

FACULTY of SCIENCE
Department of Biology

Course: SC/BIOL 2010 4.0 – **Plant Biology**

Term: Winter Term 2023

Course Webpage: <http://eclass.yorku.ca/>

Prerequisite / Co-requisite: SC/BIOL 1010 6.0; or SC/BIOL 1000 3.0 and SC/BIOL 1001 3.0; or Permission of the Course Director.

Course Instructor: Nik Kovich, PhD
(416) 736-2100 ext 33890
Life Sciences Building 327D
Course Email: plantbio@yorku.ca
Email: kovich@yorku.ca
Research website: www.kovichlab.com

Laboratory Coordinator Ms. Tanushree Tiwari, PhD candidate
Email: plantbio@yorku.ca, Office hours by appointment

Time and Location

Lectures	MWF 9:30-10:20 am in LAS C, or on Zoom (here is the link)
Office hours Questions	WF 10:20-11:00 am, or request a *Zoom appointment
Laboratory	MTWR 10:00-1:00, 2:30–5:30, or 6:30–9:30 in LUM 118

*Please email me if you would like to book a Zoom meeting inside or outside of regular office hours. Expect an average response time of 3 (working) days, not including weekends or holidays. Include 'BIOL 2010' in the subject line to ensure that your email is not discarded.

Expanded Course Description

Plant Biology looks at plant and all other organismal groups EXCEPT for animals. We learn about their biodiversity, evolution, ecology, physiology, and biotechnology.

This course has three lecture hours and three laboratory hours per week for one term, and is worth four course credits.

Overview. This course introduces you to botany. Non-biology majors with some background in biology may enroll with permission of the Course Director.

The lectures present information about prokaryotes, algae, fungi and plants, including their evolution, ecology, diversity, physiology, life cycles and their relevance to human society.

The laboratories are integrated with lectures, and illustrate the biological diversity of algae, nonvascular, and vascular plants, and highlight key aspects of plant biology.

Course Structure & Organization. This course has formal lectures given by the course director and weekly laboratories, run by teaching assistants. The textbook and lectures are crucial, and evaluation on this component is worth 60% of the final grade.

Most of the materials presented in laboratory exercises focus on developing observational skills of the gross form and structure of plants and other organisms, and also microscopic form and structure, and some molecular analyses. We learn to identify material using keys, including those for identifying microscopic algae and multicellular conifers. We also do experiments and some laboratory write-ups that require statistical analysis. The lecture and laboratory components are integrated, and aim to be relatively synchronous.

The final grade is a combination of lecture and laboratory tests and written assignments.

Course Learning Objectives. Please note that the syllabus and lecture material will be posted on the course website (eClass) provides a detailed and practical presentation of the Learning Objectives

Some specific learning objectives of the course:

Students will learn to:

- differentiate amongst the diversity of major organismal groups, including their characteristics (general appearance) and life cycles
- understand the key evolutionary transitions from photosynthetic prokaryotes (cyanobacteria) to protist eukaryotes (unicellular algae) to multicellular complexity (algae, fungi and land plants), and appreciate the remarkable depth and breadth of 4 billion years of evolution.
- develop and hone your observational skills
- develop the flexibility required to apply and integrate fundamental principles and mechanisms in the evolution of diverse organisms —both form and function.
- become comfortable and familiar with the scientific language used to describe organismal diversity and the physiological basis of the life cycle of a flowering plant.
- develop your ability to independently analyze organismal diversity and the life of a flowering plant.

Course Text / Readings

Evert RF and SE Eichorn 2012 *Raven Biology of Plants*. Eighth Edition.

Raven Biology of the Plants is one of the **best** biology textbooks out there. It includes excellent photographs and diagrams, as well as very clear and comprehensive explanations of biological terms and processes.

Bazely, Lew and others 2023. Laboratory Manual for SC/BIOL 2010 4.0 (Plant Biology).

This is provided as pdf files, electronically at zero cost. The laboratory manual provides explanations of each of the lab exercises, diagrammatic representations of diverse life cycles and identification keys for major groups.

Evaluation

- Two term tests based on lectures, worth 25%. Your highest scoring test will be weighted 15%, and your lowest scoring test weighted at 10%. Term test 1 will cover the first 1/3 of the course and term test 2 will cover the second 1/3 of lectures.
- The final exam is worth 35% and covers the entire term's material, though emphasis is placed on the last 1/3 of lectures.
- Laboratory exercises, 3 write-ups and lab quizzes, worth 40%. See your lab manual introduction for a detailed breakdown of the laboratories.
- In-class quiz answers using iClicker, bonus 5% (yes, it is possible to get more than 100% in this course!).

If you miss a term test, you will need to provide the Laboratory Co-ordinator, Ms. Tanushree Tiwari, with a letter stating the reason for your absence. If she determines that the reason is valid and warrants some accommodation (i.e. you were ill, had a death in the family, car accident, etc...), the weight of the missed term test (10%) can be transferred to the weight of the final exam. You must provide justification for missing the test to her within one week of the test date in order to be considered.

If you are unable to attend a lab, or if you cannot submit a report on time, you must notify the lab coordinator before the lab if possible, or within 24 hours of the lab or due date if not. "Final course grades may be adjusted to conform to Program or Faculty grades distribution profiles."

Grading: The grading scheme for the course conforms to the 9-point grading system used in undergraduate programs at York (e.g., A+ = 9, A = 8, B+ = 7, C+ = 5, etc.). Assignments and tests* will bear either a letter grade designation or a corresponding number grade (e.g. A+ = 90 to 100, A = 80 to 90, B+ = 75 to 79, etc.).

For a full description of York grading system see the York University Undergraduate Calendar - <https://calendars.students.yorku.ca/2022-2023/grades-and-grading-schemes>

Students may take a limited number of courses for degree credit on an ungraded (pass/fail) basis. For full information on this option see Alternative Grading Option in the (*Faculty of Science and Engineering*) section of the Undergraduate Calendar: (<http://ugbio.apps01.yorku.ca/>)

Assignment Submission: Proper academic performance depends on students doing their work not only well, but on time. Accordingly, **lab** assignments for this course must be received on the due date specified for the assignment. Assignments are to be handed in to the TA for your laboratory section per their instructions.

Lateness Penalty: Assignments received later than the due date will be penalized (Late penalties will be determined by the laboratory coordinator).

Missed Tests: Students with a documented reason for missing a course test, such as illness, compassionate grounds, etc., which is confirmed by supporting documentation (e.g., doctor's letter provided to the laboratory co-ordinator, Ms. Stephanie Haas-Desmarais) will have the weight of the missed term test transferred to the final exam.

IMPORTANT COURSE INFORMATION FOR STUDENTS

All students are expected to familiarize themselves with the following information, available on the Senate Committee on Academic Standards, Curriculum & Pedagogy webpage (see Reports, Initiatives, Documents) <https://secretariat-policies.info.yorku.ca/>

- Senate Policy on Academic Honesty and the Academic Integrity Website
- COVID-19 Vaccination Mandate
- Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities
- Student Conduct Standards
- Religious Observance Accommodation

Technical requirements for taking the course: Students are required to have a stable, high-speed internet connection. Classes will include real-time polling/quizzing using iClicker Reef, which is [free](#) to all York University students. Some quizzes and write-ups will be completed online. However, Senate currently suggests that classes and all tests should be conducted in-person (December 7, 2021). In the event of an illness, recorded lectures will be available asynchronously on the [Zoom](#) links provided on eClass.

Academic Honesty and Integrity

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - <http://www.yorku.ca/academicintegrity/>

Important A note from the Faculty of Science Committee on Examinations and Academic Standards:

Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g. Course Hero, One Class, etc.) were taken and used by unknown students in later offerings of the course. The Faculty's Committee on Examinations and Academic Standards (CEAS) found in these cases that the burden of proof in a charge of aiding and abetting had been met, since the uploading students had been found in all cases to be wilfully blind to the reasonable

likelihood of supporting plagiarism in this manner. Accordingly, to avoid this risk, students are urged not to upload their work to these sites. Whenever a student submits work obtained through Course Hero or One Class, the submitting student will be charged with plagiarism and the uploading student will be charged with aiding and abetting.

Note also that exams, tests, and other assignments are the copyrighted works of the professor assigning them, whether copyright is overtly claimed or not (i.e. whether the © is used or not). Scanning, sharing, uploading or publishing these documents constitutes copying, which is a breach of Canadian copyright law, and the breach is aggravated when scans are shared or uploaded to third party repository sites.

Access/Disability

York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

While all individuals are expected to satisfy the requirements of their program of study and to aspire to achieve excellence, the university recognizes that persons with disabilities may require reasonable accommodation to enable them to perform at their best. The university encourages students with disabilities to register with [Student Accessibility Services](#) to discuss their accommodation needs as early as possible in the term to establish the recommended academic accommodations that will be communicated to Course Directors through their Letter of Accommodation (LOA). **Please let me know as early as possible in the term if you anticipate requiring academic accommodation so that we can discuss how to consider your accommodation needs within the context of this course.** Sufficient notice is needed so that reasonable steps for accommodation can be discussed. Accommodations for tests/exams normally require three (3) weeks (21 days) before the scheduled test/exam to arrange.

Additional information is available at the following websites:

Student Accessibility Services - <https://accessibility.students.yorku.ca>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete and submit an accommodation request form

<https://secure.students.yorku.ca/pdf/religious-accommodation-agreement-final-examinations.pdf>

at least 3 weeks before the exam period begins.

Student Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at - <http://secretariat-policies.info.yorku.ca/policies/disruptive-andor-harassing-behaviour-in-academic-situations-senate-policy/>

Course Overview – topic schedule subject to change

Monday	Tuesday	Wednesday	Thursday	Friday
January				
<i>First Day of Class 8 Introduction</i>	9	10 <i>Origin of Life</i>	11	12 <i>Origin of Life</i>
15 <i>Review, Metabolites, Photosynthesis</i>	16	17 <i>Review, Metabolites, Photosynthesis</i>	18	19 <i>Review, Metabolites, Photosynthesis</i>
22 <i>Review, Metabolites, Photosynthesis</i>	23	24 <i>Review, Metabolites, Photosynthesis</i>	25	26 <i>Review, Metabolites, Photosynthesis</i>
29 Termtest #1	30	31 <i>Systematics</i>	February 1	February 2 <i>Systematics</i>
February				
5 <i>Systematics</i>	6	7 <i>Evolution (Part1)</i>	8	9 <i>Evolution (Part1)</i>
12 <i>Evolution (Part1)</i>	13	14 <i>Evolution (Part2)</i>	15	16 <i>Bryophytes</i>
Reading Week 19	Reading Week 20	Reading Week 21	Reading Week 22	Reading Week 23
26 <i>Seedless Vascular Plants</i>	27	28 <i>Angiosperms</i>	29	March 1 <i>Evolution of Angiosperms</i>
March				
4 Term test #2	5	6 <i>Evolution of Angiosperms</i>	7	8 <i>Early Development of the Plant Body</i>
11 <i>Cells and Tissues</i>	12	13 <i>Cells and Tissues</i>	14	15 <i>Hormones in Growth & Development</i>

18 <i>Reproduction & Heredity</i>	19	20 <i>Reproduction & Heredity</i>	21	22 <i>Reproduction & Heredity</i>
25 <i>Reproduction & Heredity</i>	26	27 <i>Chemistry of Heredity & Gene Expression</i>	28	29 <i>Chemistry of Heredity & Gene Expression</i>
April				
1 <i>Plant Biotech & Genomics</i>	2	3 <i>Plant Biotech & Genomics</i>	4	5 <i>Plant Biotech & Genomics</i>
<i>LastDayofClasses</i> 8 <i>Review</i>	9			

Jan 2024