

BIOL 366 – Plant Physiology

Course Outline - Spring Term, 2021

Tuesday, Wednesday, Friday; 1:30-2:20 pm

By Zoom

<https://uvic.zoom.us/j/83337725789?pwd=cFFZUm1zb1lFSzM4VVR2a3lQbmhSQT09>

INSTRUCTORS: Dr. Barbara Hawkins (bhawkins@uvic.ca) Course co-ordinator
Dr. Barbara Ehling (behling@uvic.ca)

SENIOR LABORATORY INSTRUCTOR: Dr. Katy Hind (khind@uvic.ca)
Labs: Tuesdays, 2:30-5:30 pm

COURSE OBJECTIVES: To provide a basic understanding of how plants function. Topics include the capture of light energy for growth and metabolism, water relations, plant nutrition, transport processes, plant development and its control, phytohormones, and responses to environmental stimuli. You will see that plants are very active and responsive to internal and external stimuli. Plant response to the environment will be explored on physiological and molecular levels. The laboratory exercises reinforce these concepts and provide virtual, practical experience in plant physiology.

TEXTBOOK: Taiz et al., **Plant Physiology and Development**, 6th Edition (2015), Sinauer. Older editions are also suitable.

LAB MANUAL: Biology 366 Laboratory Manual 2021- Plant Physiology (will be posted weekly on Brightspace)

COURSE FORMAT: Dr. Hawkins will teach the first half of the course. She will teach synchronous, live lectures on *Zoom* during the lecture period. The slides for each lecture will be made available in advance on the course *Brightspace* site. Although the *Zoom* lectures will be recorded and posted to *Brightspace*, it is strongly recommended that you attend lectures and take notes. Dr. Ehling will teach the second half of the course. She will post recorded lectures on *Brightspace* and hold a Q&A discussion forum live on *Zoom* biweekly, during one of the lecture periods. All quizzes and exams will be based on lecture material, and readings from the text will help reinforce the concepts. Dr. Hind will coordinate the labs. All labs will be synchronous and online.

LABS: Labs begin on Tuesday, January 19th, 2021. There is one lab section (B01 – Tuesdays, 2:30-5:30pm) for all students. We designed the labs to be approximately 90 mins each week, but we anticipate that some weeks will be longer, so please block off the entire three hours in your schedule. You may also want to use this time to work with your lab partners on weekly lab assignments. You will have two Teaching Assistants (TAs) who will lead your lab sessions on *Zoom* each week. Lab videos, lab manual chapters, datasets, and assignments will be posted every Tuesday one week before your lab. The labs will also use the platform *Microsoft Teams*. Please sign up for your free *Microsoft Teams* account before the first lab and allow 48 hours for activation. Here is the link:
<https://onlineacademiccommunity.uvic.ca/O365/teams/>

The laboratory portion of the course is worth 40% of your final grade. You must pass the lab in order to pass the course. Please see Chapter 1 of the laboratory manual posted on *Brightspace* for full laboratory policies and details. Attendance in the synchronous

laboratory sessions is mandatory and we will be taking weekly attendance. If you miss more than two labs for any reason, even with a medical excuse, you will receive a failing grade (F) in the course.

EVALUATION:	6 quizzes (best 5 of 6) (5% each)	25%
	Final examination (cumulative)	35%
	Lab Assignments	40%

GRADE CONVERSION: A+ 90-100%; A 85-89.5%; A- 80-84.5%; B+ 77-79.5%; B 73-76.5%; B- 70-72.5%; C+ 65-69.5%; C 60-64.5% D 50-59.5%; F <49.5%

There will be no supplemental quizzes or final exams. If you miss a quiz for a medical reason, the evaluation breakdown will be adjusted accordingly. Make-up final exams will only be considered if a formal Request for Academic Concession is provided.

PROPOSED COURSE OUTLINE

Date	Lecture Topic	Readings (text – 6th edition)	Lab topics (weekly)
Jan 12-15	Introduction Plant cells & anatomy Water relations	pp. 1-34 pp. 83-117	No lab
19 - 22	Water relations (continued) Mineral nutrition Jan 22 - Quiz	pp. 119-167	Introduction to online labs
26 - 29	Mineral nutrition (continued) Symbionts – mycorrhizae & N fixation	pp. 360-367	Mineral nutrition
Feb 2-5	Photosynthesis Feb 5 - Quiz	pp. 171-198	Water conduction & transpiration
9-12	Photosynthesis (continued)	pp. 203-229 pp. 245-255	Measurement of photosynthesis in C3 & C4 plants
15 - 19	Reading Break- no lectures or labs		No lab
23 - 26	Transport & storage of carbohydrate Respiration Feb 26 - Quiz	pp. 285-308 pp. 317-342	Data analysis & group work
Mar 2-5	Assimilation of mineral nutrients Responses to red light – phytochrome Responses to blue and UV light	pp. 353-360, 367-369 pp. 447-461, 540-541 pp. 462-474	Seed germination & respiration
9-12	Photoperiodism and flowering Mar 10 – Q&A Mar 12 - Quiz	pp. 597-612	Nitrogen fixation
16 - 19	Photoperiodism (continued) Plant signal transduction Plant growth regulators (auxin, GA. etc.)	pp. 407-414 pp. 414-442, 517-539, 567-578, 658-662, 682-686, 708-711	Plant growth regulators I
23 - 26	Plant growth regulators (continued) Mar 24- Q&A Mar 26 - Quiz		Plant growth regulators II
30 - 31	Abiotic stress physiology Biotic stress physiology	pp. 731-760 pp. 715-724, 698-706	Final paper presentations I
April 2	University closed		
6-9	Biotic stress physiology (continued) Apr 7 – Q&A Apr 9 -Quiz		Final paper presentations II

Academic Integrity: Students are required to abide by all academic regulations set as set out in the [University calendar](#), including standards of academic integrity. Violations of academic integrity (e.g. cheating and plagiarism) are considered serious and may result in significant penalties. The exams (quizzes and final exam) must all be completed **individually** and not with a friend/classmate or a group. You are prohibited from sharing any information about the exam with others.

UVic Services:

Student Supports for Online Technology

Learn Anywhere:

<https://onlineacademiccommunity.uvic.ca/LearnAnywhere/>

New Student Mental Health Supports - In addition to providing both face to face and online mental health resources through our new Student Wellness Centre, a new 24x7 phone & online student mental health resource and support program is now available for all UVic students, no matter where they are located, at any time.

<https://www.uvic.ca/services/counselling/resources/supportconnect/>

Counselling Services - Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students. <https://www.uvic.ca/services/counselling/>

Health Services - University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives. UVic Health has transitioned to offering services almost entirely by telehealth. <http://www.uvic.ca/services/health/>

Centre for Accessible Learning - The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations.

<https://www.uvic.ca/services/cal/>.

Elders' Voices - The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students and others in Indigenous ways of knowing and being.

<https://www.uvic.ca/services/indigenous/students/programming/elders/index.php>

Sexualized Violence Prevention and Response - UVic takes sexualized violence seriously. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). If you want to take part in the important prevention work taking place on campus, you can also reach out: Where: Sexualized violence resource office in EQHR; Sedgewick C119, Phone: [250.721.8021](tel:250.721.8021), Email: svpcoordinator@uvic.ca