

HORTICULTURAL PHYSIOLOGY

HOS 6932 - 3 CREDITS

FALL 2017

INSTRUCTOR: Dr. Rebecca L. Darnell
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OFFICE HOURS: By appointment

CLASS MEETING TIME & LOCATION: MWF 5th period. 2316 Fifield Hall.

COURSE DESCRIPTION: A broad-based, introductory course covering basic concepts and processes of plant physiology, including water relations, nutrient absorption, photosynthesis, respiration, carbohydrate partitioning, nutrition, and hormones.

COURSE OBJECTIVES: At the end of the course, students will be able to describe basic plant physiology concepts and how they relate to plant growth and development.

INSTRUCTIONAL METHOD: This is a lecture based course with no laboratory. PowerPoint is not typically used (except in rare cases); however, handouts using drawings, tables, and figures are used to illustrate concepts. Handouts will be posted on the course website.

WEBSITE: The course syllabus, handouts, and old exams are available on Canvas. Lecture notes will **NOT** be available.

GRADING: Based on 2 exams (100 pts. each), a cumulative final (140 pts.), 3 homework assignments (20 pts. each), and journal club (100 pts). Exam material will come from lectures and class discussions. Grading scale:

90-100	A	70-74	C
85-89	B+	65-69	D+
80-84	B	60-64	D
75-79	C+	<60	E

TEXT: Recommended: Taiz, L. and E. Zeiger. **2015.** *Plant Physiology and Development*. 6th edition, Sinauer Assoc., Inc. Older editions of this text are available. There is a website associated with this text, which has additional readings. See: www.plantphys.net.

HOMEWORK ASSIGNMENTS: 22-4 questions to be answered using lecture notes, reading materials, and/or other written sources. You may discuss homework questions with your classmates; however, **answers must be in your own words**. If two (or - perish the thought - three or more) people turn in homework where a question or questions have the same answers, all will get a 0. Homework assignments will be posted on Canvas and due on the following dates:

<u>Posted</u>	<u>Due</u>
9/11/2017	9/13/2017
10/16/2017	10/18/2017
11/13/2017	11/15/2017

Homework assignments must be uploaded to Canvas by midnight on the due date as a Word doc. Late assignments WILL NOT be accepted.

JOURNAL CLUB: In order to obtain graduate credit for this course, you must complete a presentation and a critical review of journal articles in an area pertaining to a subject area we cover in this course. This will be done at a separate time (outside of lecture time) and attendance of all graduate students is required. To begin, we will meet to discuss how to critically review an article. Then, I will present a critical review to you as an example. I will then help each of you select articles (hopefully that pertains to your research) for you to present and critically analyze in a journal club format. Thus, we must plan on meeting extra hours outside of lecture time during the course of the semester.

This extra assignment will be worth 100 points, and so the point total for the course will be 500 (instead of the 400 for undergraduates).

COURSE POLICIES: Class attendance is the student's responsibility. Keep in mind, however, that exam questions come from lectures and class discussions. Class participation is highly encouraged!

Requirements for make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

CLASSROOM DECORUM: Cellular and other types of communications devices must be turned off during class (if it buzzes, beeps, chimes, plays music, or makes any other sound, turn it off). Please keep reading of non-class materials reserved for an appropriate location such as the lounge area in this building.

If you come in late to class or have to leave early, please sit in the back so as not to disturb the other members of the class.

UF POLICIES:

UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES:

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

UNIVERSITY POLICY ON ACADEMIC MISCONDUCT: UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honorcode/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.”

ONLINE COURSE EVALUATION: Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

CAMPUS HELPING RESOURCES: Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

Health and Wellness

U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575

Sexual Assault Recovery Services (SARS) Student Health Care Center, 392-1161.

University Police Department, 392-1111 (or 9-1-1 for emergencies). <http://www.police.ufl.edu/>

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learningsupport@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <http://www.crc.ufl.edu/>

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

HOS 4304 - FALL 2016
Horticultural Physiology
 *Tentative lecture schedule

<u>Date</u>	<u>Topic</u>	<u>Reading</u>
Aug. 22	Introduction	
24, 26	Organization of Plant Growth Cell Tissue Tissue systems Morphological structures	p. 5-34; 39-48
29	Organic Compounds	
31	Proteins/Enzymes	
Sept. 2	Enzyme kinetics, Michaelis-Menten plots Factors influencing rates of enzymatic reactions	www.plantphys.net (Appendix 1, p. A1-10 to A1-21)
5	No Class - Labor Day	
7	Enzymes (cont.)	
9, 12	Water Relations Water potential Water movement	p. 83-97
14, 16	Transpiration Transpirational flux equation Stomatal mechanism Factors influencing transpiration Daily patterns of transpiration	p. 99-117 p. 269-276
19, 21, 23	Nutrient Absorption/Solute Transport Nutrient movement from soil to leaf Membrane transport proteins Mechanisms of absorption	p. 142-167
26	Nitrogen Metabolism	p. 353-360
28	EXAM I	
30	Photosynthesis – Overview	
Oct. 3, 5	Light reaction	p. 171-198
7, 10, 12	CO ₂ fixation reactions C3 Photorespiration C4 CAM	p. 203-211 p. 211-220 p. 220-228 p. 228-230
14	No Class - Homecoming	
17, 19	Factors affecting photosynthesis	p. 245-264
21, 24, 26	Carbohydrate partitioning Sucrose/starch synthesis	p. 230-242

		Phloem loading	p. 300-305
		Phloem translocation	p. 285-300
		Phloem unloading	p. 305-308
		Sink allocation	p. 309-311
Oct.	28	EXAM II	
	31	Respiration	
Nov.	2, 4	Glycolysis, Citric Acid Cycle, Electron Transport (ET)/ATP synthesis	p. 317-342
		Alternative ET	
		Factors affecting respiration	p. 342-343
	7, 9	Gene Expression/Signal Transduction	p. 62-78; 407-414
	11	No Class – Veteran’s Day	
	14, 16	Hormones & Plant Development	p. 414-421
	18, 21	Hormone Signaling	p. 431-445
	25, 27	No Class- Thanksgiving	
	28, 30	Phytochrome	p. 447-463
Dec.	2, 5, 7	TBD	

Final exam: Wed., Dec. 14, 3:00 – 5:00 p.m.

*This is a tentative schedule, based on previous semesters; topics and dates may be adjusted. Students will be notified in class of any changes to the course schedule.