

DISCUSSION SYLLABUS

Biology 211 Spring 2016

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Sections D01, D02 (Tuesday D01 9:55-12:44; D02 2:10-5)

HWWE 307

Discussion section includes weekly in-class activities and longer-term research projects on major themes from throughout the course in Ecology, Evolution, Conservation and Biodiversity. Assignments will include both independent and group work. Please see lecture syllabus for general overview of goals, policies and points for projects for discussion sections. The syllabus schedule is subject to change (particularly if *Arabidopsis* are growing slowly), amendments will be announced. Find materials for readings of papers on OAKS.

In Biology 211 discussion, our learning objectives include :

- 1) developing critical thinking skills
- 2) learning about quantitative models in biology as they relate to ecology, conservation and evolution
- 3) writing skills
- 4) develop your toolbox of scientific methods

Including

- a) formulate questions and hypothesis generation,
- b) data organization,
- c) data analyses and evaluation of statistical hypotheses,
- d) working with quantitative models
- e) graphing and interpretation of graphs
- f) reading primary literature in biology
- g) synthesizing, summarizing and appropriate citation of primary literature
- h) working independently and in collaborations with other students
- i) presenting findings in written, poster and oral formats

There is a single grade for the combined discussion and lecture in Biology 211. Details of the grade calculation and course policies and requirements are listed in the lecture syllabus.

Suggested supplies/equipment for class: 3 ring binder with tabs for different projects. You may also consider an in-binder 3 ring punch, or sheet protectors. If you have one, bring a laptop with MS Excel loaded to each discussion section.

Project 1 Evolutionary ecology of a model genetic organism: *Arabidopsis* plants in response to environmental treatments. Skills developed: hypothesis development in ecological genetics and mutation/population genetics variation, data collection, metadata, statistics, graphing, literature search, written project in scholarly lab-report format...student authored datalines in public database for CURE (course based research experience).

Project 2: Citizen science: Learning experimental design through ecological and evolutionary interactive projects. Further developing skills in science communication.

Project 3 Biological hotspots and conservation: Justification for conserving a taxonomic group within an identified biological hotspot. Skills developed: building a biological argument, use of the primary literature for background research and citation.

Typed Discussion Questions: Hand in a typed copy of three questions (no extensions) based on the reading. All other assignments are due at the beginning of class and will otherwise be considered late. Powerpoint presentations are due on OAKS 30 minutes prior to the class start-time.

Details of projects and all associated handouts will be provided during discussion. Quizzes will also occur during discussion and will be announced in lecture and/or discussion.

Note, this schedule may change. Any updates to the syllabus will be announced!

<u>Week</u>	<u>Date</u>	<u>Discussion Activity</u>	<u>Due in Discussion</u>
1	Jan 12	Welcome Introduction to majors/minors in biology Asking biological questions How to write a discussion question	
2	Jan 19	Plagiarism discussion Primary literature exercise Literature databases work Population ecology and evolution quantitative problems Discuss Suarez and Case Discuss <u>Project 1</u>	Read Suarez and Case (on OAKS), bring a copy paper or electronic to class Typed Discussion questions (on OAKS) refer to on-line handout for what this means.
3	Jan 26	<u>Project 1:</u> Introduction to <i>Arabidopsis</i> Collecting early life history plant data Data and metadata lab notebook skills <u>ROOM NUMBER: SSMB 241 (am) OR 253 (pm)</u>	Read: <i>Arabidopsis</i> background material, complete quiz on OAKS Hand in categorized biological questions assignment
4	Feb 2	<u>Project 2:</u> Introduction to citizen science (discussion, online projects) What goes into a scientific introduction? Intro to powerpoint best practices	Pop Eco Evo problems quiz on OAKS Reading assignment

5	Feb 9	Choose citizen science activity Make a data collection plan and submit to instructor Answering a question powerpoint	Answering a question powerpoint (upload to OAKS) Species Interactions quiz on OAKS
6	Feb 16	Meet with instructor to discuss citizen science data collection, also time to collect data	Write an introduction assignment Data collection for citizen science project
7	Feb 27	<i>Project 2:</i> Oral presentation of citizen science findings	Upload oral presentation to OAKS
8	Mar 1	<i>Project 1:</i> Second plant measurement <u>ROOM NUMBER: SSMB 241 OR 245</u>	<i>Project 2:</i> Written project for citizen science Make sure all data in electronic form
	March 8	<i>SPRING BREAK</i>	
9	Mar 15	Introduce project 3: choose hotspot <i>Project 1:</i> Discuss lab report <i>Project 1:</i> Statistics and Graphing of <i>Arabidopsis</i> data	Make sure all data is in electronic form Statistics and Graphing video Bumpus bird assignment (on OAKS)
10	Mar 22	<i>Project 3: Present hotspot</i> <i>Project 3:</i> Build a conservation argument, literature search	Hotspot presentation Reading of conservation paper
11	March 29	Presentation of <i>Arabidopsis</i> results Peer review of <i>Arabidopsis</i> draft and data Phylogeny: theory and practice	Hotspot presentation Draft of project 1 lab report due (Intro, Methods, Result)

12	Apr 5	Phylogeny construction Building a study guide	Project 1 final draft due Biodiversity quiz
13	Apr 12	<u>Major Field Test</u>	Project 3 paper due
14	April 19	<u>No discussion</u>	Optional rewrites due in lecture or on OAKS