



## COURSE OUTLINE

1. **Course:** PLBI 403, Plant Physiology - Fall 2020

Lecture 01: MWF 12:00 - 12:50 - Online

<b>Instructor</b>	<b>Email</b>	<b>Phone</b>	<b>Office</b>	<b>Hours</b>
Dr Dae-Kyun Ro	daekyun.ro@ucalgary.ca	403 220-7099	BI 393	Tuesday 2-3 pm
Dr Peter Facchini	pfacchin@ucalgary.ca	403 220-7651	BI 396	Tuesday 2-3 pm

### Online Delivery Details:

This course is being offered online in real-time via scheduled meeting times, you are required to be online at the same time.

All online lectures and labs will be delivered synchronously on the scheduled time and date. As this course involves frequent real-time discussion of the lab data and lab reports with instructors and TAs, lectures will not be recorded and regular attendance at these lectures is mandatory.

### Course Site:

D2L: PLBI 403 L01-(Fall 2020)-Plant Physiology

**Note:** Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

### Prerequisite(s):

Biology 371.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Component	Percentage of final grade	Dates
<b>Lecture (40%)</b>		
Quiz 1	10	Sep 28
Quiz 2	10	Oct 21
Quiz 3	10	Nov 18
Quiz 4	10	Dec 9
<b>Laboratory (40%)</b>		
Assignment 1	5	TBA
Assignment 2	10	TBA
Assignment 3	5	TBA
Assignment 4	5	TBA
Assignment 5	10	TBA
Assignment 6	5	TBA
<b>Term-paper (20%)</b>	20	Nov. 23

1. Quizzes will be "timed synchronous" assessments. Quizzes are designed to take 30 minutes to complete but students will be given 45 minutes to account for any issues. Randomized MCQ and/or short-answer questions will be given to students.

2. Workshop (general guideline and Q/A session) is scheduled on Oct 23 to help your writing.

3. Details of the essay format will be posted at D2L.

4. For any synchronous assessment, time will be adjusted for SAS students if needed and accommodations for students will be done on a case-by-case basis.

There will be no Registrar scheduled Final Exam.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
<b>Minimum % Required</b>	90 %	85 %	80 %	77%	73%	70 %	67 %	63%	60%	55 %	50 %

#### 4. Missed Components Of Term Work:

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course.

#### 5. Scheduled Out-of-Class Activities:

There are no scheduled out of class activities for this course.

#### 6. Course Materials:

Required Textbook(s):

Taiz, L. and Ziegler, E., *Plant Physiology and Development, Sixth Edition*. Sinaur Associates Inc, Sunderland, MA.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;

- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

#### 7. **Examination Policy:**

Quizzes are open book questions but must be individual work.

Students should also read the Calendar, [Section G](#), on Examinations.

#### 8. **Approved Mandatory And Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

#### 9. **Writing Across The Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also [Section E.2](#) of the University Calendar.

#### 10. **Human & Living Organism Studies Statements:**

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

#### **ETHICS IN THE BIOLOGICAL SCIENCES**

Studies in the Biological Sciences involve the use of living and dead organisms. Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes fieldwork requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

**STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS.** Students taking laboratory and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with [Section SC.4.1](#) of the University Calendar.

#### 11. **Reappraisal Of Grades:**

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within

the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar

- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

## 12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Center:** For more information, see [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email ([svsa@ucalgary.ca](mailto:svsa@ucalgary.ca)) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>)
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**
- e. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head, Undergraduate of the Department of Biological Sciences, Heather Addy by email [addy@ucalgary.ca](mailto:addy@ucalgary.ca) or phone [403 220-6979](tel:403-220-6979). Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca). [Student Ombudsman](#), Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca).
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be

pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

### Tentative Lecture Schedule

Date	Topic	Instructor
Sep. 9	Introduction to plant physiology	PJF
Sep. 11	Xylem transport I	PJF
Sep. 14	Xylem transport II	PJF
Sep. 16	Xylem transport III	PJF
Sep. 18	Phloem transport I	PJF
Sep. 21	Phloem transport II	PJF
Sep. 23	Phloem transport III	PJF
Sep. 25	Phloem transport IV	PJF
Sep. 28	<b>Quiz 1</b>	PJF
Sep. 30	Photosynthesis I	PJF
Oct. 2	Photosynthesis II	PJF
Oct. 5	Respiration and lipid metabolism I	PJF
Oct. 7	Respiration and lipid metabolism II	PJF
Oct. 9	Respiration and lipid metabolism II	PJF
Oct. 12	Thanksgiving Day	No lecture
Oct. 14	Nutrient assimilation I	PJF
Oct. 16	Nutrient assimilation II	PJF
Oct. 19	Nutrient assimilation III	PJF
Oct. 21	<b>Quiz 2</b>	PJF
Oct. 23	Workshop (Q/A and discussion for essay writing)	DKR
Oct. 26	Introduction	DKR
Oct. 28	Cell walls	DKR
Oct. 30	Signal transduction I	DKR
Nov. 2	Signal transduction II	DKR
Nov. 4	Light and plant development I	DKR
Nov. 6	Light and plant development II	DKR
Nov. 9-13	Reading week	No lecture
Nov. 16	Light and plant development III	DKR
Nov. 18	<b>Quiz 3</b>	DKR
Nov. 20	Seed physiology I	DKR
Nov. 23	Seed Physiology II	DKR
Nov. 25	Gametophytes	DKR
Nov. 27	Fruit development	DKR
Nov. 30	Senescence and cell death I	DKR
Dec. 2	Senescence and cell death II	DKR
Dec. 4	Biotic interactions I	DKR
Dec. 7	Biotic interactions II	DKR
Dec. 9	<b>Quiz 4</b>	DKR

### Lab Schedule

Week of	Lab	Topic
Sep. 14	1	Xylem tension
Sep. 21	2	Photosynthesis I
Sep. 28	3	Photosynthesis II
Oct. 5	4	Nitrogen assimilation
Oct. 12	5-1	Rhizobium set-up
Oct. 19	6-1	Brassinolide set-up
Oct. 26	6-2	Brassinolide data collection
Nov. 2	7-1	Germination assay set-up

Nov. 9		Reading week
Nov. 16	7-2	Germination assay data collection
Nov. 23	5-2	Rhizobium data collection
Nov. 30		No lab
Dec. 7		No lab

**Course Outcomes:**

- 1. Describe the physiology of water transport through the xylem of plants
- 2. Describe the physiology of sugar transport through the phloem of plants
- 3. Describe the physiology of photosynthesis in plants
- 4. Describe the physiology of respiration and lipid metabolism in plants
- 5. Describe the physiology of nitrogen fixation and assimilation in plants
- 6. Describe the chemical properties, structural organization, biosynthetic mechanisms of cell-wall components in plants
- 7. Explain the molecular mechanisms of how plants perceive red- and blue-light, delay respective signals, and show light-mediated physiological responses
- 8. Describe six major plant hormones, their signal transductions, and developmental and physiological roles in plants
- 9. Describe the molecular mechanisms of germination, phototropism, gravitropism, and thigmotropism in plants
- 10. Describe the defense mechanisms of plants against various biotic stresses

Electronically Approved - Sep 01 2020 16:40

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**Department Approval**

Electronically Approved - Sep 01 2020 17:31

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**Associate Dean's Approval**