BIOL 366 – Plant Physiology

Course Outline - Spring Term, 2020
Tuesday, Wednesday, Friday; 10.30 -11.20 am
Cunningham 146

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COURSE OBJECTIVES: ***To provide a basic understanding of how plants function.*** We will explore how plants use light for energy and to direct growth, how they take up and transport water and nutrients, and how plant hormones help to organize growth and development. You will see that plants are very active and responsive to internal and external stimuli. Such plant responses to their environment will be explored on physiological and molecular levels. The laboratory exercises reinforce these concepts and will give you practical experience in plant physiology.

TEXTBOOK: Taiz et al., **Plant Physiology and Development**, 6th Edition (2015), Sinauer. Text is also placed on Reserve at the Library. Older editions are also suitable.

LAB MANUAL: Biology 366 Laboratory Manual 2020 Plant Physiology (available from the Bookstore)

Web Material: Outline notes and slides for the lectures will be made available in advance on CourseSpaces. ***Please be aware that these are not detailed notes, and lectures cover the material more extensively.*** It is imperative you ***attend lectures and take notes***. Exams will be based primarily on lecture material, and readings from the text will help reinforce the concepts.

EVALUATION:	Midterm examination (Feb 25, 2020)	20%
	Lab Assignments	35%
	Final examination (April, 2020)	45%

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 midterm or final exams. You must score over 50% in both lab and lecture components in order to pass the course. If you miss the midterm for a **documented** 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.

We know exam time can be very stressful. You can reduce stress by avoiding last minute studying, reviewing the material every week, and discussing it with your classmates. Stay healthy, and talk to us if you have any concerns and questions. UVic Counselling Services is free and can help if you feel overwhelmed: https://www.uvic.ca/services/counselling/

Please be aware the University deals harshly with plagiarism. See UVic's guidelines on how to avoid it: https://www.uvic.ca/library/research/citation/plagiarism/

COURSE OUTLINE 2020

Date	Lecture Topic	Readings (text – 6th edition)	Lab topics (weekly)
Jan 7	Introduction to Plant Physiology		No lab
8	Plant cells & anatomy	pp. 1-34	
10	Water & plant cells	pp. 83-97	
14	Plant-water relations	pp. 99-117	1. Solutions,
15	Mineral nutrition – essential elements	pp. 119-131	dilutions, plant
17	Mineral nutrition – ion uptake by roots	pp. 131-140, 163-165	morphology
21	Mineral nutrition – ion uptake by cells	pp. 143-163	2. Mineral nutrition
23	Photosynthesis – light reactions I	pp. 172-195	
24	Photosynthesis – light reactions II	pp. 172-195	
28	Photosynthesis – dark reactions	pp. 203-220	3.Plant tissue culture
29	C3, C4 & CAM plants	pp. 220-230	
31	Ecological aspects of photosynthesis	pp. 246-255	
Feb 4	Transport & storage of carbohydrate	pp. 285-308	4. Water conduction
5	Respiration and general metabolism	pp. 317-342	& transpiration
7	Assimilation of nitrogen	pp. 353-360, 367-9	
11	Sulfur & iron metabolism	pp. 367-372	5. Measurement of
12	Symbiotic nitrogen fixation	pp. 360-367	Photosynthesis in
14	Responses to red light - phytochrome	pp. 448-461, 540-541	C_3 & C_4 plants
17-21	**Reading Break- no lectures or labs**		**No lab**
25	**MIDTERM TEST**		6. Plant growth
26	Blue and UV light responses	pp. 462-474	regulators and
28	Photoperiodism and flowering	pp. 597-612	pigment extraction
Mar 3	Plant Signal Transduction	pp. 407- 414;	7. Nitrogen fixation
4	Plant growth regulators - auxin	pp. 414-442; 526-539,	
6	Auxin II		
10	Gibberellins (elongation, germination)	pp. 517-525,	8. Seed germination
11	Cytokinins (cell division)	pp. 567-574, 682-683,	& respiration
13	Abscisic acid (ABA) and dormancy	431-433	
17	Ethylene and ripening	pp. 517-519, 436-437; 658-662, 684 – 686	9. Poster presentations
18	Strigolactones	429, 574-578	
20	Other novel plant regulators		
24	Jasmonates and plant stress signals	420-421, 428, 708-711,	**Lab Exam**
25	Secondary metabolism/chemical ecology*	pp. 693-707	
27	Mycorrhizae*		
31	Biotic stress physiology	pp. 715-724, 698-706	No lab
April 1	Abiotic stress physiology	Chapter 24	
3	Special Topics & Review		

* guest lectures