

HORTICULTURAL PHYSIOLOGY

HOS 6932 - 3 CREDITS

FALL 2018

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>
9/12/2018	9/15/2018
10/10/2018	10/12/2018
11/14/2018	11/16/2018

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).

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.

COURSE POLICIES

Attendance and Make-Up Work: 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>

Online Course Evaluation Process: Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at www.evaluations.ufl.edu

Evaluations are typically open during the last two or three weeks of the semester. Students will be notified of the specific times when evaluations for this course are open. Summary results of these assessments are available to students at: www.evaluations.ufl.edu/results

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit 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."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams).

Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken when appropriate.

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

- Disability Resource Center, 0001 Reid Hall, (352) 392-8565, www.dso.ufl.edu/drc/

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.

- University Counseling & Wellness Center, 3190 Radio Road, 392-1575, www.counseling.ufl.edu
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu
- Career Resource Center, CR-100 Reitz Union, 392-1601, www.crc.ufl.edu/next-level

Student Complaints

- Residential Courses: www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

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Horticultural Physiology
 *Tentative lecture schedule

<u>Date</u>	<u>Topic</u>	<u>Reading</u>
Aug. 22	Introduction	
24, 27	Organization of Plant Growth	p. 5-34; 39-48
	Cell	
	Tissue	
	Tissue systems	
	Morphological structures	
29	Organic Compounds	
31	Proteins/Enzymes	
Sept. 3	No Class – Labor Day	
5, 7	No Class	
Sept. 10, 12, 14	Enzyme kinetics, Michaelis-Menten plots	www.plantphys.net : (Appendix 1, p. 10-21)
	Factors influencing rates of enzymatic reactions	
17, 19	Water Relations	p. 83-97
	Water potential	
	Water movement	
21, 24, 26	Transpiration	
	Transpirational flux equation	p. 99-117
	Stomatal mechanism	p. 269-276
	Factors influencing transpiration	
	Daily patterns of transpiration	
28	Exam 1	
Oct. 1, 3, 5	Nutrient Absorption/Transport (Dr. Gerardo Nunez)	p. 142-167
	Nutrient movement from soil to leaf	
	Membrane transport proteins	
	Mechanisms of absorption	
8, 10	Photosynthesis – Overview/Light reaction	p. 171-198
12, 15, 17	CO ₂ fixation reactions	
	C3	p. 203-211
	Photorespiration	p. 211-220
	C4, CAM	p. 220-228
19, 22	Factors affecting photosynthesis	p. 245-264
24	Respiration	
	Glycolysis, Citric Acid Cycle	p. 317-342
26	Exam II	
29, 31	Respiration (cont.)	
	Electron Transport (ET)/ATP synthesis	
	Alternative ET	
	Factors affecting respiration	p. 342-343
Nov. 2	No Class – Homecoming	

	5, 7	Nitrogen metabolism (Dr. Gerardo Nunez)	p. 353-360
	9	Carbohydrate (CHO) partitioning Sucrose/starch synthesis	p. 230-242
Nov.	12	No Class – Veteran’s Day	
	14, 16, 19	CHO partitioning (cont.) Phloem loading Phloem translocation	p. 300-305 p. 285-300
	21, 23	No Class- Thanksgiving	
	26	Carbohydrate partitioning (cont.) Phloem unloading Sink allocation	p. 305-308 p. 309-311
	28, 30	Phytochrome	p. 447-463
Dec.	3, 5	Hormones (Dr. Gerardo Nunez)	p. 414-421

Final exam: Wed., Dec. 12, 10 a.m. – 12 p.m.

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