

## DISCUSSION SYLLABUS

### Biology 211 Fall 2020

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Section D08 (Tuesday 1:45-4:45) RITA 271

Zoom: Link on Oaks

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 and the hybrid nature of this course in F2020. The syllabus schedule is subject to change. If *Arabidopsis* are growing slowly, amendments to the syllabus 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, *accommodation for pandemic are available with communication*. Details of the grade calculation and course policies and requirements are listed in the lecture syllabus.

**Hybrid course:** This course will be hybrid. Please consult OAKS for specifics for each week.

Suggested supplies for class: Folder or binder with tabs for different projects. Laptop with MS Excel loaded, and headset. Please bring laptop to each discussion section when in Rita 271. MS Excel, word and power point are available through Office365 for CofC students at portal.office.com and entering your CofC email and MyCharleston password. Download and installation can take some time, please give yourself plenty of time for the install.

## What are our three major projects?

**Project 1: Community science:** Learning experimental design through ecological and evolutionary interactive projects. Contributing data to ongoing research efforts with data from our geographic area. Developing skills in science communication, including communication of data.

**Project 2 Evolutionary ecology of a model genetic organism:** *Arabidopsis* plants in response to environmental treatments. Skills developed: hypothesis development in ecological genetics and population genetic 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 3 Biodiversity: Biological hotspots and local biodiversity:** Justification for conserving a biological hotspot. Biodiversity skill development. Skills developed: building a biological argument, use of the primary literature for background research and citation, observations of biological diversity.

Assignments: Typed Discussion Questions (DQ): Hand in questions based on the reading. Some assignments will be due at the start of the discussion period as we will have presentations to be shared with the class, or we will be building on the project. Details of projects and all associated handouts will be provided during 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	Sept 1 (zoom)	Welcome Introduction to majors/minors in biology Asking biological questions How to write a discussion question Your journey as a biologist	
2	Sept 8 (zoom)	Plagiarism discussion Primary literature exercise Literature databases work & Librarian resources Paper discussion Suarez and Case	<b>Read:</b> Suarez and Case (on OAKS), complete discussion questions <b>Critical thinking:</b> Hand in categorized biological questions assignment
3	Sept 15 (hybrid)	<b><u>Project 1:</u></b> Introduction to community science (video, discussion, online projects) Choose science activity Build a data collection plan and submit to instructor Intro to PowerPoint practices	<b>Read:</b> Community Science articles on Oaks (DQ) <b>Growth:</b> Your journey assignment

4	Sept 22 (hybrid)	<b>Project 2:</b> Introduction to <i>Arabidopsis</i> Collecting early life history plant data Lab notebook skills <b>(see Oaks for groups)</b>	<b>Read:</b> <i>Arabidopsis</i> background material
5	Sept 29 (hybrid)	<b>Project 1:</b> Workshop Meet with instructor to discuss community science data collection, also time to collect data with your team	<b>Critical thinking:</b> Data collection for community science project <b>Communication:</b> 1pg Writing – put library scholarly references to use
6	Oct 6 (hybrid)	<b>Lightning talks:</b> Answering a question PowerPoint What goes into a scientific introduction? <b>Project 1:</b> Touch base with community science team <b>Project 2:</b> Rosette measurement 2	<b>Communication:</b> Conference talk style: lightning talk Answering a question PowerPoint
7	Oct 13 (hybrid)	<b>Project 1:</b> Group presentations of community science findings	<b>Communication:</b> Project 1: Community science presentations <b>Communication:</b> Written project for Project 1 community science
8	Oct 20 (hybrid)	<b>Project 2: Skills:</b> Graphing rosette plant experiment data, testing hypotheses	<b>Data skills &amp; critical thinking:</b> Graphing videos Bird dataset practice assignment part 1
9	Oct 28 (hybrid)	<b>Project 3:</b> Biodiversity – hotspots and iNaturalist Phylogeny practice	<b>Communication:</b> Written project for Project 1 community science
10	Nov 3 (no class)	<i>Election Day – no classes at CofC.</i>	

11	Nov 10 (hybrid)	<b>Project 2:</b> Plant reproduction measurements, Discuss full project report, Graphing <i>Arabidopsis</i> data at maturity.	<b>Project 2:</b> draft of introduction
12	Nov 17 (hybrid)	<b>Project 2:</b> Stats and Gallery Walk. <b>Project 3:</b> Biodiversity hotspot discussion	<b>Data skills &amp; critical thinking:</b> Graphing videos Bird dataset practice assignment part 1 <b>Read:</b> Conservation paper.
13	Nov 24 (last day on campus)	<b>Project 2:</b> Peer review of <i>Arabidopsis</i> draft and data Phylogeny: theory and practice	<b>Communication:</b> Draft of Project 2 lab report due for peer review
14	Dec 3 (online)	<b>Project 3:</b> Biodiversity project presentations	<b>Communication:</b> Project 2 Revised version due <b>Communication:</b> Biodiversity