Experiments in Plant Growth and Development
BIOL 305 Fall 2015

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Course goals and structure
The goal of this course is to give students a chance to try their hands at research, a process that includes production of a professional quality written work describing the results. Students will read articles in the primary literature and participate in brainstorming sessions that will result in design of semester-long projects. The process of writing about the project will take place in stages throughout the term. Formal written and oral reports at the end of the term will allow individuals to demonstrate what they have learned.

Grading
Grades will be based on oral presentation of an article (10%), article summaries (3 x 5 % = 15%), lab notebooks (5 %), project proposals (5 %), and lab work (20%). The final paper will be worth 50 % of the grade and is due in stages as the course progresses, with the completed version due at the time of the final exam.

Each student will present one article to the class. Prior to the presentation, you must schedule a meeting with me to go over the material and discuss effective means of communicating it. For weeks in which you are not presenting an article, you must read an article that is being presented and write a summary of it. Summaries should be two pages (typed, 1.5 line spacing, 1 inch margins, 12 pt font). The first page should be a straightforward summary of what you feel are the most important points of the article. The second page should describe how some aspect of the paper applies to the project you are working on. You should provide such a summary in three of the weeks that you are not presenting; if there are more presentations, the choice of which week to skip is yours. Summaries are due at the start of class (e.g. prior to the class discussion). You do not need to write anything the week that you present.

Topics of Study, Fall 2015:
Does age matter?
Your first assignment is to come up with a project that you want to do this semester. There is some flexibility in this, but the experiment you design should be related to the molecular mechanisms that regulate root architecture, with emphasis on lateral root initiation and the locations in which they arise. Within this universe, you may choose a highly molecular experiment, such as a gene expression study, an experiment that focuses more on whole plant physiology, or an experiment that addresses natural variation.

Read and consider the questions below. What experiments appeal to you? We will talk about your ideas during the second week of class and a project proposal will be due at the end of next week (Sept. 11th, 5PM). A project plan includes the hypothesis you want to test and how you will go about it: the species you want to work with, the specific experiment(s) you plan to do, and starting estimates for the concentration range of any chemicals that you want to apply, the length of time for which you will apply them, etc.
Tentative Schedule

Sept. 1: Course organization; initial presentation, start plants.
This week: read articles, and think about what sort of project interests you.

Sept. 8: Brainstorming session in class; select projects and partners.
Project descriptions due by Friday of this week.

Sept. 15: Start projects; Sample presentation (3:45)

Sept. 22: Projects; Presentation of papers

Sept. 29: Projects; Presentation of papers

Oct. 6: Projects; Presentation of papers

Oct. 13: Projects; Presentation of papers

Fall break

Oct. 27: 3:30-4:20 Discussion of writing
Project Bibliography due this week! This is a list of the relevant articles you
have read so far plus original references that you have found that you can use
for your introduction. (Two of these must be found on your own.)

Nov. 3: Projects; 3:30 writing exercise
Bring a draft of your introduction to class

Nov. 10: Projects; 3:30 writing exercise

Nov. 17: Projects

Nov. 24: Projects Bring a draft of your methods section to class

Dec 1: Bring a draft of the whole paper to class; you will edit each other's drafts

Dec. 8: Oral presentations of your projects will be scheduled this week. Those who are
able will present our work to the BIOL 204 class 9-10 AM Friday Dec 11. If
this time can not work, we will arrange something else.

Your research paper is the final project for this course. The paper should be submitted by
email no later than 4 PM on Thursday, Dec. 17th, which is the end of the final exam period
that has been scheduled for this course.