

Plant Ecology

BIOL3114

Instructor Dr. Stephanie Rivest	Course Details Lecture: Mon/Wed 5:30-7:00 pm (RB 3023) Lab: Tues 2:30-5:30 pm (CB 3010)
Contact srivest@lakeheadu.ca	Course Description Theories, concepts and methods in the study of plant ecology are discussed with special reference to the concept of community, ecosystem, succession and species' vital attributes.
Office Hours By appointment or stop by my office (CB 4022) to see if I'm free. If I'm busy, we can schedule an appointment.	Credits: 0.5 FCE.
Teaching Assistant Firas Dib: fdib@lakeheadu.ca	

1. Overview

Plant ecology is the study of how plants interact with their physical environment and with other living organisms. It explores how plants acquire resources, respond to environmental change, and influence broader ecological processes like the structure and function of entire ecosystems. While plant communities can differ dramatically across landscapes, this course seeks to uncover the general principles that govern their organization and dynamics. Topics covered in this course include vegetation classifications; approaches for sampling plants; resource acquisition and adaptations to scarcity; species interactions; disturbance and succession; and ecosystem and landscape processes.

Lectures will include a mix of instructor-led content and group discussion of articles. Labs will focus on practical skills like plant identification, vegetation surveys, and data analysis using the statistical program R.

2. Learning Outcomes

By the end of this course, students will be able to...

1. **Interpret vegetation patterns** and infer the ecological processes that generate them.
2. **Describe the ecological roles of plants** and their contributions to ecosystem structure, function, and global processes.
3. **Evaluate scientific articles** in plant ecology by thinking critically, applying concepts, interpreting data, and assessing weight of evidence.
4. **Collect data in the field and lab**, identify common plant species, and evaluate how methodological choices impact inference.
5. **Analyze ecological datasets** using basic modeling and data visualization in R.

3. Land Acknowledgement

Lakehead University respectfully acknowledges its campuses are located on the traditional lands of Indigenous peoples. Lakehead Thunder Bay is located on the traditional lands of the Fort William First Nation, Signatory to the Robinson Superior Treaty of 1850. Lakehead Orillia is located on the traditional territory of the Anishinaabeg. The Anishinaabeg include the Ojibwe, Odawa, and Pottawatomi nations, collectively known as the Three Fires Confederacy. Lakehead University acknowledges the history that many nations hold in the areas around our campuses, and is committed to a relationship with First Nations, Métis, and Inuit peoples based on the principles of mutual trust, respect, reciprocity, and collaboration in the spirit of reconciliation.

4. Assessments

Distribution of Marks:

<i>Assessment</i>	<i>Weight</i>
Theory:	
- Article discussions (x4)	7%
- Guest speaker worksheets (x3)	3%
- Seminar presentation	10%
- Midterm	15%
- Final exam	25%
Practical:	
- Worksheets (x2)	3%
- Lab reports (x4)	22%
- Lab exam	15%

Article Discussions: During lecture, we will discuss four articles showcasing primary research in plant ecology. The goal of these sessions is to interpret data, critique research, and evaluate the validity of claims made by the authors. To prepare, students will read the assigned article and respond to several questions before arriving in class (submit answers on D2L). The articles are as follows:

- Article 1: due **Sept 23rd** 5:30 pm
- Article 2: due **Oct 7th** 5:30 pm
- Article 3: due **Nov 2nd** 5:30 pm
- Article 4: due **Nov 23rd** 5:30 pm

Guest Speakers: During lecture, we will hear from several guest speakers about plant conservation work and traditional ecological knowledge. A worksheet will be distributed at the beginning of these presentations which students will fill-out and submit before leaving class. Attendance is mandatory to receive a mark for this activity.

Seminar Presentation: At the end of the semester, students will give a 10-minute educational presentation on a plant ecology topic of their choosing. The goal of this presentation is to teach the class about a topic in plant ecology in a clear, organized, and engaging way while integrating evidence from peer-reviewed studies (e.g., articles, reviews). Detailed instructions and a grading rubric for the presentation are available on D2L. Due dates are as follows:

- Topic choice – **Oct 2nd** 10:00 pm
- Presentation Slides – **Nov 23rd** 10:00 pm

Labs & Lab Reports: Lab activities will include outdoor field exercises sampling plants, an allelopathy experiment, and tutorials on how to analyze and interpret vegetation data using the statistical program R. Students will submit two worksheets and four lab reports over the course of the semester based on the exercises conducted during labs. Several exercises will require more than one lab period to complete. Labs will culminate with a practical exam assessing core concepts and skills. See the *Lab Manual* for more details. Due dates are as follows:

- Plant ID worksheet – **Sept 21st** 10:00 pm
- Mount McKay worksheet – **Sept 28th** 10:00 pm
- Lab report: Diversity – **Oct 19th** 10:00 pm
- Lab report: Quadrat size – **Nov 2nd** 10:00 pm
- Lab report: Ordination – **Nov 9th** 10:00 pm
- Lab report: Allelopathy – **Nov 30th** 10:00 pm

Submitting Assessments & Late Penalties: Lab reports, presentation slides, and paper discussions should be submitted to D2L on or before the dates specified. Late submissions will receive a 5% deduction (of the total assignment worth) per day, including weekends. Poor internet connection, corrupted files, or other technical problems will not be accepted as reasons for late submissions, so please plan accordingly.

5. Course Schedule

Overview: This schedule is subject to change. Due dates for assessments may change but will never occur earlier than the dates specified below.

<i>Week</i>	<i>Lecture</i>	<i>Lab</i>	<i>Assessment(s) due</i>
Week 1 Sept 7-11	M: no class W: Introduction & course outline	No lab	
Week 2 Sept 14-18	M: Functional classifications W: Phylogenetic classifications	Intro to lab Plant IDing on campus	
Week 3 Sept 21-25	M: Practical techniques W: Article discussion 1	Field trip Mount McKay	Article discussion 1 Plant ID worksheet
Week 4 Sept 28-Oct 2	M: Plant resources W: no class (Truth & Reconc.)	Field trip Mission Island Marsh	Presentation topic choice Mount McKay worksheet
Week 5 Oct 5-9	M: Resource scarcity W: Article discussion 2	Intro to R & diversity analysis ^a	Article discussion 2
Week 6 Oct 12-16	READING WEEK		
Week 7 Oct 19-23	M: Midterm W: Antagonisms I	Quadrat size analysis ^a	Lab report: Diversity
Week 8 Oct 26-30	M: Antagonisms II W: Facilitation	Ordination analysis ^a	
Week 9 Nov 2-6	M: Article discussion 3 W: Disturbance	Allelopathy I	Lab report: Quadrat size Article discussion 3
Week 10 Nov 9-13	M: Guest speaker 1 W: Succession	Allelopathy II	Lab report: Ordination Speaker worksheet 1
Week 11 Nov 16-20	M: Guest speaker 2 ^b W: Kalmia case study	Allelopathy III	Speaker worksheet 2
Week 12 Nov 23-27	M: Article discussion 4 W: Landscape ecology	Seminar presentations	Article discussion 4 Presentation slides
Week 13 Nov 30-Dec 4	M: Guest speaker 3 W: Ecosystem dynamics	Seminar presentations	Speaker worksheet 3 Lab report: Allelopathy
Week 14 Dec 7-8	M: Reserve lecture slot W: no class	Lab exam	

^a These labs will take place in LI 1003 (computer lab)

^b This lecture will take place in CB 3012

Other Important Dates:

- Sept 8th: first day of classes
- Sept 21: last day to register for a Fall course & last day to withdraw from a Fall course with a full refund
- Sept 30: no class (National Day for Truth and Reconciliation)
- Nov 6: last day to withdraw from a fall course without academic penalty
- Sept 30 and Oct 12: university is closed
- Dec 8: last day of classes

6. Guidelines & Expectations

Community Guidelines: My goal with this course is to develop an environment of mutual respect and safety for all participants. There is something to learn from everyone, so be open-minded and empathetic. Everyone is at a different place in their learning, so please be patient and kind. Please respect the boundaries of others.

Required Texts: There is no required textbook for this course. However, lectures are based off chapters from “Plant Ecology: Origins, Processes, Consequences” 2nd edition by Paul A. Keddy (hardcover ~\$140, kindle ~\$100). Students that benefit from learning through reading are encouraged to follow along with the text. I will indicate relevant pages and/or chapters associated with each lecture. We will also utilize articles from the primary literature to support learning in this course (see *Article Discussions*).

Communications: I reliably check and reply to emails between 8:30am and 5:00pm on weekdays (excluding holidays). I do my best to reply within two working days, so please try to consider this and plan accordingly (e.g., do not email the day before something is due). If I need to make an announcement to the entire class, I will do this on D2L so please make sure to regularly check the course website.

Attendance: Class attendance is strongly recommended to successfully complete this course. Participation during class will help you to process your ideas and ensure that you understand the course material. In addition, attendance in labs is mandatory to receive a grade for each activity and its corresponding assessment.

Illness & Missed Work: Sometimes, you may miss class or be late submitting your work due to illness or other extenuating circumstances beyond your control. In these instances, you may choose to submit a self-declaration form to request a plan or accommodation to make-up the missed work (no doctor's notes are required). You must submit this form before the missed class or due date (some exceptions are allowed) with a maximum of 2 submitted forms per semester. To access the form, see here:

<https://www.lakeheadu.ca/studentcentral/exams/missed-academic-term-work>.

Accommodations: Lakehead University is committed to achieving full accessibility for persons with disabilities/medical conditions. Part of this commitment includes arranging academic accommodations for students with disabilities/medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability/medical condition and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please email sas@lakeheadu.ca or visit <https://www.lakeheadu.ca/faculty-and-staff/departments/services/sas>.

Academic Integrity: There will be no tolerance for academic dishonesty or breaches of academic integrity in this course. Lakehead University provides an Academic Integrity Code

which outlines appropriate academic behaviours and what is considered prohibited conduct (found here: <https://www.lakeheadu.ca/students/student-life/student-conduct/academic-integrity>). Students should familiarize themselves with this document. In short, students should only present and submit their own work, document properly when reproducing or paraphrasing someone else's work (e.g., use of quotation marks and citations), collaborate appropriately, and avoid misrepresentation. The Academic Integrity Code provides a full description of academic offences, procedures when breaches are suspected and sanctions for confirmed breaches.

Copyright Compliance: By taking this course, you agree to the following statement:

"I understand and agree that all instructional, reference, and administrative materials to which I am given access in this course (the "course materials"), whether they consist of text, still or kinetic images, or sound, whether they are in digital or hard copy formats, and in whatever media they are offered, are protected in their entirety by copyright, and that I will comply with this copyright and the law:

- a) I may access and download the course materials only for my own personal and non-commercial use for this course.
- b) I am not permitted to download, copy, store (in any medium), forward or share, transmit, broadcast, show, post or play in public, adapt, or change in any way any text, image, or sound component of the course materials for any other purpose whatsoever except as expressly authorized, and only to the extent authorized, in writing, by the course instructor.

I further understand and agree that, if I infringe the copyright of the course materials in any way, I may be prosecuted under the Academic Integrity Code, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviours that support the University's academic values."

Recording Lectures: Lectures will be recorded for confidential access by students registered in the course. To the greatest extent possible, only the image and voice of the instructor will be recorded but, due to class interaction, the images and voices of students may also be recorded. These recordings are strictly confidential and may be used only by the instructor and students registered in the course and only for purposes related to the course. They may otherwise not be used or disclosed. The recordings are made under the authority of sections 3 and 14 of The Lakehead University Act, 1965. Questions about the collection of the images and sounds in the recordings may be directed to the Chair of the Department of Biology.

7. Other Resources & Supports

Student Central: Including registration support, academic advising, course planning, student awards, and financial aid. More info here: <https://www.lakeheadu.ca/studentcentral/registering-advising>.

Health & Wellness: More info here: <https://www.lakeheadu.ca/students/wellness-recreation/student-health-and-wellness>.

Student Success: Including peer mentoring, writing support, career advising, and leadership development opportunities. More info here: <https://www.lakeheadu.ca/students/academic-success/student-success-centre>.

Student Accessibility Services (SAS): As mentioned previously, SAS coordinates services that facilitate equitable opportunities in academic activities. More info here: <https://www.lakeheadu.ca/students/student-life/student-services/accessibility>.