

DISCUSSION SYLLABUS

Biology 211 Spring 2017

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Sections D01, D02 (Thursday D01 9:30-12:30; D02 Tuesday 2:10-5)
HWWE 305

Discussion section includes weekly in-class activities and longer-term research projects to accompany with 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 additional information regarding 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.

Student Learning Outcomes

At the end of this course, students are expected to be able to:

- describe the processes by which populations of organisms change in size
- explain the forces that lead to evolutionary change in populations and diversification among species
- interpret phylogenetic trees to comprehend the evolutionary relationships they depict
- discuss how interactions with the physical environment and with other organisms influence populations and communities
- build a foundation of knowledge about life's diversity and its interrelatedness
- apply ecological and evolutionary principles to the conservation of biodiversity
- apply the following skills used by professional biologists: use primary literature, generate scientific questions and pose testable hypotheses, analyze data to evaluate hypotheses, use quantitative models to describe biological processes, and communicate these to a scientific audience.

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

Suggested supplies 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 or tablet with MS Excel loaded to each discussion section. MS Excel, word and power point are available for CofC students at portal.office.com and entering your CofC email and MyCharleston password. Download and installation can take a bit, give yourself plenty of time for the install prior to class.

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, including communication of data.

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

Typed Discussion Questions (DQ): Hand in a typed paper copy of three questions (no extensions) based on the reading at the end of the discussion period. 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 on OAKS or during discussion and will be announced.

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 17/19	Welcome Introduction to majors/minors in biology Asking biological questions How to write a discussion question	
2	Jan 24/26	Plagiarism discussion Primary literature exercise Literature databases work Discuss Suarez and Case Discuss <u>Project 1</u>	Read: Suarez and Case (on OAKS), bring a copy to class (DQ due) Quiz: Complete quiz on Oaks Critical thinking: Hand in categorized biological questions assignment
3	Jan 31/ Feb 2	<u>Project 1:</u> Introduction to <i>Arabidopsis</i> Collecting early life history plant data Data and metadata lab notebook skills <u>ROOM NUMBER: TO BE ANNOUNCED</u>	Read: <i>Arabidopsis</i> background material Quiz: complete quiz on OAKS Communication: 1pg Writing – put references to use

4	Feb 7/9	<u>Project 2:</u> Introduction to citizen science (discussion, online projects) Choose citizen science activity Make a data collection plan and submit to instructor Intro to powerpoint best practices	Quiz: complete quiz on OAKS Read: articles on Oaks (DQ)
5	Feb 14/16	Meet with instructor to discuss citizen science data collection, also time to collect data, view TED talks	Critical thinking: Species Interactions problems Critical thinking: Data collection for citizen science project
6	Feb 21/23	Answering a question powerpoint What goes into a scientific introduction? Planning your STEM summer and fall semester Citizen science group discussion	Communication: Answering a question powerpoint (upload to OAKS) Communication: Write a professional email inquiry for summer REU or grad school
7	Feb 28/ Mar 2	<u>Project 2:</u> Group synthesis of citizen science findings and presentation	Quiz: complete on Oaks Communication: Write an introduction assignment
	March 7/9	<u>SPRING BREAK</u>	
8	Mar 14/16	<u>Project 1:</u> Second plant measurement Phylogeny practice <u>ROOM NUMBER: TBA</u>	Communication: Written project for Project 2 citizen science Data management: Data & metadata in electronic form
9	Mar 21/23	<u>Project 3:</u> introduction & choose hotspot <u>Project 1:</u> Discuss lab report <u>Project 1:</u> Statistics and Graphing of <i>Arabidopsis</i> data	Data skills & critical thinking: Statistics and Graphing video with Bumpus bird data assignment (find URL for information on OAKS)

10	Mar 28/30	<p><u>Project 3:</u> Present hotspot <u>Project 3:</u> Build a conservation argument Discuss conservation paper</p>	<p>Communication: Hotspot conservation and biodiversity presentation Read: Conservation paper (DQ)</p>
11	Apr 4/6	<p>Peer review of Arabidopsis draft and data Evaluate class Arabidopsis results for inclusion in Discussion, how to write a discussion and abstract Phylogeny: theory and practice</p>	<p>Communication: Arabidopsis results to class Communication: Draft of project 1 lab report due (Descriptive Title, Intro, Methods, Results, Literature Cited (to date))</p>
12	Apr 11/13	<p>Phylogeny construction Building a S17 biodiversity study guide</p>	<p>Communication: Project 1 final version due (revised Title, Intro, Methods Results, including new sections Title, Abstract, Discussion, Literature Cited) Quiz: Biodiversity quiz</p>
13	Apr 18/20	<p><u>Major Field Test</u></p>	<p>Communication: Project 3 due</p>
14	April 25	<p><u>No discussion</u></p>	

Key dates: 1/18/17 last day to drop, 3/23 last day to W, **4/27 Reading day**