DISCUSSION SYLLABUS
Biology 211 Fall 2019
Dr. Matthew Rutter
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Section D07 (Tuesday 1:40-4:40) and D08 (Thursday 1:40-4:40)
RITA 273

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 through Office365 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. 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!

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<tr>
<th>Week</th>
<th>Date</th>
<th>Discussion Activity</th>
<th>Due in Discussion</th>
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| 1    | Aug 27/29  | Welcome  
Introduction to majors/minors in biology  
Asking biological questions  
How to write a discussion question |                                                                                 |
| 2    | Sep 3/5    | HURRICANE                                                                           |                                                                                 |
| 3    | Sep 10/12  | Plagiarism discussion  
Primary literature exercise  
Literature databases work  
Discuss Suarez and Case | **Read:** Suarez and Case (on OAKS), bring a copy to class (DQ due)  
**Critical thinking:** Hand in categorized biological questions assignment |
|      | Sep 17/19  | **Project 1:** Introduction to Arabidopsis  
Collecting early life history plant data  
Data and metadata lab notebook skills  
Intro to powerpoint best practices | **Read:** Arabidopsis background material  
**Quiz:** complete quiz on OAKS on Arabidopsis background |
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| 4    | Sep 24/26  | **Project 2:** Introduction to citizen science (discussion, online projects)  
Choose citizen science activity  
Make a data collection plan and submit to instructor  
Answering a question powerpoint  
What goes into a scientific introduction?  
**Quiz:** complete quiz on OAKS on population growth  
**Read:** articles on Oaks (DQ)  
**Quiz:** Species Interactions problems  
**Communication:** Answering a question powerpoint (upload to OAKS) |
| 5    | Oct 1/3    | Meet with instructor to discuss citizen science data collection, also time to collect data  
**Critical thinking:** Data collection for citizen science project  
**Communication:** Write an introduction assignment (upload to OAKS) |
| 6    | Oct 8/10   | **Project 2:** Group presentations of citizen science findings  
**Quiz:** complete on Oaks  
**Communication:** Citizen science presentations  
**Communication:** 1pg Writing – put references to use |
| 7    | Oct 15/17  | **October 15: Fall Break / NO DISCUSSION**  
**October 17: MFT exam**  
**Communication:** Written project for Project 1 citizen science |
| 8    | Oct 22/24  | **Project 1:** Second plant measurement  
Phylogeny practice  
**Data management:** Data & metadata in electronic form |
| 9    | Oct 29/31  | **Project 1:** Discuss lab report  
**Project 1:** Statistics and Graphing of Arabidopsis data  
**Project 3:** introduction & choose hotspot  
**Data skills & critical thinking:** Statistics and Graphing video with Bumpus bird data assignment (find URL for information on OAKS) |
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<th>Communication</th>
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<tbody>
<tr>
<td>10</td>
<td>Nov 5/7</td>
<td><strong>Project 3:</strong> Present hotspot&lt;br&gt;<strong>Project 3:</strong> Build a conservation argument&lt;br&gt;Discuss conservation paper</td>
<td>Hotspot conservation and biodiversity presentation&lt;br&gt;<strong>Read:</strong> Conservation paper (DQ)</td>
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<td>11</td>
<td>Nov 12/14</td>
<td>Peer review of Arabidopsis draft and data&lt;br&gt;Evaluate class Arabidopsis results for inclusion in Discussion, how to write a discussion and abstract&lt;br&gt;Phylogeny: theory and practice</td>
<td>Arabidopsis results to class&lt;br&gt;<strong>Communication:</strong> Draft of project 1 lab report due (Descriptive Title, Intro, Methods, Results, Literature Cited (to date))</td>
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<td>12</td>
<td>Nov 19/21</td>
<td>Phylogeny construction&lt;br&gt;Building a S17 biodiversity study guide</td>
<td><strong>Communication:</strong> Project 1 final version due (revised Title, Intro, Methods Results, including new sections Title, Abstract, Discussion, Literature Cited)&lt;br&gt;<strong>Quiz:</strong> Biodiversity quiz</td>
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<td>13</td>
<td>November 26/28</td>
<td><strong>November 26: MFT exam</strong>&lt;br&gt;<strong>November 28: No Lab, Thanksgiving</strong></td>
<td><strong>Communication:</strong> Project 3 due December 3</td>
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<td>14</td>
<td>December 3</td>
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