

Plant Physiology

BIOL 311/511 – Fall 2007

Lecture: MWF 8:00 – 8:50 AM in LS 214

Laboratory: R 2:00 – 4:50 PM in LS 214

Instructor:

Mathew Dornbush, Ph.D.

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Office Hours: T 9-10, W 12-1

Supplies, etc:

- Plant Physiology (4th edition), by L. Taiz and E. Zeiger
- Supplementary information at www.plantphys.net
- Writing standards and expectations can be found at http://www.uwgb.edu/nas/docs/Writing_in_Biology.pdf (Recommendations for Student Writing in Biology)
- Safety Glasses for lab
- Lectures, grades, laboratory manual, etc. on D2L

Grade Evaluation:

Assignment	Points
1-hr Exam 1	100
1-hr Exam 2	100
1-hr Exam 3	100
Final	150
Paper	100
Laboratory Project	50
Lab attendance and participation	50
TOTAL	650

- **Course Objectives:** This is an upper level undergraduate and graduate level course. As such, the primary emphasis of this class is to 1) train scientists in critical thinking and experimental methods, 2) provide both broad and narrow scale understanding of plant functioning, 3) foster skepticism and promote independent inquiry.
- **Grading Scale:** Grades are based on a 90, (<90 to 88) 80, (<80 to 78) 70, 60, <60% scale.
- **Exam Policies:** There are no makeup exams. If you are unable to attend class on the day of a scheduled exam I **MUST** be contacted prior to class, and I must be provided with valid proof for your absence. Last minute emails do not suffice, a phone call is

needed. If you are unable to reach me by phone, leave a message for me at the Natural and Applied Sciences office (phone #: 465-2371).

- **Final Examination: Mon. Dec. 17th, 8:00 - 10:00 AM (LS-214) - The exam is 100 points from new material and 50 points from cumulative material.**
- **Paper:** This paper **requires** two submissions. All topics must be approved by me by **Friday September 21st**. Manuscripts are expected to average 10 pages of text (citations, figures, etc not included) and all sources are expected to be from the primary literature. The first submission should be a final product and is **due on Wednesday, October 31st**. Your second submission will require extensive improvements upon the first submission, and you can improve your first score by no more than two letter grades. The second submission is **due on Wednesday, December 12th**. No partial credit is given for turning in only a single submission. Writing requirements can be found at http://www.uwgb.edu/nas/docs/Writing_in_Biology.pdf (Recommendations for Student Writing in Biology)
- **Laboratory Project:** See specific handout for this assignment for details. **This is a group project and it is due on Wednesday, November 28th.**
- **Academic Integrity:** There is no single factor more important to science than personal honesty. Scientific investigations, even within large collaborative projects, are largely conducted alone in the field or laboratory, and as such, scientists must be self-regulating. The scientific method is dependent upon this honesty; a lack of integrity directly undermines science. For this reason I will pursue all matters of academic dishonesty to the fullest extent possible.
 - **Plagiarism** includes both the use of another individual's ideas or their exact words without crediting them. When in doubt either ask me, or cite the work to be on the safe side.

University policy for student academic dishonesty is found at

http://www.uwgb.edu/deanofstudents/policies_procedures/students/uws14_17_18.html

- **Special Needs:** It is the policy of the University of Wisconsin-Green Bay to provide appropriate and necessary accommodations to students with documented physical and learning disabilities. This is your right, and I strongly urge any student who suspects that they may have, or are aware of existing disabilities to contact Education Support Services at 465-2671 to make appropriate arrangements to maximize your success.

Tentative Lecture Outline:

Date	Topic	Readings
	<u>INDEPENDENT REVIEW</u>	
Sept 5	Plant Cells	1
	Biochemistry basics	Web Chapter 2
	<u>INTRODUCTION</u>	
	Introduction	None
Sept 7 - 24	<u>Water uptake and transport</u>	
	H ₂ O Uptake and Internal Transport	3, 4, 18, (26)
Tentatively Sept 28th	EXAM 1	
Sept 26; Oct 1 -17	<u>Nutrient uptake and transport</u>	
	Plant Nutrient Uptake and internal Transport	5, 6, (12)
Tentatively Oct 22nd	EXAM 2	
Oct 19, 24-31; Nov 2 - 12	<u>PHOTOSYNTHESIS</u>	
	Photosynthetic Light Reactions	7
	Carbon Reactions (Dark Reactions)	8
	Ecological Implications	9
<i>(if time permits)</i>	<i>Phloem Transport and Carbon Allocation</i>	10
Tentatively Nov 19th	EXAM 3	
Nov 14, 16, 21, 26 -30;	<u>TROPISMS AND GROWTH</u>	
Dec 3 -14	Seed Germination	17, 20, 23
	Seedling emergence and Plant Growth	15, 16, 19, 21, 24
	Phenology	22, 25
<i>(if time permits)</i>	<u>Plant-microbe/animal Interactions</u>	
	<i>Plant-microbe Interactions</i>	
	<i>Plant-symbiont Interactions</i>	Assigned
	<i>Plant-herbivore Interactions</i>	13
Dec 17th, 8 to 10 AM	FINAL	

* Lecture organization does not generally follow that of the textbook. Relevant information is presented in chapters listed, but read at your own pace and you are only required to read topics covered in class.

Laboratory

- Laboratory Material: Handouts available on D2L
- **Attendance and participations are mandatory** (50 pts at my discretion)

Laboratory Schedule:

Date	Topic
Sept.	<p>6th Leaf collection for pigment analysis (collection 1 of 3) Experimental plantings and</p> <p>13th Leaf Acclimatization (1 of 2)</p> <p>20th Leaf Acclimatization (2 of 2) Leaf Collection for pigment analysis (collection 2 of 3)</p> <p>27th Water exchange</p>
Oct.	<p>4th Water exchange</p> <p>11th Photosynthesis (day 1 of 2)</p> <p>18th Photosynthesis (day 2 of 2)</p> <p>25th Plant Respiration (day 1 of 2) Leaf Collection (collection 3 of 3)</p>
Nov.	<p>1st Plant Respiration (day 2 of 2)</p> <p>8th Photosynthetic Pigments (day 1 of 2)</p> <p>15th Photosynthetic Pigments (day 2 of 2)</p> <p>22nd Thanksgiving Break – NO CLASS</p> <p>29th Plant Symbionts (day 1 of 2)</p>
Dec.	<p>6th Plant Symbionts (day 2 of 2)</p> <p>13th Grant Evaluations (group projects)</p>