BIOL 341
Plant Physiology
Winter Term (2022)

CALENDAR DESCRIPTION

The course examines various aspects of plant cell biology, physiology, and biochemistry including carbon and nitrogen metabolism (photosynthesis, respiration, etc.), water relations, mineral nutrition, response to environmental stress, roles of plant hormones, plant biotechnology.

PREREQUISITE BIOL 205/3.0. EXCLUSION No more than 3.0 credits from BIOL 301/3.0; BIOL 341/3.0.

SCHEDULE

Lectures: Mon 2:30pm, Tues 4:30pm, Thurs 3:30pm; see Bio341 onQ

Instructors	**Dr. W. Snedden**
Instructor Contact	Wayne.snedden@queensu.ca
Office Hours	by appointment and TBA
TAs:	TBA
TA Contact	

Learning Objectives

The main goal of Biol341 is to help students acquire a comprehension of plant biology from the subcellular to the organismal level. The course explores various topics in plant cell biology, physiology, and biochemistry including primary and secondary metabolism, photosynthesis, respiration, water relations, mineral nutrition, response to environmental stress, roles of plant hormones, and plant biotechnology. The course objectives, broadly speaking, are to help students to:

(i) understand the relationship between structure and function as it relates to plant macromolecules, cells, and tissues
(ii) understand the interaction between the environment and plant growth and development
(iii) gain an appreciation of the metabolic and physiological processes unique to plants

Learning Hours: The table below provides an **estimate** of hours of study for Biol341. This is for general reference purposes only and is not intended to describe the precise duration of time the course will require. The nature of assignments will vary year to year and thus the allocation of time to various activities will vary accordingly. A 3.0-unit course would normally require a total of 110 to 130 total learning hours (or hours on task) and Biol 341 will fall within that window on any given calendar year. It is prudent to keep in mind however that time commitment to some tasks will vary widely among students depending upon individual aptitude, level of background, etc.

Teaching method		*Average hours per week*	*Number of weeks*	*Total hours*
In-class hours	Lectures (online)	3	12	36
	Seminars			
	Laboratories			
	Tutorials			
	Group learning	3	6	~18
	Individual instruction			
Other	(online) activities	3	6	~18
	Private study	4	12	~48
Total learning hours				~120 (typical range 110-130)

Course Outline

The course explores a broad range of concepts in plant physiology. Topics covered may vary somewhat year-to-year, and are subject to change, but generally include one or more lectures on: why we study plants, water relations, xylem and phloem transport, photosynthesis, carbon assimilation, starch and sugar synthesis, respiration, mineral nutrition, nitrogen metabolism, signal transduction, growth and development, photoreceptors, phytohormones, plant genomics, plant-pathogen interaction, plant response to environmental stress, plant biotechnology. The final exam will test all material covered in the course. The nature of graded assignments will vary year-to-year but could include one or more of the following: making a poster for display in the atrium on a topic in plant biology (may be group project), reading assigned material and answering online quizzes, giving a short seminar in class on a topic in plant biology (may be group project), short essays on plant biology topics.

Textbooks/Readings

Required: Fundamentals of Plant Physiology Taiz et al (2018), Sinauer Oxford Press, ISBN: 1605357901, ISBN13: 9781605357904

Alternate Textbook: Plant Physiology and Development, 6th edition (2015), by L. Taiz et al, Sinauer Press, ISBN-10: 1605352551, ISBN-13: 978-1605352558 (used copy is fine)

Grading Scheme – see onQ for due dates and any changes to grading scheme

group quizzes (2 x 7.5%)	15%
Seminar project (oral)	13%
Pop press article (written)	20%
Peer reviews	10%
Online Assignments, Quizzes (4)	12%
Final Exam	30%

Grading Method

• In this course, some components will be graded using numerical percentage marks. Other components will receive letter grades, which for purposes of calculating your course average will be translated into numerical equivalents using the Faculty of Arts and Science Letter Grade Input Scheme.

When letter grades are employed, the following scale will be employed for purposes of calculating your course average:

Arts & Science Letter Grade Input Scheme

Assignment mark	Numerical value for calculation of final mark
A+	93
A	87
A-	82
B+	78
B	75
B-	72
C+	68
C	65
C-	62
D+	58
D	55
D-	52
F48 (F+)	48
F24 (F)	24
F0 (0)	0

Your course average will then be converted to a final letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69

C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Academic Integrity and Queen's Code of Conduct:
https://www.queensu.ca/artsci/sites/default/files/academic_regulations_19_final_ks_revised_dec_2020.pdf

Queen's students, faculty, administrators and staff all have responsibilities for supporting and upholding the fundamental values of academic integrity. Academic integrity is constituted by the five core fundamental values of honesty, trust, fairness, respect and responsibility (see http://www.academicintegrity.org) and by the quality of courage. These values and qualities are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University. Students are responsible for familiarizing themselves with and adhering to the regulations concerning academic integrity. General information on academic integrity is available at Integrity@Queen's University, along with Faculty or School specific information. Departures from academic integrity include, but are not limited to, plagiarism, use of unauthorized materials, facilitation, forgery and falsification. Actions which contravene the regulation on academic integrity carry sanctions that can range from a warning, to loss of grades on an assignment, to failure of a course, to requirement to withdraw from the university.

Accommodation Policy, Exam Conflicts, and Other Conflicts

Students who feel they need accommodations for disabilities or extenuating circumstances, or have a conflict between exams or other commitments should consult the Queen's website for details about how to proceed (http://www.queensu.ca/studentwellness/home). In general, the earlier a course coordinator is apprised of an extenuating circumstance, the more likely an accommodation can be made. Students are encouraged to be proactive in anticipating difficulties, when it is possible to do so.

Students may apply to write a make-up or deferred exam if they have an exam conflict as defined in the Academic Regulations of the Faculty (See Arts and Science Academic Regulations - https://www.queensu.ca/artsci/sites/default/files/academic_regulations_19_final_ks_revised_dec_2020.pdf). In this case, the student should report to the Exams Office first to verify that there is a genuine exam conflict. Biology professors will not consider your situation to be a conflict unless it meets the criteria set out by the Faculty of Arts and Sciences.

Students may request a make-up or deferred exam if they have an exam conflict with off-campus travel associated with a field course (e.g BIOL-307/3.0 or 407/3.0) that is held during the fall or winter terms.

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Accommodation of Disabilities

Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact the Disability Services Office (DSO) and register as early as possible. For more information, including important deadlines, please visit the DSO website at:
http://www.queensu.ca/studentwellness/accessibility-services