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BIOO 434.02: Plant Physiology Laboratory

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BIOO 434 - PLANT PHYSIOLOGY LABORATORY - SYLLABUS

SPRING 2015

Teaching Assistant: Lauren Waller, NS 311; email: lauren.priestman@mso.umt.edu

Office Hours: Tuesdays 3:00 – 5:00 PM, and by appointment

Meeting Day/Times: Tuesdays 1:10 - 3:00 PM

Laboratory Room: Natural Sciences 207

Texts: A. Sala. Plant Physiology Lab Manual

Course Description:

This course consists of a series of laboratory exercises intended to familiarize students with core concepts and techniques in plant physiology. We may also read and discuss some scientific papers in the primary literature. The lab complements the lecture course BIOO 433, which is a **necessary** pre-requisite. This is a “Partial Writing Course”: grades are based on writing assignments with at least one of the assignments revised based on instructor feedback.

Main Laboratory Objectives:

- To learn some common research techniques used in plant physiology
- To increase your appreciation for plants and their complex, integrated nature
- To increase your understanding of how plants grow, develop and sense their environment
- To learn to write scientific reports
- To learn to prepare a short research proposal
- To learn how to summarize scientific ideas in oral communication

Course Structure:

The course consists of a **two hour laboratory** every week. Most of the labs are intended to help students visualize main basic concepts and common techniques in plant physiology (see Laboratory Schedule). Students will learn basic data analysis techniques and how to interpret results from simple experiments. At the end of each experimental laboratory, students are asked to either answer the questions posted in the lab manual (worksheet) or to write a short scientific report with an introduction, methods, results and interpretation. Appendix 1 of the lab manual has guidelines on how to write a short report. Although students work in pairs in the classroom and are encouraged to discuss the results in groups, each student is required to write her/his own reports or worksheets independently. Therefore, different wording and writing structure is expected. Failure to comply with this rule constitutes academic dishonesty and with grounds for failure of the course for all students involved.

Students are also required to write a research proposal during the semester. Undergraduate students will work in groups of two to prepare the proposal and graduate students will work individually. Students might elect to pursue their proposed research during the semester for extra credit in the course, or as an independent study. At the end of the course students will present their proposal to the rest of the class. Students will first submit a title and a one-page outline of their proposal, then a first complete draft for instructor review and feedback, and lastly a revised version of the first draft based on the instructor's feedback. The revised proposal serves to fulfill the writing requirements. The lab manual has a section on how to write a research proposal. Please, make sure to read this section. The instructors will be happy to help you any time. **You are encouraged to approach either the teaching assistant or the course instructor for guidance on this and all other aspects of the course.**

Grading: Late work will lose 10% of the assigned points per day.

6 Laboratory worksheets (15 each):	90	90-100% = A
3 Laboratory short reports (20 each):	60	80-89% = B
Proposal	40	70-79% = C
Proposal Presentation	20	60-69% = D
Total:	210	<60% = F

In the past, the lab and the lecture were listed as one single, 4-credit course. However, the lecture and lab courses are now listed independently to give the opportunity to students whose major does not require the lab+lecture course, but are interested in the topic to take only the lecture. **Students taking both courses should view them as a single 4-credit course and will receive the same combined grade for both. The lab portion will make up one-third of your entire grade.**

Unfortunately, due to the nature of the course, **laboratories cannot be made up.** If you have an extenuating circumstance that forces you to miss a lab, please talk to the instructors **in advance** to make some other acceptable arrangements at the discretion of the teaching assistant or course instructor. Any student that misses 3 or more laboratory sessions will automatically fail the lab course. If the student is also taking the lecture, a lecture grade will be given according to the student's performance in lecture. Failure to appear in lab or to turn in homework for a lab session counts as a missed session.

Adds, drops and changes of grade: This course follows university policies on drops, adds, changes of grade option, or changes to audit status. Please check the Registrar's Office Calendar for important deadlines and dates after which course changes are not automatically approved. Requests to drop a course or change the grade basis to benefit a student's grade point average will not be approved. A grade of C or higher will be considered passing for the P/NP option.

Special circumstances:

Only students registered with Disability Student Services (see: <http://life.umt.edu/dss/>) will be considered for disability accommodation as needed. Please contact the teaching assistant or the main instructor at least **one week before** the accommodation is required.

PLANT PHYSIOLOGY LABORATORY (BIOO 434) SCHEDULE 2015

Read each lab in advance.

Assignments are due the following week (10% grad reduction per day late).

Week	Date	Topics	Homework	Assignments Due
1	Jan. 27	General Introduction		
2	Feb. 3	LAB 1: Basics of Plant Anatomy	WORKSHEET	
3	Feb. 10	LAB 2: Data Analysis and Graphs	REPORT	Lab 1 Worksheet
4	Feb. 17	LAB 3: Tissue Water Potential	WORKSHEET	Lab 2 Report
5	Feb. 24	LAB 4: Mineral Nutrition: Setup	none	Lab 3 Worksheet & <u>PROPOSAL TITLE & OUTLINE</u>
6	Mar. 3	LAB 5: Stomatal Conductance & Transpiration	REPORT	
7	Mar. 10	LAB 6: Xylem Water Potential	WORKSHEET	Lab 5 Report
8	Mar. 17	LAB 7: Hill Reaction	WORKSHEET	Lab 6 Worksheet
9	Mar. 24	LAB 4: Mineral Nutrition: Harvest	REPORT	Lab 7 Worksheet & <u>PROPOSAL DRAFT</u>
10	Mar. 31	SPRING BREAK		
11	Apr. 7	LAB 8: Photosynthesis	WORKSHEET	Lab 4 Report
12	Apr. 14	LAB 9: Plant Hormones		Lab 8 Worksheet
13	Apr. 21	LAB 9: Hormones Cont. & How to Make Presentations	WORKSHEET	
14	Apr. 28	Proposal Presentations		Lab 9 Worksheet & <u>PROPOSAL DUE</u>
15	May 5	Proposal Presentations		