

Plant Responses to the Environment Biology (ES) 280



CU-Boulder

Professor Barry Logan

Office: Druckenmiller 220A

Phone: 725-3944

e-mail: blogan@bowdoin.edu

Office Hours: Wed. – 9:45 to 11:45AM

Tuesday and Thursday: 1:00 - 2:25PM
Searles 213

Plant Responses to the Environment – Biology (ES) 280

Syllabus

<u>Date</u>	<u>Topic</u>
Aug. 31 st	A walk through the Schilling Forest
Sept. 5	Introduction & The impacts of land use history on New England landscapes
7	The impacts of land use history on New England landscapes
12	Bogs
14	Bogs
19	The alpine
21	The alpine
26	Plant volatile emissions
28	Plant volatile emissions
Oct. 3	Plant volatile emissions
5	Plant volatile emissions
10	<i>No class</i>
12	<i>Interlude: T.D. Lysenko and the misuse and abuse of science</i>
17	<i>Fall break</i>
19	Leaf energy balance
24	Leaf energy balance
26	Leaf energy balance
31	Ecological uses for stable isotopes
Nov. 2	Ecological uses for stable isotopes
7	Complex effects of global climate change
9	Complex effects of global climate change
14	Complex effects of global climate change
16	Complex effects of global climate change
21	<i>Populus: Object of the 21st century's "green revolution"?</i>
23	<i>Thanksgiving</i>
28	The sustainability sessions
30	The sustainability sessions
Dec. 5	The sustainability sessions
7	The sustainability sessions
Dec. 13	<i>Final Exam – 2PM</i>

Field Excursions

<u>Date</u>	<u>Destination</u>
Aug. 31 st	Schilling Forest – Evidence of land use history in the present-day forest
Sept. 9 th	The Saco Heath
Sept. 17 th	Saddleback Mountain

Grant proposal deadlines

<u>Date</u>	<u>Task</u>
Sept. 19	Subject area and concept of the proposal
Oct. 3	Developing reference list (at least 6 references)
Oct. 17	Proposal outline
Oct. 26	Submission of full proposal
Oct 26 – Nov. 7	Proposal review period
Nov. 7	Panel review
Dec. 7	Submission of revised proposal

Course philosophy

I developed *Plant Responses to the Environment* to include elements of a survey course with the 'feel' of a graduate school seminar. During the semester I will lecture, we will take field trips, and you will give presentations and lead discussions. Regardless of the format of a given day, I expect it to be entirely interactive. Speak up and get involved.

Plant Responses to the Environment is an upper-division biology course. As such, I expect to dig deeply into the finer points of the material. Just as in graduate school, not every reading will be accompanied by a written assignment or quiz. Do not interpret their absence as an indication that complete comprehension of the reading is not required. It is.

I expect that the material will challenge you and that you will have to work to understand it. I am available to assist you outside of class, however, you must recognize when you're struggling and seek help. Didn't get something from lecture? Ask me about it. Reading doesn't make any sense? Ask me about it. Can't reproduce some calculation pertaining to leaf energy balance? Ask me about it.

To put it succinctly, you must help me pull this sled.

Structure of the course

You will each be responsible for leading a portion of a class period on three separate occasions: 1) Individually, you will lead class through the discussion of a paper from the primary literature on one of the topics ranging from *Bogs* to *Leaf energy balance*. 2) In pairs you will do the same with *Complex effects of global climate change*. 3) Lastly, individually, you will present your findings on the subject of *Sustainability in agriculture*. I will provide you feedback on your handling of these discussions/presentations and they will comprise 40% of your overall final grade. Your grant proposal will make up 25% of your grade, while your reviews of the proposals of others will account for 10% of your grade. The final will comprise the remaining 25% of your grade. I will not assign a percentage to the importance of active and thoughtful participation in our regular discussions; however, this will play a significant role in your final grade, as well.

Grant Proposals

Nothing focuses the mind like the act of writing a grant proposal. In addition, proposal writing (and reviewing) is an important element in nearly all careers in science. For *Plant Responses to the Environment*, you will prepare a grant proposal on a topic of your choosing that would be suitable for submission to one of the panels at either the *National Science Foundation* or the *United States Department of Agriculture* (I stole name, Plant Responses to the Environment, from a USDA research panel).

Your proposal should include the following:

- *Cover Sheet*

- *Project Summary* (250 words maximum)

The project summary should be a self-contained description of the research to be undertaken and should focus upon: the overall project goal(s), the plans to accomplish goal(s), the relevance of the project to the objectives of the funding program.

- *Project Description* (12 double-spaced pages maximum)

The project description should include the following:

- A clear statement of the goal(s) of the proposed project
- A review of the most significant published research in the subject area of the proposed project
- The rationale and significance of the project in terms of the specific objectives of the funding program
- The hypotheses or questions to be addressed and the methodology to be used to address them. This section should be specific and include a timeline for the experiments to be performed and a discussion of the expected results.

- *Budget* (included with your syllabus)

Your budget should be accurate and reasonable (you may not pay yourself a seven figure summer salary). Write your proposal assuming that the entire annual budget for your program will be \$1,000,000 and that approximately 20% of all proposals will be funded (actual funding rates are currently closer to 8%).

- *References*

Use a format from any scientific journal (but be consistent).

Review of proposals:

At the “real” NSF and USDA, a panel of researchers, comprised of scientists from academia and industry, is assembled to review proposals. In a week-long period, they read and evaluate all proposals and submit their recommendations regarding funding. In this class, we will do something analogous, with you serving as reviewers. You will be expected to read and evaluate four proposals and assist the Program Chair (me) with decisions on funding. We will perform this task on November 7. Funding decisions made by the panel may influence your final grade, however, I will be solely responsible for assigning that grade.

Tips for Presentations

Tips for giving a presentation:

- 1 - Begin with a brief outline of your talk. Cast your talk within the context of the field of study.
- 2 - Face your audience and speak clearly. [Do not wear a baseball hat. Baseball hats obscure your face, particularly when you look down at your notes.]
- 3 - Develop and deliver your talk so that people can learn from you, *not* so that you can “get through” the most material.
- 4 - Practice your talk to yourself (at least three times) and to others. Work hard to eliminate space-filling “Ummms,” “Ohhhs” and “you knows.”
- 5 - Pay attention to time restrictions. Practicing your talk will enable you to refine it so that you can complete it within the allotted time.
- 6 - Do not read your presentation (though notes are acceptable and encouraged)
- 7 - Use visual aids (relevant pictures, overheads of charts, tables, etc.) strategically and clarify their organization and lay-out when you first display them. Do not apologize for illegible visual aids; if you can't see them, don't use them!
- 8 - Refrain from decorating your visual aids with excessive text [this is a *very* common mistake]. You do not want to be competing with projected text for the attention of your audience.
- 9 - Prepare yourself for potential questions. In this regard, be thoroughly familiar with experiments, units, sites, calculations, etc.
- 10 - Take your time when explaining complicated ideas.
- 11 - Let your interest in a topic show through your enthusiasm.
- 12 - It is OK to be nervous; to a point, it fosters a careful presentation.

Tips for listening to a presentation:

- 1 - Be on time
- 2 - Do not - read the newspaper
 - write your correspondence
 - knit, whittle or osculate
 - sleep
- 3 - Listen intently and prepare yourself to ask incisive questions.

[Credit goes to Prof. Yan Linhart of the University of Colorado for creating and/or inspiring these tips.]