

BIOL 366 – Plant Physiology

Course Outline - Winter Term, 2023

Lectures: Tuesday, Wednesday, Friday; 1:30-2:20 p.m. - Cunningham 146

Labs: Tuesday or Wednesday, 2:30-5:30 p.m. - Cunningham 136

INSTRUCTORS: Dr. Barbara Hawkins (bhawkins@uvic.ca) - Course co-ordinator
Dr. Sian Kou-Giesbrecht (siankougiesbrecht@uvic.ca)

LAB INSTRUCTOR: Claire McPolin (marieclairemcpolin@uvic.ca)

COURSE OBJECTIVES: To provide an 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 learn that plants are very active and responsive to internal and external stimuli. Plant response to the environment will be explored on biochemical, physical and molecular levels. The laboratory exercises reinforce these concepts and provide practical experience in plant physiology.

TEXTBOOK: Taiz et al., **Plant Physiology and Development**, 7th Edition (2022), Sinauer.
(strongly recommended - older editions are also suitable).

LAB MANUAL: Biology 366 Plant Physiology - Laboratory Manual 2023 (required - available from the Bookstore)

COURSE FORMAT: Dr. Hawkins will teach the first half of the course and Dr. Kou-Giesbrecht will teach the second half. The Powerpoint slides for each lecture will be made available on the Brightspace site for the course. **Please be aware that these are outlines, not detailed notes** that are provided to help you organize and review the lecture material. It is important that you attend lectures and take notes.

EVALUATION:	6 quizzes (best 5 of 6) (5% each)	25%
	Final exam (cumulative – April exam period)	35% (required)
	Lab Assignments and Test	40% (required)

Quizzes and exams will be based on lecture material, and readings from the text will help reinforce the concepts. Quizzes will be 20-30-minute, online, open book, multiple choice/short answer tests to be completed individually, when convenient for you, between 2:00 and 6:30 p.m. on the noted days. Lectures will end at 2:00 p.m. on quiz days. There will be no supplemental quizzes or final exam. If you miss one or two quizzes for a medical reason, the evaluation breakdown will be adjusted accordingly. If you miss more than two quizzes, additional missed quizzes will be given a grade of zero (0). Deferred final exams will only be considered if a formal Request for Academic Concession is provided.

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%

PROPOSED COURSE OUTLINE

Date	Lecture Topic	Readings (7 th edition)	Lab topics
Jan 10-13	Introduction Plant cells & anatomy Water relations	Sec. 1.0-1.8 Ch. 5 & 6	No lab
17-20	Water relations (continued) Mineral nutrition Jan 20 - Quiz	Ch. 7	Introduction to plant morphology, anatomy & physiology
24-27	Mineral nutrition (continued) Symbionts – mycorrhizae Assimilation of mineral nutrients		Mineral nutrition
Jan 31 -Feb 3	Photosynthesis Feb 3 - Quiz	Ch. 9	Plant tissue culture
7-10	Photosynthesis (continued)	Ch. 10 & 11	Water conduction & transpiration
14-17	Transport & storage of carbohydrate Respiration Feb 17 - Quiz	Ch. 12 Ch. 13	Measurement of photosynthesis in C3 & C4 plants
20-24	Reading Break- no lectures or labs		No lab
Feb 28 -Mar 3	Biological nitrogen fixation Responses to light	Sec. 14.5, 24.1 Sec. 4.1-4.2, 16.1-16.9	Plant growth regulators & pigment extraction
7-10	Responses to light (continued) Plant signal transduction Plant growth and development regulators: seed dormancy and germination (abscisic acid / gibberellin) Mar10 - Quiz	Sec. 4.3-4.6 Sec. 17.1-17.5	Nitrogen fixation
14-17	Plant growth and development regulators: vegetative growth / phototropism (auxin), flowering / photoperiodism	Sec. 17.6-17.8, 19.1- 19.2 Sec. 20.1-20.8	Seed germination & respiration
21-24	Plant growth and development regulators: flowering / photoperiodism (continued) reproductive growth, fruit development and ripening (ethylene), cell death (cytokinin) Mar 24 - Quiz	Sec. 21.1, 21.10 Sec. 23.1-23.5	Poster presentations
28-31	Abiotic stress physiology Biotic stress physiology	Sec. 15.1-15.6 Sec. 24.1-24.4	Final Lab test
Apr 4 5	Guest lecture – Dr. Constabel Review Apr 5 - Quiz		

Academic Policies and Regulations:

[Undergraduate policies and academic regulations](#) are described in the UVic Undergraduate Calendar. Please read very carefully the Policy on Academic Integrity, the Academic Concession Regulation/Guidelines, and Academic Important dates.

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, midterm and final exam) must all be completed **individually** and not with a friend or classmate or a group. You are prohibited from sharing any information about the exam with others.

Academic Concession Regulation/Guidelines:

Please refer to the links below when determining what is a ‘valid reason’ to request an Academic Concession and the process for requesting a concession.

[Academic Concessions Regulation](#) and [Academic Concession Guidelines](#)

Academic Important Dates:

Check [here](#). It is the student’s responsibility to attend to Add/Drop dates published in the Calendar (last day to add courses – Jan 25, last day to drop without failure – Feb 28). Students must not assume they will be dropped automatically from any course they do not attend. It is also the students’ responsibility to check their records and registration status.

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 24x7 phone & online student mental health resource and support program is 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.

<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 contact the sexualized violence resource office in EQHR; Sedgewick C119, Phone: [250.721.8021](tel:250.721.8021), Email: svpcoordinator@uvic.ca