Biodiversity of Plants and Algae
BIOL 2043/2040L

Instructor: Dr. Zoe Panchen
Office: MAH 430
Office hours:
M/W 5:30-6pm or by apt.
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Lecture: M/W BAC 244, 4-5:20 pm (in-person lectures)

Lab Instructor: Jen Kershaw
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Office hours: by apt. in-person or Teams
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Lab: BIO 210 (in-person labs)
FA01 W 1-4 pm
FA02 Th 8:30-11:20 am
FA03 Th 1-4 pm
FA04 F 1-4 pm

We're here to help and facilitate your learning! If you have questions or concerns, please drop by our offices during office hours or by making an appointment. To make an appointment please send an email with days and times you are available and briefly what you would like to discuss. You can also email questions.

Emergency communication plans: if there is a class/lab cancellation or classes/labs need to move on-line, we will send an email to all students via Moodle at least 2 hours before the start of the class/lab with a Teams link for an on-line class/lab.

Evaluation	Percentage	Date
Practice	20%	Practice and reflection (before, during, after class)
Tests	30%	2 tests (15% each), in class on Oct 19 and Nov 9
Lab	35%	Lab activities due throughout the term
Final exam	15%	Exam week

No classes/ labs	Sept 30, 2026 (National Day for Truth and Reconciliation) Oct 12, 2026 (Thanksgiving) Oct 13-16, 2026 (Fall Study Break) Nov 11, 2026 (Remembrance Day)

Part 1: Course Information

Course Description

An introduction to the structure, function, evolution and diversity of plants and algae.

Prerequisite(s): BIOL 1113/1123 with at least a C- (60%) in each, or permission from the instructor.

Course Materials & Requirements

Plant Biology (free pdf available on the course Moodle site). Students are expected to read the relevant chapters to compliment what is presented in the lectures and practiced in the lab.

Access to Moodle and a computer or tablet for online practices, reflections, quizzes and tests (please let instructor know if this is an issue).

Course Structure

Lecture material will be presented in 1hr 20 min lecture slots. Lecture time will be used for activities, discussion, and instruction.

Labs start Sep 16 (see dates below). Labs are mandatory and complement the lectures by providing opportunities for experiential learning. You must pass the lab to pass the course.

Student Learning Outcomes

1. Understand the development of reproductive structures and their role in plant reproductive biology.
2. Understand seed morphology, anatomy, and physiology of seed germination.
3. Understand growth and development of above ground and below ground tissues and organs.
4. Understand the anatomy and physiology of how plants grow and survive under different conditions.
5. Understand the biodiversity and evolution of plants.

How to Meet the Learning Outcomes

1. Attend lectures, take notes, and participate in class activities.
2. Keep up with materials and activities posted for each unit on Moodle.
3. Read the relevant chapters of the course text and read other scientific papers or books on the subject.
4. Test yourself on the material on a regular basis.
5. Print and read lab handouts in advance, participate in lab activities and complete lab assignments.

Part 2: Topic Outline/Schedule

The instructors reserve the right to amend the course and laboratory plan with reasonable notice, and in consultation with the class.

Lecture:

Date	Topic
09-Sep-26	Unit 1 – Introduction to plant biodiversity
14-Sep-26	Unit 1 - Mosses, Guest Lecture by Dr. Amy Heim
16-Sep-26	Unit 2 - Flowers
21-Sep-26	Unit 2 - Flowers

23-Sep-26	Unit 3 - Fruits
28-Sep-26	Unit 3 - Fruits
30-Sep-26	National Day for Truth and Reconciliation: no class
05-Oct-26	Unit 4 - Seeds
07-Oct-26	Unit 5: Plant Cells
12-Oct-26	Thanksgiving: no class
14-Oct-26	Fall Study Break: no class
19-Oct-26	Test 1 (Units 1-4)
21-Oct-26	Unit 5: Plant Cells
26-Oct-26	Unit 6: Plant Tissues & Organs
28-Oct-26	Unit 6: Plant Tissues & Organs
02-Nov-26	Unit 7: Roots
04-Nov-26	Unit 8: Vascular Tissue
09-Nov-26	Test 2 (Units 5-8)
11-Nov-26	Remembrance Day: no class
16-Nov-26	Unit 9: Secondary growth
18-Nov-26	Unit 10: Leaf anatomy & photosynthesis
23-Nov-26	Unit 11: Algae
25-Nov-26	Unit 11: Algae, Guest lecture by Dr. Amanda Savoie
30-Nov-26	Unit 12: Plant-fungal interactions, Guest lecture by Dr. Allison Walker
02-Dec-26	Unit 13: Acadia Forest Biodiversity, Guest Lecture by Alain Belliveau
07-Dec-26	Unit 14: Plant biodiversity survey
09-Dec-26	Unit 14: Plant biodiversity survey

Lab:

Lab 1 (Sep 16-18): Non-Angiosperm groups; Traditional uses of plants and antibacterial activity of some plant extracts
Lab 2 (Sep 23-25): Angiosperm flowers & pollination
Lab 3 (Oct 7-9): Angiosperm fruit & seeds
Lab 4 (Oct 28-30): Plant cells, tissues, organs, & organ systems
Lab 5 (Nov 18-20): Secondary growth, leaf anatomy & twig ID
Lab 6 (Dec 2-4): Algae

Please read your lab handout prior to lab and print it if you would like a paper copy.

Part 3: Assessment and Grading

The assessment schedule is listed at the beginning of the syllabus. Each test will be delivered on Moodle and completed by each student, separately, during lecture time. Appropriate accommodations will be made for any student who might require them; please contact Accessibility Services to make sure you are getting the support set up that you need.

Makeup tests will not be given. If you are sick, or have other valid reasons for missing a test, the weight from the missed test will automatically be distributed among the completed tests.

We encourage you to come talk to us if you have concerns about completing course work. We are happy to meet with you in person or via Teams, there is help available at the free weekly Bio Help Centre. We encourage you to keep to the assigned deadlines so that you can keep up but understand that there can be extenuating circumstances.

You must attend at least 75% of the lectures and pass the lab to pass the course.

Part 4: Course Policies

All materials covered in lecture, information from the textbook and information from guest speakers may be included in the tests and final exam. Thus, in-person attendance is strongly encouraged.

Lab activities are designed to reinforce class content. If you are sick or otherwise unable to come to the lab, please contact me as soon as possible so that we can make alternate arrangements. **Attendance in person for the labs is mandatory.**

Part 5: University Policies

University policies are available in the Acadia University Academic Calendar or through the Registrar's website: https://registrar.acadiau.ca/welcometotheregistrarsoffice.html

Equity, Diversity and Inclusion

Acadia University is committed to becoming a culturally safe and anti-oppressive community. This can only be achieved where there are simultaneous efforts to eliminate all forms of discrimination and harassment from our campus community, including the elimination of all discrimination, harassment and violence based on one's identity, including but not limited to, gender, race, class, ethnicity, sexual orientation, disability, gender identity, gender expression, and Indigeneity. The policy against harassment and discrimination, and resources for students who believe they may have experienced, or witnessed, discrimination or harassment, are available here: https://www2.acadiau.ca/student-life/equity-judicial/equity.html

Last Drop Day

Last day to drop a course and receive a "W". Please check the Acadia University calendar dates, which are available here: https://registrar.acadiau.ca/AcademicCalendars.html

Inform Your Instructor of Accommodations

Acadia University is dedicated to improving access to campus life for all students with disabilities. While we attempt to ensure that all courses are accessible, we recognize that there are barriers that need to be addressed on an individual basis. Students who require accommodations to complete coursework or otherwise fully participate in class should

contact Accessible Learning Services directly at (accessible.learning@acadiau.ca) as soon as possible. More information is also available at Accessible Learning Services website.

The Use of Animals in Teaching and Research

The use of animals in teaching and research at Acadia University is done in accordance with guidelines on the care and use of animals published by the Canadian Council on Animal Care (CCAC). For more information on the CCAC, please visit their website at http://www.ccac.ca

Commitment to Integrity

It is standard practice in Biology to check exams and assignments for cheating and plagiarism. Cheating in the class and/or lab, including plagiarism, will not be tolerated. Please read the appropriate sections of the current Acadia University Academic Calendar: https://registrar.acadiau.ca/AcademicCalendars.html

Information on copy-write and course content from Acadia University is available through the Vaughan Memorial Library: http://libguides.acadiau.ca/c.php?g=433650&p=5027078

The spoken and written course content (including the syllabus, handouts, lectures, presentations, labs, assignments, quizzes, tests, and exams) are the intellectual property of the instructor and may only be copied for personal use. Sharing these materials or uploading them where they may be accessed by others is a violation of copyright. If you wish to make audio, video, or photographic recordings in class, you must first obtain the consent of the instructor and of any other persons (e.g., guest speakers, other students) who may be captured in such recordings. The instructor's consent shall not be unreasonably withheld.

Use of artificial intelligence tools by students to assist with their learning is allowed only if: prior permission has been given by the course professor/instructor, and the student properly credits/cites how the AI technology was used in their work. AI must be used in an ethical and responsible manner as a positive learning tool. AI may not be used in ways that violate Acadia's Academic Integrity Policy. Students are reminded that plagiarism, or other forms of cheating, are both types of academic dishonesty.

Share the Air Policy

In consideration of the difficulties that exposure to scented products causes individuals with sensitivities and allergies, all students, faculty, staff, employees of any companies working on university property, visitors, and guests of Acadia University, or of members of the University community are asked to refrain from wearing scented personal care products such as perfumes / aftershave, lotions, hair spray and deodorant. In addition, users of tobacco and cannabis are asked to be aware that odours associated with product use may impact individuals with sensitivities and allergies. Acadia University in consultation with its contracted cleaning staff, have agreed to use products that do not leave residual odors that may cause difficulties for individuals with sensitivities and allergies. https://hr.acadiau.ca/employment/university-policies.html

Part 6: Program Learning Outcomes

Foundations of knowledge	**Explanation**	**Course specific examples**	**Proficiency** 1-Introduction 2-Reinforcement 3-Proficient
Scientific method, inquiry and hypothesis testing	Find, understand and apply information from the literature; understand how to use the scientific method to examine problems from different perspectives	Process of discovering the role of green light in photosynthesis, interpretation & discussion of data figures from literature	2
Historical concepts and contributions by important figures	Explain foundational concepts in biology, Two-eyed Seeing, and ethical implications of scientific discoveries	Key discoveries in botany, who has (and who has not) won Nobel prize awards	2
Biodiversity and ecology	Understand the genetic, taxonomic and ecosystem levels of biodiversity; focus on SW Nova including the Acadian Forest and Bay of Fundy ecosystems	Investigate the diverse modifications of plant tissues & organs, & their adaptive function in different environments	2
Genetics and evolution	Understand the chemical basis of heredity, genetics and genomics; integrate concepts across disciplines to understand evolution	Roles of vertical & horizontal gene transfer in plant evolution. Plant evolutionary groups	2
Human and environmental health	Understand form and function in health and disease within a One Health framework, integrating human and environmental health	Plant roles in ecosystem function, primary production, CO_2 fixation, impact of climate change on plant processes	1
Lab and field skills	**Explanation**	**Course specific examples**	**Proficiency** 1-Introduction 2-Reinforcement 3-Proficient
Experimental design	Gain experience in applying the scientific method	Controls, conducting an experiment, data collection	2

Safety	Work safely and productively in lab and field settings	Basic lab safety protocols	2
Lab skills	Gain experience with basic and advanced lab techniques and understand their application in research, health science and industry	Use of compound and dissecting scopes, slide preparation, examination of live material and prepared slides, plant dissection	2
Field skills	Gain experience in basic and advanced field skills and understand their application in ecology, conservation biology and environmental change	Field identification of patterns & terms learned in class and lab; data collection with iNaturalist	2
Data acquisition, analysis and interpretations	Collect data, present results both qualitatively and quantitatively, and interpret outcomes in light of the literature	Analysis of figures	2
Statistical analysis	Use R and or other programs to analyze biological data		
Professional skills	**Explanation**	**Course specific examples**	**Proficiency** 1-Introduction 2-Reinforcement 3-Proficient
Ethical practices	Demonstrate ethical conduct, apply principles of academic integrity, and understand the principles of EDI in science	Respectful participation in class & lab, proper citation, professional email & other communication	2
Collaboration and group work	Work effectively in groups within and across disciplines	Group collaboration in class & lab activities such as small group discussions, case studies, lab partners & review work	2
Critical thinking	Analyze and evaluate information to make science-based decisions	Question response, discussions, reflection questions, lab observation reflection questions	2

Computer proficiency	Use common and discipline-specific software		
Scientific communication	Communicate science effectively to both scientific and general audiences	Discussions, written hand-ins, written and oral responses to prompts in-class	2