

ADVANCED HORTICULTURAL PHYSIOLOGY

**HOS 6932 - 3 CREDITS
SPRING 2017**

INSTRUCTOR: R. L. Darnell
1131 Fifield Hall
273-4789
rld@ufl.edu

OFFICE HOURS: By appointment.

CLASS MEETING TIME & LOCATION: MWF 3rd period. 2316 Fifield Hall.

COURSE DESCRIPTION: A whole-plant physiology course covering vegetative and reproductive biology and environmental effects on plant growth and development. Culture and management of specific crops will not be covered.

COURSE OBJECTIVES: At the end of the course, students will 1) understand environmental influences on plant growth and development and the relationship to basic physiological processes and 2) gain an appreciation for structure and function of the whole plant.

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.

WEB SITE: The course syllabus, handouts, and old exams are available at the following site:
<http://hos.ufl.edu/hos4341/>

Lecture notes will **NOT** be available on the web.

PREREQUISITE: HOS 4304 OR BOT 3503

GRADING: GRADING: Based on 2 exams (100 pts. each), a cumulative final (140 pts.), 3 homework assignments (20 pts. each), and an out-of-class time journal club (100 pts., see below). 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

FINAL EXAM: Monday, April 24, 7:30-9:30 a.m.

TEXT: None required. Recommended: Taiz, L. and E. Zeiger, 2010. *Plant Physiology*. 6th edition, Sinauer Assoc., Inc. There is a web site associated with this text, which has additional readings. See: www.plantphys.net.

HOMEWORK ASSIGNMENTS: Short answer questions to be answered independently, using lecture notes, reading materials, and/or other written sources. Homework assignments will be handed out and due on the following dates:

<u>Handout</u>	<u>Due</u>
1/25/17	1/27/17
2/27/17	3/1/17
4/3/17	4/5/17

Homework assignments must be turned in at the beginning of class on the due date. 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 weekly meeting** 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!

Make-up exams will be given only for documented emergencies.

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 newspapers and other 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 requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

UNIVERSITY POLICY ON ACADEMIC MISCONDUCT: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <http://www.dso.ufl.edu/students.php>.

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 as appropriate.

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.

- *Counseling and Wellness Center*, 3190 Radio Rd. 352-392-1575
<http://www.counseling.ufl.edu/cwc/>
- *Career Resource Center*, CR-100 JWRU, 392-1602, www.crc.ufl.edu/

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.

0001 Reid Hall, 392-8565, www.dso.ufl.edu/drc/

HOS 6932 - Spring 2017
Advanced Horticultural Physiology
Tentative Lecture Schedule

<u>Date</u>	<u>Topic</u>	<u>Reading</u>
Jan. 4	I. Introduction	
	II. Growth and Development	
	A. Vegetative Growth	
9	1. Seed structure, development, germination	p. 514-528
11	2. Juvenility/Maturation	p. 591-594
	Seasonal vegetative growth - shoot/root growth	
13	3. Dormancy	
	Types	
	Onset/Release	
	Chilling Requirement	
	Heat Unit Requirement	
16	NO CLASS - Martin Luther King, Jr. Day	
18, 20, 23	Dormancy (continued)	
	B. Reproductive Growth	
25, 27	1. Flower Bud Initiation	
	Photoperiod	p. 594-605
	Vernalization	p. 605-608
30	Genetics of FBI	p. 608-615
Feb. 1	2. Flowering	
3	3. Fruit Set and Growth	
6	4. Maturation/Ripening	
8	EXAM I	
	III. Environment	
	A. Solar radiation	
10	1. Specific heat, heat of fusion, heat of vaporization	
13	2. Factors affecting distribution of solar radiation	
	B. Temperature relations	
15, 17, 20, 22, 24	1. Growing Season	p. 736
	Thermoperiodism/DIF	
	Root/shoot temperatures	
	Chilling Injury	p. 752-753
27, Mar. 1, 3	2. Dormant Season	
	Freezing	p. 737; 754-755
Mar. 6-10	SPRING BREAK	
	C. Light Relations	
13	1. Photomorphogenesis/Phototropins/	p. 462-473; 535-536

15	Cryptochromes	
17	2. Phytochrome	p. 447-463
20, 22, 24	EXAM II	
	3. Light relations within plant canopy	
	Quantity vs Quality	
	Shade effects within canopy	p. 540-542
27	4. Modification of Light Environment	
	D. Water Relations	
29, 31	1. Flooding	p. 737; 749-750
Apr. 3, 5, 7	2. Drought	p. 735-736; 748-749; 755-758
10	3. Growth Control via Water	
Apr. 12-19	TBD	

Final Exam: Monday, April 24, 7:30-9:30 a.m.