30</b>	Quiz Module 7 due Oct 24 (Note: Sept 30 is National Day for Truth and Reconciliation-University Holiday)	Q8: Are Ecosystems Complex or Merely Complicated?
<b>9 Oct 31- Nov 6</b>	Quiz Module 8 due Oct 31 Assignment 2 due by 11:59 AST on Nov 4	Q9. Do Ecosystems Function as Chimeras and How Do They Evolve at the Ecosystem Level?
<b>Nov 7-13</b>	STUDY BREAK	STUDY BREAK
<b>10 Nov 14-20</b>	Quiz Module 9 due Nov 14	Q10: Can Ecosystems be Managed and What Is 'Ecosystem-Based Management'?
<b>11 Nov 21-27</b>	Quiz Module 10 due Nov 21	Summing Up Assignment 2: What Are the Most Interesting Ecosystem Questions-Amelie Paulin
<b>12 Nov 28- Dec 4</b>	Assignment 3 Due Dec 4	

**Course Policies** (See also university policies and websites on last pages of this syllabus.

### **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.

### **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.

### **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 by Urkund. 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.

### **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. Lane on when the missed work is due.

## Faculty of Science Course Syllabus (Section B) (revised June-2021)

### Fall/Winter 2021-22

#### *BIOL3061 Communities and Ecosystems*

Please ensure that the following information on University Policies is available to all students in your course. This document should be sent to students in your course along with your Course Syllabus, Section A, or may be copied into your **Course Syllabus (Section A)**.

### University Policies and Statements

**This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate**

#### **Academic Integrity**

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of 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.

**Information:** [https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

#### **Accessibility**

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

**Information:** [https://www.dal.ca/campus\\_life/academic-support/accessibility.html](https://www.dal.ca/campus_life/academic-support/accessibility.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.

**Code:** [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)

#### **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

**Statement:** <http://www.dal.ca/cultureofrespect.html>

#### **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 (1321 Edward St) ([elders@dal.ca](mailto:elders@dal.ca)).

**Information:** [https://www.dal.ca/campus\\_life/communities/indigenous.html](https://www.dal.ca/campus_life/communities/indigenous.html)

**Important Dates** in the Academic Year (including add/drop dates)

[https://www.dal.ca/academics/important\\_dates.html](https://www.dal.ca/academics/important_dates.html)

#### **University Grading Practices**

[https://www.dal.ca/dept/university\\_secretariat/policies/academic/grading-practices-policy.html](https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html)

