



### COURSE OUTLINE

1. **Course:** PLBI 403, Plant Physiology - Fall 2021

**Coordinator(s)**

Name	Email	Phone	Office	Hours
Dr Peter Facchini	pfacchin@ucalgary.ca	403 220-7651	BI 396	TBA

**Section(s)**

Lecture 01: MWF 12:00 - 12:50 in ST 132

Instructor	Email	Phone	Office	Hours
Dr Dae-Kyun Ro	daekyun.ro@ucalgary.ca	403 220-7099	BI 393	TBA
Dr Peter Facchini	pfacchin@ucalgary.ca	403 220-7651	BI 396	TBA

**In Person Delivery Details:**

Lectures and labs will be delivered in person. Students unable to attend in-person lectures and labs as a result of Covid-19 isolation protocol should contact an instructor.

**Re-Entry Protocol for Labs and Classrooms:**

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found [here](#).

**Course Site:**

D2L: PLBI 403 L01-(Fall 2021)-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	Date
<b>Lecture (60%)</b>		
Midterm Exam	30	October 20
Final Exam	30	TBA
<b>Laboratory (40%)</b>		
Assignment 1	5	October 1
Assignment 2	10	October 13
Assignment 3	5	October 27
Assignment 4	5	December 6
Assignment 5	10	November 19
Assignment 6	5	In-Lab, Nov 16 or 18

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 %

This course will have a final exam that will be scheduled by the Registrar. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 2 hours.

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

#### 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, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this 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..

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:**

No aids are allowed on tests or examinations.

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:

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

**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.

- a. **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 Services:** 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 ([syva@ucalgary.ca](mailto:syva@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/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>)
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)  
Student Academic Misconduct [Policy](#) and [Procedure](#)

[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

**e. Academic Accommodation Policy:**

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Lisa Gieg by email [imgieg@ucalgary.ca](mailto:imgieg@ucalgary.ca) preferably 10 business days before the due date of an assessment or scheduled absence.

**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.

LECTURE SCHEDULE		
Date	Topic	Instructor
September 8	Introduction to plant physiology	PJF
September 10	Xylem transport I	PJF
September 13	Xylem transport II	PJF
September 15	Xylem transport III	PJF
September 17	Phloem transport I	PJF
September 20	Phloem transport II	PJF
September 22	Phloem transport III	PJF
September 24	Photosynthesis I	PJF
September 27	Photosynthesis II	PJF
September 29	Photosynthesis III	PJF
October 1	Photosynthesis IV	PJF
October 4	Respiration and lipid metabolism I	PJF
October 6	Respiration and lipid metabolism II	PJF
October 8	Respiration and lipid metabolism III	PJF
October 11	Thanksgiving	
October 13	Nutrient assimilation I	PJF
October 15	Nutrient assimilation II	PJF

October 18	Nutrient assimilation III	PJF
October 20	Midterm Exam (in-class)	
October 22	Introduction to growth and development	DKR
October 25	Cell walls	DKR
October 27	Signal transduction I	DKR
October 29	Signal transduction II	DKR
November 1	Light and plant development I	DKR
November 3	Light and plant development II	DKR
November 5	Seed physiology I	DKR
November 8-12	Academic break	
November 15	Seed physiology II	DKR
November 17	Seed physiology III	DKR
November 19	Gametophytes	DKR
November 22	Fruit development	DKR
November 24	Senescence and cell death I	DKR
November 26	Senescence and cell death II	DKR
November 29	Biotic interactions I	DKR
December 1	Biotic interactions II	DKR
December 3	Abiotic stress I	DKR
December 6	Abiotic stress II	DKR
December 8	Review	DKR

LAB SCHEDULE		
Week	Lab	Topic
September 13	1	Xylem tension
September 20	2-1	Photosynthesis I
September 27	No lab	
October 4	2-2	Photosynthesis II
October 11	3	Nitrate reductase
October 18	4-1	Rhizobium set-up
October 25	5-1	Brassinolide set-up
November 1	5-2 & 6-1	Brassinolide data collection & Germination assay set-up
November 8	No lab	
November 15	6-2	Germination assay data collection & In-Lab assignment
November 22	4-2	Rhizobium data collection
November 29	No lab	
December 6	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 05 2021 16:40

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**Department Approval**

Electronically Approved - Sep 07 2021 10:41

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**Associate Dean's Approval**