

BIOL 366 – Plant Physiology

Course Outline - Spring Term, 2022

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

Welcome to BIOL366!

We acknowledge and respect the ləkʷəŋən peoples on whose traditional territory the University of Victoria stands, and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day. We are thankful to be able to learn together on this land, and strive to make the world a better place.

We welcome everyone to learn in this course and we respect every human being, including all people from all ethnic backgrounds, religious beliefs, sexual orientations, genders, socio-economic backgrounds and abilities. We expect that you treat everyone with respect.

UVic and we as instructors are committed to promoting, providing and protecting a supportive and safe learning and working environment for you and us.

We hope that you enjoy a great spring term with Biol366 Plant Physiology!

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.

Teaching Team:

- Dr. Barbara Ehlting (behlting@uvic.ca), Course co-ordinator and lecturer

Office hours: via Zoom, please email to arrange a time

- Harley Gordon (harleygordon@uvic.ca), lecturer

Office hours via Zoom, please email for appointment

- Dr. Katy Hind (khind@uvic.ca), senior laboratory instructor

Office hours: via Zoom, please email to arrange a time

You can find out more about us on the Brightspace 'Meet your instructor' site!

Office hours are for you to connect with us, discuss course material, and for us to get to know each other.

Lectures and Labs place and time:

Lectures: Tue, Wed, Fri 1.30-2.20 pm

- Classes start Tuesday Jan 11th and end Wednesday April 5th 2022.
- The first two weeks of lectures (Jan 10 – Jan 21) will be delivered online via zoom (<https://uvic.zoom.us/s/86138455116>). Please check the Brightspace site for material and links.
- at the moment we plan to teach face-to-face starting the week of Jan 24th in Cunningham 146

Labs: Mondays (B02) and Tuesdays (B01), 2:30-5:30 pm in Cunningham 136

-Lab 1 will be ONLINE the week of January 17th, 2022. Your TA will send a Zoom link for the lab via email.

-Subsequent labs will be in person (*depending on university guidelines at the time*), starting the week of January 24th, 2022.

Please see the lab manual for additional lab-specific assessments and policies.

You are required to wear and bring your own lab coat to every lab.

Textbook and Lecture slides:

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

- *Lab manual:* Biology 366 Laboratory Manual 2022- Plant Physiology (Lab 1 will be posted on Brightspace; a hardcopy lab manual is required for purchase and will be available in the bookstore by mid-January)

-*Laboratory recordings:* For those that miss laboratories due to illness, laboratory videos will be posted for your review.

- *Lecture notes* will be posted on Brightspace for you

- *Lecture recordings:* We plan to record the live lectures

*All course content and materials (lecture notes and exam/quiz questions) are made available by instructors for educational purposes and for the exclusive use of students registered in their class. The material is protected under copyright law, even if not marked with a ©. **Any further use or distribution of materials to others requires the written permission of the instructor, except under fair dealing or another exception in the Copyright Act. SHARING COURSE CONTENT (e.g., LECTURE SLIDES, QUIZ QUESTIONS) through note-sharing sites or other means VIOLATES THE POLICY ON ACADEMIC INTEGRITY. Violations may result in disciplinary action under the Resolution of Non-Academic Misconduct Allegations policy (AC1300).***

Learning Outcomes:

- You will learn classical plant physiology, e.g. water transport and photosynthesis, and how to experimentally analyze those processes

- You will learn plant molecular signaling cascades which allow plants to respond and react to their environment accordingly, e.g. plant (a)biotic stress responses
- You will learn experimental procedure used for plant research
- You will learn to read and interpret scientific graphs

Tentative lecture schedule:

Week of	Lecture Topic	Readings (text – 6th edition)	Lab topics (weekly)
Jan 10-14	Introduction Plant cells & anatomy Water relations	pp. 1-34 pp. 83-117	No labs
17-21	Water relations (continued) Mineral nutrition	pp. 119-167	Introduction to Plant Physiology (ONLINE)
24 - 28	Mineral nutrition ion uptake Assimilation of nitrogen and sulfur Symbiotic nitrogen fixation		Mineral nutrition
Jan/Feb 31-4	Photosynthesis: light reaction Dark reaction	pp. 171-198	Plant tissue culture
7-11	Photosynthesis : C4 and CAM Ecological aspects of photosynthesis Respiration	pp. 203-229 pp. 245-255	Water conduction & transpiration
14 - 18	Phloem transport and proteomics		Measurement of Photosynthesis in C ₃ & C ₄ plants
21 - 25	Reading Break- no lectures or labs		

Feb/Mar	Midterm		
28-4	Responses to red light – phytochrome Responses to blue and UV light	pp. 447-461, 540-541 pp. 462-474	Plant growth regulators and pigment extraction
7-11	Photoperiodism and flowering	pp. 597-612	Nitrogen fixation
14 - 18	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	Seed germination & respiration
21 - 25	Plant growth regulators (continued)		Poster presentations
28 - 1	Abiotic stress physiology Biotic stress physiology	pp. 731-760 pp. 715-724, 698-706	Final lab exam
April			
4-6	Biotic stress physiology (continued)		No labs

How to be successful?

Do you want a good grade in this course? Look for the 'How-to-Study' guide on Brightspace. But here is the **most important advice**: I want you to know that **off – task activities** (checking email, surfing the internet, checking social network sites) during lectures and study time is **negatively affecting students' grades by more than 10%** (Sana *et al.*, 2013).

There will be a **Q&A forum on Brightspace** for scientific questions. This is a good way to connect with your peers: Help and learn from each other! Please ask questions and please help other students by answering questions. This is also a good study tool to prepare for tests!

Exam times can be very stressful for you. In order to stay healthy physically and mentally make sure that you get enough sleep, eat well, exercise and take breaks. Avoid last minute study panic by working regularly throughout the term: we recommend that you spend at **least 1-2 hours studying after each lecture and lab!**

Life can happen and it can happen to every one of us. If there is any situation arising that makes it difficult for you to be successful in this class, please come and talk to me (BE). I am sure that together we can find solutions!

If you miss too many components of this course, an alternative assessment might be considered and your grade will be calculated accordingly. If you miss too many components and you are not able to compensate for missed assessment, you will be given an N grade.

Evaluation:

- Lecture midterm on Feb 18 th during class time	25%
- Final examination (cumulative)	40%
- Lab Assignments	20%
- Final lab exam (cumulative)	15%

If you cannot attend an exam for a valid reason (illness, accident, family crisis or athletic competition representing UVic), it is your responsibility to inform the course coordinator (BE) as soon as possible. A deferred midterm will be scheduled. Make-up final exams will only be considered if a formal Request for Academic Concession is provided. If you miss the midterm and/or the final (lab) exam you will receive an N.

The laboratory portion of the course is worth 35% of your final grade. You must pass the lab in order to pass the course. Please see Lab 1 of the laboratory manual posted on *Brightspace* for full laboratory policies and details.

Attendance in the labs 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 an incomplete grade (N) in the course.

Students must pass both the lecture & lab by scoring at least an overall 50% in both components in order to pass the course.

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%

How do we connect?

- *Brightspace* will be used to post lecture slides, assignments, Q&A forums, announcements, zoom links, and more...

- *Administrative questions:* If you have any administrative related questions, please post your question on Brightspace under 'Administrative Q & A forum'. Those could be questions like 'When do we write quiz 1?' (Hint: often you find the answers to those question in the course syllabus or on Brightspace)

- *Scientific questions:* if you have any topic related question, please post your question on Brightspace under 'Scientific Q & A forum'. This is a great study tool before exams!

- *Lab-specific questions:* if you have any questions related to the laboratory content, please post your question on Brightspace under 'Lab Q & A forum'.

Important dates this spring term 2022. Events happen during class time unless noted otherwise.

Jan 12 th	Introduction of the course and the team via zoom (synchronous)
Jan 23 rd	Last day for 100% reduction of second term fees
Jan 24 th	Planned return for face-to-face teaching
Jan 26 th	Last day for adding courses that begin in the second. term
Feb 13 th	Last day for 50% reduction of tuition fees for standard courses
Feb 18 th	Midterm during class time,
Feb 21-25	Reading week, no lectures, no labs
Apr 6 th	Last class for biol366
April	Final exam during exam period, cumulative

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. You are prohibited from sharing any information about the exam with others.

Public Health Concerns, Expectations and Policies

We are currently living through a global pandemic in which we have a shared responsibility in maintaining safety in our communities. In the words of Bonnie Henry – “Be Kind, Be Calm, and Be Safe”. All staff and students are expected to abide by the University of Victoria Return to Campus Guidelines (<https://www.uvic.ca/return-to-campus/>) and according to the self-assessment tool provided here: <https://bc.thrive.health/covid19/en>. Any person that does not pass the self-assessment must refrain from attending classes and/or laboratories. This applies equally to students, instructors, teaching assistants, and staff. Provisions will be made to accommodate such absences, via recorded materials and/or resources that will be posted on the course website. If you are absent from labs due to illness, you are required to keep up with the material and assignments by watching the videos posted on Brightspace. Class data will be shared online with those that are absent. If necessary, classes and labs might be moved online beyond Jan 24th.

Other resources for you to maintain a healthy student life:

- Stay healthy! A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep, and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. **You are not alone.**

- **Support Connect:** 24/7 help by phone or online

<https://www.uvic.ca/student-wellness/contacts/emergency-contacts/index.php#ipn-supportconnect-24-7-help>

- **Student Wellness Centre** to support students’ mental, physical and spiritual health

<https://www.uvic.ca/student-wellness/>

- **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/](#). The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

- **Office of Indigenous Academic and Community Engagement (IACE)** has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being. <https://www.uvic.ca/services/indigenous/students/index.php>

- **Office of Student life:** student conduct, Student mental health, Sexualized violence awareness,... : <https://www.uvic.ca/services/studentlife/index.php>