

DISCUSSION SYLLABUS

Biology 211 Fall 2018

Dr. Matthew Rutter rutterm@cofc.edu

Sections D03, D04 (Tuesday D03 12:45-3:45; Thursday D04 12:45-3:45)
RITA 273

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.

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. 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 and Powerpoint (or similar programs) 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.

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	Aug 28 / Aug 30	Welcome Introduction to majors/minors in biology Asking biological questions How to write a discussion question	
2	Sept 4 / Sept 6	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 paper or electronic to class Typed Discussion questions (on OAKS) refer to on-line handout for what this means.
3	Sept 11 / Sept 13	<u>Project 1:</u> Introduction to <i>Arabidopsis</i> Collecting early life plant data Data and metadata lab notebook skills	Read: <i>Arabidopsis</i> background material, complete quiz on OAKS Hand in categorized biological questions assignment
4	Sept 18 / Sept 20	<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	Sept 25 / Sept 27	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	Oct 2 / Oct 4	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	Oct 9 / Oct 11	<u>Project 1:</u> Second plant measurement	Make sure all data in electronic form
8	Oct 16 / Oct 18	<u>Project 2:</u> Oral presentation of citizen science findings	Project 2: Written project for citizen science Upload oral presentation to OAKS
9	Oct 23 / Oct 25	Introduce project 3: choose hotspot <u>Project 1:</u> Discuss lab report <u>Project 1:</u> 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	Oct 30 / Nov 1	<u>Project 3:</u> Present hotspot <u>Project 3:</u> Build a conservation argument, literature search Additional stats and graphing as necessary for Project 1	Hotspot presentation Reading of conservation paper
	Nov 6 /8	<u>Fall Break – No discussion</u>	
11	Nov 13 / 15	Peer review of <i>Arabidopsis</i> draft and data Phylogeny: theory and practice	Draft of project 1 lab report due (Intro, Methods, Result)
	Nov 20 / Nov 22	<u>Thanksgiving Week – No Discussion</u>	Project 3 paper due November 20 (or earlier)
12	Nov 27 / Nov 29	<u>MFT Exam</u>	Project 1 final paper due in lecture