BIOLOGY
213/213D
Sections 01
MARINE BIODIVERSITY, ECOLOGY AND CONSERVATION BIOLOGY
College of Charleston, Department of Biology, Spring 2022

Lecture:  Section 01: MWF 10:00 am to 10:50 am in RITA 271
Discussion: Section 01 W 2:00 pm to 5:00 pm in RITA 271
Instructor: Dr. Christopher (Chris) Freeman
Email: freemancj@cofc.edu
Office hours: M 1pm 3 pm via Calendly: https://calendly.com/freemancj/officehours to set up appointment
Office: RITA 201

Course Description: This course provides an understanding of how organisms interact with their environment, how organisms are related, and how humans have altered life on Earth, with a focus on the marine environment when possible. There are three main focal areas within the course: (1) population biology and evolution; (2) ecology at the level of an organism, community, ecosystem, and biosphere, and (3) biodiversity and the relatedness of organisms.

Course Structure: Biological science requires you to both understand concepts and use practical skills to develop and test these concepts. This course therefore includes two components (lecture and discussion). Together these contribute to a single grade.

Lecture will introduce you to key concepts in ecology, biodiversity, and conservation biology.

Discussion will help you develop practical skills used in doing science. You will gain experience examining peer-reviewed scientific literature; collecting, organizing, visualizing, and analyzing data; using the scientific method, identifying research questions, and designing experiments; and presenting scientific information in figures, text, and oral presentations.

Student Learning Outcomes for Lecture:

- Describe the processes by which populations of organisms change in size
- Discuss how interactions with the physical environment and with other organisms influence populations and communities
- Demonstrate how humans have impacted ecological systems
- Explain the forces that lead to evolutionary change within populations and diversification among species
- Interpret and draw conclusions about the evolutionary relationships depicted in phylogenetic trees
- Build a foundation of knowledge about life’s diversity, its interrelatedness, and important traits contributing to the success of lineages of organisms
- Apply ecological and evolutionary principles to the conservation of biodiversity
- Synthesize knowledge from ecology with social and/or economic systems to address conservation problems.
Student Learning Outcomes for Discussion:

- Generate scientific questions and pose testable hypotheses
- Find, read, and evaluate primary scientific literature,
- Analyze and visualize data to evaluate hypotheses; use quantitative models to describe biological processes
- Share data and results by writing for/present to a scientific audience

Instructional Objectives:

- Review the theory of evolution, as posed by Charles Darwin.
- Explore the modern view of evolution that integrates genetics, molecular biology and many other areas of biology.
- Explore mechanisms (or processes) of evolution including
  - How populations evolve at the genetic level (evolutionary genetics).
  - How new species arise (speciation)
  - How biologists are revealing the way life diversified on earth and what the current “tree of life” looks like (systematics & phylogeny)
- Explore the evidence in support of evolutionary theory and processes.
- Explore the features of the diverse species that inhabit the planet to discover
  - The anatomical, physiological and behavioral associations between related groups of organisms
  - The contributions of the diverse groups of living organisms to ecological systems and human welfare
  - An astonishing variety of lifestyles, traits, and solutions to the challenges of life
- Explore how populations change in abundance and distribution (population ecology)
- Explore ecological interactions between species (community ecology)
- Explore processes and changes that occur at the level of ecosystems.
- Apply evolutionary and ecological concepts and theories to issues related to the conservation of biodiversity on earth (conservation biology).

Course Information:

How will the class be given? The class is scheduled for in-person lectures. These lectures are in small classrooms and will tentatively remain in person unless instructor decides to shift to online synchronous due to deteriorating local conditions (high numbers of positive cases in class and/or high numbers of students in quarantine or isolation). The class will not be organized in a “Hybrid” mode where some students are in person and others are joining synchronously online. Lectures will be recorded, and these recordings will be uploaded at the end of each lecture; if you are unable to attend in person due to COVID-19 exposure or sickness, you will be able to watch the lecture asynchronously this way. 213D will mostly be held outside in the field and on research trips, but for weeks when we are in the classroom, we will meet in a hybrid or online synchronous mode.

I have questions-how to I communicate with the instructor? Email me or join me for Office Hours by scheduling an appointment here: [https://calendly.com/freemancj/officehours](https://calendly.com/freemancj/officehours) for a Zoom meeting. I will respond to emails within 24 hours (weekdays) or 48 hours (weekends) and discussion board posts directed to me within 72 hours.
How to stay up to date? Students should set notifications on OAKS so that they are informed when new materials or announcements are uploaded to OAKS. Students should also check OAKS daily for updates. It is imperative that you maintain a consistent presence in this class reading materials, taking OAKS quizzes, and staying on top of the assignments.

Need a study partner? The discussion board Course Lounge can be used for student-to-student interactions and is optimal for pre-exam study sessions.

How do I communicate with other students? Students will communicate with each other in person, via OAKS discussion boards, in breakout rooms on Zoom, and in GoogleDrive.

How should I act in online discussions with students? In these discussions, always be aware of your “Netiquette”: 1) Be kind and ethical. Avoid using sexist, racist, or offensive language in writing and speaking; be sensitive to and reflective about what others are saying, 2) Be aware of how your communication may be perceived; use appropriate levels of capitalization as USING ALL CAPITAL LETTERS is the online equivalent of yelling; be cautious with sarcasm, 3) think before you hit the post button, 4) be forgiving as anyone can make a mistake and respect disagreement, 5) help each other; realize that all students learn differently, 6) stay on topic (don't let a chat about class turn into a casual discussion among some students that derails the ability of other students to focus on course content), 7) only use appropriate abbreviations or acronyms as some students may not be familiar with them, and 8) keep the dialogue professional.

How should I act in class? Please come to class on time and do not spend class texting or using the Internet for activities not related to class. This is distracting to students that are learning the material or especially peers that are presenting. Please be respectful of others in your group and class. Sitting arrangements may be changed over the semester to stimulate collaborations and reduce distracting behavior. The use of cell phones may also be restricted if needed.

Computers are allowed for note taking. Students should have personal laptops with Excel, Word, and PowerPoint for discussions.

Please be understanding of other students need for a quiet classroom and do not talk during class, tests, or quizzes. Please also refrain from potentially distracting activities in class.

Want to have a successful group for projects? Successful groups in discussion are those that set agreed upon deadlines, delegate tasks, identify meeting times and formats, and discuss progress and questions, etc. If problems arise, please see instructor immediately.

Do I need to come to class? You are expected to attend each meeting of the lecture and required to attend each 3-hour discussion unless you are unable due to a medical or other emergency. Please arrive on time prepared to conduct the work and stay for the entire duration. For group projects in discussion sections, other students are counting on you to be there. Attendance will be determined each day by in-class activities.

What if I miss class? Students are responsible for getting notes or any missed information from classmates and/or contacting the professor if they have questions due to a missed class. I’m happy to go over material with you. See below for more information about missed classes due to COVID-19.
Turning in assignments: Written assignments will be turned in via dropbox on OAKS. Links to these dropbox folders will be sent by email or included in assignment instructions. Assignments must be turned in on time to obtain full credit. Assignments will lose 5% of their grade each weekday they are late and cannot be turned in once they are graded and returned.

How am I doing in class? Grades will be uploaded to OAKS so students can track their progress!

What about COVID? I fully recognize that these are unprecedented times and that there will be unforeseen challenges that arise over the course of the semester. Therefore, it is my intention to be flexible with deadlines and class attendance if challenges arise for students due to COVID-19 exposure. I trust you to inform me directly (via email) and as soon as possible to notify me when you miss class and I trust that the reason you provide for an absence or delayed assignment is honest and truthful. In addition, to facilitate this:

1) I will drop the lowest two OAKS quiz grades for each student over the semester

2) Your grade will not suffer if you are unable to attend lecture and therefore miss in-class assignments for that day if you make up the assignment within a reasonable amount of time (within one week) and email it to me. This includes participation grades for lecture. If you miss lecture, you will receive a “0” for that day for participation, but you can get this point back if you email me answers to the questions I asked the class during my lecture within a week. You are responsible for contacting me or a classmate about missed materials and catching up on missed assignments. If you miss lecture, you will need to download and watch the lecture recording asynchronously via OAKS. It is important to watch these ASAP so that you can review the material, contact me with questions, and make up any assignments. I’m happy to help you make this up so please contact me ASAP.

3) If you are unable to attend your discussion, please notify me as soon as possible. Most discussion activities are in groups, so we would need to work with your group to make up these activities and this can be very difficult. There are, however, three discussion sections that I teach each week so you may be able to join one of them. We will work on this as needed.

4) If an emergency arises and you miss lecture, discussion, or an exam, please seek medical or other needed care first and then let me know (via email) as soon as you can.

5) I will use the FAST system for students that have excessive absences or appear to be struggling in order to facilitate the allocation of CofC resources to help them.

6) If you get COVID-19 or are exposed and need to isolate, we will adjust so that you can stay in the class.

What rules are in place due to COVID-19? Students must wear a quality mask in class and always maintain social distancing from each other and the instructor (as allowed). Masks must hug your face (cannot be open on the bottom) and must cover both your nose and mouth at all times. Because of this, no eating or drinking is allowed while in class. Instructor will ask students in violation of these rules to leave the class and if this happens more than once will begin reporting these occurrences to the CofC administration via the COVID-19 dashboard.
What if I get COVID-19 or am exposed to it?

Review the COVID-19 update for Spring 2022:

https://emergency.cofc.edu/campus-advisory-covid-19-update-for-spring-22/

COVID-19 positive students, faculty and staff both on and off-campus (regardless of vaccination status):

- 5-day isolation away from campus required.
- Your isolation period is determined from the date of the positive COVID-19 test. Day 1 of isolation begins the day after the positive test date.
- If you have no symptoms after five days and you are without fever for 24 hours and not on fever-reducing medicines, you may return to campus but **MUST** wear a mask while around others for an additional five days.
- If your symptoms have not improved on day 5, a full 10-day isolation away from campus is required.

Students, faculty and staff that have close contact with an individual who has tested positive:

1) **For those who have received their initial COVID-19 vaccination series recently (within six months for Pfizer and Moderna and within two months for Johnson and Johnson) or who have received their booster:**
   - No quarantine required.
   - Masks are required for 10 days in public spaces following exposure.
   - Monitor yourself for COVID-19 symptoms. If symptoms develop, stay home and seek testing.
   - If asymptomatic, testing is encouraged on day 5 or after, but is not required.

2) **For those who have not completed their initial COVID-19 vaccination series or for those who received their initial vaccination series some time ago (more than six months out from their second Pfizer or Moderna shot or more than 2 months after the J&J vaccine and not yet boosted):**
   - Required to complete 5-day quarantine away from campus; if asymptomatic on day 5, you may return to campus and adhere to strict masking around anyone for another 5 days.
   - Monitor yourself for COVID-19 symptoms. If symptoms develop, stay home and seek testing.
   - **Quarantine expectations** will be shared with close contacts by the College’s contact tracing team.

Please note: any student (regardless of vaccination status) who tests positive for COVID-19 will need to isolate.

If people suspect they have COVID-19, they can submit a notice through a self report form:
Student submissions will go to Student Health Services. Alternatively, students can call Student Health Services at 843.953.5520.

*How will I evaluate the class?* Course evaluations will be completed in class towards the end of the semester

**Course map:**

*How is the course organized?* **Students can access course materials on OAKS.** Our course is divided into three sections with multiple chapters within each section. Lectures and materials for each chapter will become available as the course progresses. Some more complex chapters or discussion assignments may come with an OAKS checklist to help students stay organized and to use as a roadmap through the assignments.

**EXAMS**: The *lecture* course will be divided into three sections based on topics. The first two topics will each have an exam (2 *“midterm” exams*). Each exam will take an entire class period.

Exams may include multiple-choice and true/false questions, matching, drawing, fill-in-the blanks, short answer, long answer, etc. **Many of these questions will require you to apply what we have talked about in class.**

Exam questions will be pulled from lecture slides, notes, and activities, some material from discussion classes, and the corresponding textbook material. There is a lot of information in this class, so I urge students to: 1) attend lectures, 2) take detailed notes and 3) ask questions in class or office hours.

There will also be a comprehensive (weighted with more material from topic #3) final exam at the end of the course.

*Make up exams can be administered under situations like a medical or family emergency. Missed exams should be made up as soon as possible.

**QUIZZES**: A quiz will be uploaded to OAKS for each new chapter or a set of chapters. Sometimes quizzes will be uploaded before we start a chapter; other times they will be uploaded in the middle of a chapter or even as a review once we have finished a chapter. These will be *open book and open note* and you will have ample time to start them. These quizzes are designed to facilitate reading ahead in the book, understanding the material, or reviewing the material in the book. Because of this, there will be a window of time when these quizzes are open on OAKS and they will always end at a specific time and date that can be seen on the OAKS calendar. **Once the quiz is closed, they cannot be completed unless missed due to an excused absence. Please notify me of this ASAP and please make sure you check the calendar on OAKS and complete them before the deadline.**

Quizzes **should be completed alone** (please do not take them together or in groups).

These are an easy source of points **(25% of your lecture grade)!**
ASSIGNMENTS:
We will have class activities to broadly review material we are going over and, in some cases, relate back to past material. These are a great opportunity to test your understanding, identify areas where you need to focus (or ask me questions), and improve your grade (100/800 lecture points for these assignments)!

We will also have assignments during (and outside of) class over the course of the semester to encourage active participation, collaboration, and discussion among students (Poll Everywhere questions, Think, Pair, Share; short writing assignments; reading articles; reviewing news stories, worksheets, and others).

This assignment grade is heavily weighted by participation (attending lectures, completion of questions and worksheets, and participation in discussions). This is an easy source of points in the class, but you need to participate in these activities and discussions to access these points.

ASSESSMENTS, and GRADING in DISCUSSION:
PROJECTS

You will conduct three main projects as well as smaller assignments for discussion. In general, there will be an assignment due at the start or end (or both) of each discussion period. Some of the work on these projects will be completed in pairs or small groups. A large part of your grade will be based on your contribution to the class discussion and working effectively within your group, including peer evaluations of your work. However, you will complete most all of your assignments individually, and most of your grade will be based on your own work, for which you alone are responsible. Thus, even though you are working in groups and sometimes using the same data, files (written assignments and even figures or data analyses/results need to be completed individually unless otherwise requested). Copies of the exact same figure or data tables should not be turned in for all group members.

The three projects are:
Project 1: Field biodiversity activity: scientific method, observations, question and hypothesis generation, experimental design, data collection, organization, and statistics, graphing, literature searching and review, scientific writing, and communication.

Project 2: Behavioral Ecology activity at the South Carolina Aquarium: scientific method, observations, question and hypothesis generation, experimental design, data collection, organization, and statistics, graphing, literature searching and review, scientific writing, and communication.

Project 3: Biodiversity hotspots and conservation: research taxonomic groups of interest; gather literature to support the argument to protect an organism, scientific communication.
How can you be successful in this class? You can be successful in this course if you:

- Log in to the course at least **four times each week**
- Print out lecture slides before coming to class and take notes on what I’m saying
- Activate OAKS notifications to stay up to date with quizzes and assignments
- Take OAKS quizzes
- Set aside **three to four hours** of time outside of class for this course each week
- Review and complete OAKS checklists as needed
- Complete worksheets, assignments, and class activities
- Utilize office hours
- Study lecture slides and lectures for exams
- Engage with your classmates in and outside of class (use the course lounge)

Course learning tools and links:

*Zoom* will be used for office hours and synchronous lectures (as needed) because it allows instructor-student and student-student face-to-face interactions.

*OAKS Discussion boards* will be used to post and respond to course discussion questions that the instructor and students post.

*GoogleDrive* will be used for student collaborative work

*PollEverywhere* will be used to assess student understanding during lecture

These tools require accounts but are free to use.

If students encounter technical issues, please contact me, or review online tools and FAQ for each program.
Required textbook and supplies:
You will need one of the following textbooks:
I will use this one:

*Biological Science* 6th Edition (or later) by Freeman et al. (not written by me)
Please note that this is the big textbook and not the study guide or supplemental review book.

If you don’t have the Freeman textbook above, you can access similar material for free here:

We may also read some short sections in this free book*:


Notebook or scrap paper for notes and activities in lecture.

Composition notebook for 213D work

PollEverywhere account (need to set up by Wednesday January 12th)

PollEverywhere questions will be from the following account:
PollEv.com/freemancj

Students will also need access to the following tools:
Zoom and Google Suite Applications

Waterproof boots or waders for 213D (highly recommended)

Additional supplies for 213D fieldwork may be required

**Prerequisites:** Biology 111, 112 (It is advised that students earn at least a C in Biology 111 and 112 before enrolling in Biology 213). Please see me if you have concerns regarding your preparation for this course.
**TENTATIVE LECTURE SCHEDULE**

Remember to prepare for lecture by **reading ahead in the assigned chapters in Freeman Biological Sciences** below. If using OpenStax Biology 2e as your textbook, chapters will be different. In addition to textbook readings, we may discuss scientific articles during the semester. If an article is assigned, please read before class. Articles will be available via OAKS.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>10th January</td>
<td>Syllabus, Introduction to Biodiversity and Conservation</td>
</tr>
<tr>
<td><strong>Topic 1: Evolutionary Patterns and Processes</strong></td>
<td></td>
</tr>
<tr>
<td>12th January</td>
<td>Review: Evolution and Natural Selection [22]. (18,19)</td>
</tr>
<tr>
<td>14th January</td>
<td>Review: Evolution and Natural Selection [22]. (18,19)</td>
</tr>
<tr>
<td>17th January</td>
<td>No class (MLK Day)</td>
</tr>
<tr>
<td>19th January</td>
<td>Review: Evolutionary Process [22, 23] (18,19)</td>
</tr>
<tr>
<td>21st January</td>
<td>Speciation and Origins of Biodiversity [24] (18,19)</td>
</tr>
<tr>
<td>24th January</td>
<td>Speciation and Origins of Biodiversity [24]. (18,19)</td>
</tr>
<tr>
<td>26th January</td>
<td>Speciation and Origins of Biodiversity [24]. (18,19)</td>
</tr>
<tr>
<td>28th January</td>
<td><strong>Tentative trip to Mace Brown Museum (SSM 2nd floor)</strong></td>
</tr>
<tr>
<td>31st January</td>
<td>Phylogeny and the History of Life [25] (20)</td>
</tr>
<tr>
<td>2nd February</td>
<td>Phylogeny and the History of Life [25] (20)</td>
</tr>
<tr>
<td>4th February</td>
<td><strong>EXAM #1</strong></td>
</tr>
<tr>
<td><strong>Topic 2: Diversification of Life and Key Adaptations</strong></td>
<td></td>
</tr>
<tr>
<td>7th February</td>
<td>Domains of Life and Bacteria/Archaea and Viruses [26, 33] (21, 22)</td>
</tr>
<tr>
<td>9th February</td>
<td>Domains of Life and Bacteria/Archaea and Viruses [26, 33] (21, 22)</td>
</tr>
<tr>
<td>11th February</td>
<td>Bacteria/Archaea, Viruses, and Protists [26, 27, 33] (21, 22, 23)</td>
</tr>
<tr>
<td>14th February</td>
<td>Bacteria/Archaea, Viruses, and Protists [26, 27, 33] (21, 22, 23)</td>
</tr>
<tr>
<td>16th February</td>
<td>Protists, Green Algae, and Land Plants [27,28] (23, 25, 26)</td>
</tr>
<tr>
<td>18th February</td>
<td>Protists, Green Algae, and Land Plants [27,28] (23, 25, 26)</td>
</tr>
<tr>
<td>21st February</td>
<td>Green Algae, Land Plants, and Fungi [28] (25, 26, 24)</td>
</tr>
<tr>
<td>23rd February</td>
<td>Fungi [29] (24)</td>
</tr>
<tr>
<td>28th February</td>
<td>Introduction of Animals and Protostome [30,31] (27, 28)</td>
</tr>
<tr>
<td>2nd March</td>
<td>Protostome Animals [31] (28)</td>
</tr>
<tr>
<td>4th March</td>
<td>Deuterostome Animals [32] (29)</td>
</tr>
<tr>
<td>7th March</td>
<td><strong>No class SPRING BREAK</strong></td>
</tr>
<tr>
<td>9th March</td>
<td><strong>No class SPRING BREAK</strong></td>
</tr>
<tr>
<td>11th March</td>
<td><strong>No class SPRING BREAK</strong></td>
</tr>
<tr>
<td>14th March</td>
<td>Deuterostome Animals [32] (29)</td>
</tr>
<tr>
<td>16th March</td>
<td><strong>Review/Buffer Day</strong></td>
</tr>
<tr>
<td>18th March</td>
<td><strong>EXAM #2</strong></td>
</tr>
<tr>
<td><strong>Topic 3: Ecology and Conservation Biology</strong></td>
<td></td>
</tr>
<tr>
<td>21st March</td>
<td>Introduction to Ecology; Behavioral Ecology [49,50] (45)</td>
</tr>
<tr>
<td>23rd March</td>
<td>Behavioral Ecology [50] (45)</td>
</tr>
<tr>
<td>Date</td>
<td>Course</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>25th March</td>
<td>Population Growth/Ecology [51] (45)</td>
</tr>
<tr>
<td>25th March</td>
<td><strong>Last day to withdraw with a “W” as your grade</strong></td>
</tr>
<tr>
<td>28th March</td>
<td>Population Growth/Ecology [51] (45)</td>
</tr>
<tr>
<td>30th March</td>
<td>Population Growth/Ecology [51] (45)</td>
</tr>
<tr>
<td>1st April</td>
<td>Community Ecology [52] (45)</td>
</tr>
<tr>
<td>4th April</td>
<td>Community Ecology [52] (45)</td>
</tr>
<tr>
<td>6th April</td>
<td>Community Ecology [52] (45)</td>
</tr>
<tr>
<td>8th April</td>
<td>Ecosystem and Global Ecology [49, 53] (44, 46)</td>
</tr>
<tr>
<td>11th April</td>
<td>Ecosystem and Global Ecology [49, 53] (44, 46)</td>
</tr>
<tr>
<td>13th April</td>
<td>Ecosystem and Global Ecology [49, 53] (44, 46)</td>
</tr>
<tr>
<td>15th April</td>
<td>Biodiversity and Conservation Biology [54] (47)</td>
</tr>
<tr>
<td>18th April</td>
<td>Biodiversity and Conservation Biology [54] (47)</td>
</tr>
<tr>
<td>20th April</td>
<td>Biodiversity and Conservation Biology [54] (47)</td>
</tr>
<tr>
<td>22nd April</td>
<td>Biodiversity and Conservation Biology [54] (47)</td>
</tr>
<tr>
<td>25th April</td>
<td><strong>Last Day of Class-Final Review and Course Evaluations</strong></td>
</tr>
<tr>
<td>26th April</td>
<td>READING DAY-no class. Extra credit due by 5pm</td>
</tr>
<tr>
<td>30th April</td>
<td>FINAL EXAM: Saturday April 30th from 1-3pm in Rita 271</td>
</tr>
</tbody>
</table>
Although some of the work on these projects will be completed in groups, you will be graded individually on most written assignments. Additional details will be given in class and assignments may be added/removed or due dates changed depending on progress in class. Resources for these dates and assignments will be uploaded to OAKS under tabs for each project or individual assignments, so please check frequently.

213D meets on Wednesdays from 2pm to 5pm

Please use this syllabus to see when 213D assignments are due

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Discussion activity</th>
<th>Due in or before class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January 12th</td>
<td><strong>Field trip</strong> (bring waders or boots/water shoes, towel, jacket, dry shoes, hiking or outdoor clothes, hat, water, snacks, rain gear (if needed), sun protection, sunscreen, sunglasses, pen or pencil, phone, and lab notebook). Location: Waterfront Park Scientific method activity: observations, asking biological questions, hypotheses. Biodiversity activity: observing and cataloging biodiversity</td>
<td>By next discussion: 1) Complete scientific method activity (to be uploaded to OAKS dropbox by start of next discussion) 2) Complete biodiversity handout (to be uploaded to OAKS dropbox by start of next discussion)</td>
</tr>
<tr>
<td>2</td>
<td>January 19th</td>
<td><strong>Field trip</strong> (bring waders or boots/water shoes, towel, jacket, dry shoes, hiking or outdoor clothes, hat, water, snacks, rain gear (if needed), sun protection, sunscreen, sunglasses, pen or pencil, phone, and lab notebook). Location: Grice Marine Lab Introduction to Grice Field techniques: transects, quadrats, and replication Data collection in groups: via quadrats for graphing and statistical analyses work for next two weeks.</td>
<td>By next discussion: Read Rasher article, complete worksheet, and discussion questions for this article (upload to Dropbox by start of next discussion class). Complete worksheet on Excel, variables, and graphing using data from worksheets on OAKS. Final figures for “Bumpus” data and worksheet uploaded to OAKS dropbox for each student by start of next discussion.</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
<td>Classroom Activity</td>
<td>Next Discussion</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3 January 26th</td>
<td><strong>In classroom</strong></td>
<td>Introduction to science; what are the parts of scientific paper? Review Rashner paper</td>
<td><strong>Uploaded by next discussion:</strong>&lt;br&gt;1) Graph up field data with short conclusions.&lt;br&gt;2) Literature searching worksheet (1 per person)</td>
</tr>
<tr>
<td></td>
<td><strong>Graphing practice:</strong> Data organization, entry, and graphing activity in Excel for field data</td>
<td><strong>Before next class:</strong>&lt;br&gt;1) Read and review statistical analysis sheets and complete worksheet on statistics using data from worksheets on OAKS. This worksheet must be uploaded by start of next discussion.&lt;br&gt;2) Be prepared for questions and discussion on this topic.</td>
<td></td>
</tr>
<tr>
<td>4 February 2nd</td>
<td><strong>In classroom</strong></td>
<td>Statistical analyses lecture and work&lt;br&gt;Data statistical analysis based on example spreadsheets and data from fieldwork&lt;br&gt;Work on statistics in groups&lt;br&gt;Graphing and data analysis practice quiz.</td>
<td><strong>Uploaded by next discussion:</strong>&lt;br&gt;1) Graph up initial data from fieldwork with short conclusions (based now on statistical analyses) and with at least one citation. <strong>Before next discussion:</strong>&lt;br&gt;Read and review literature for start of group project (Project #1)</td>
</tr>
<tr>
<td>5 February 9th</td>
<td><strong>Field trip</strong> (bring waders or boots/water shoes, towel, jacket, dry shoes, hiking or outdoor clothes, hat, water, snacks, rain gear (if needed), sun protection, sunscreen, sunglasses, pen or pencil, phone, and lab notebook). <strong>Location: Grice Marine Lab</strong>&lt;br&gt;<strong>Project #1:</strong> Develop project hypotheses, predictions, and questions and a general research and data collection plan. Review with instructor.</td>
<td><strong>For February 23rd:</strong>&lt;br&gt;<strong>Project #1:</strong> Locate and review 2 additional peer-reviewed primary literature articles that are relevant to your project. Create an annotated bibliography.&lt;br&gt;Annotated bibliography worksheet uploaded by start of discussion on Feb 23rd.&lt;br&gt;Work on introduction. <strong>Draft introduction for each group due to instructor before start of discussion on Feb 23rd for review.</strong></td>
<td></td>
</tr>
<tr>
<td>Day</td>
<td>Date</td>
<td>Activities</td>
<td>Notes</td>
</tr>
<tr>
<td>-----</td>
<td>------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 6   | February 16\textsuperscript{th} | **Field trip** (bring waders or boots/water shoes, towel, jacket, dry shoes, hiking or outdoor clothes, hat, water, snacks, rain gear (if needed), sun protection, sunscreen, sunglasses, pen or pencil, phone, and lab notebook). **Location: Grice Marine Lab**  
**Project #1:** Data collection and organization Day #1.  
**Project #1:** data analysis | Project #1 data organization and preliminary analysis.  
**For February 23\textsuperscript{rd}:**  
**Project #1:** Locate and review 2 additional peer-reviewed primary literature articles that are relevant to your project. Create an annotated bibliography.  
Annotated bibliography worksheet uploaded by start of discussion on Feb 23\textsuperscript{rd}.  
Work on introduction. **Draft introduction for each group due to instructor before start of discussion on Feb 23\textsuperscript{rd} for review.** |
| 7   | February 23\textsuperscript{rd} | **Field trip** (bring waders or boots/water shoes, towel, jacket, dry shoes, hiking or outdoor clothes, hat, water, snacks, rain gear (if needed), sun protection, sunscreen, sunglasses, pen or pencil, phone, and lab notebook). **Location: Grice Marine Lab**  
**Project #1:** Data collection and organization Day #2.  
**Project #1:** data analysis | For next discussion section:  
Project #1 data organization and analysis.  
Draft figures uploaded to OAKS Dropbox for review with instructor.  
Continue to locate and read scientific articles related to your project  
Introduction drafts back to students from instructor by 5pm on Feb 25th. |
| 8   | March 2\textsuperscript{nd} | **In classroom**  
**Project #1:** Review final figures and results with instructor  
**Project #2:** Introduction and preparation for trip to South Carolina Aquarium  
**Project #2:** Develop research questions and plan. | Project #1 final copy due via Dropbox by 5pm on March 4th  
For next discussion section:  
Continue to locate and read scientific articles related to your project #2.  
Finalize project #2 methods |
<table>
<thead>
<tr>
<th>Date</th>
<th>Date (Format)</th>
<th>Activity</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>March 9&lt;sup&gt;th&lt;/sup&gt;</td>
<td>No discussion-Spring break</td>
<td>No discussion-Spring break</td>
</tr>
</tbody>
</table>
| 10   | March 16<sup>th</sup> | **Project #2: Trip to SC Aquarium** | For next discussion:  
- **Project #2**:  
  Organize data collected at South Carolina Aquarium and complete data analysis.  
  Literature searching for project #2  
  Outline for introduction |
| 11   | March 23<sup>rd</sup> | **In classroom**  
- **Project #2**: Data analysis, literature searching, working on introduction. | For next discussion section:  
- Continue work on Project #2. **FINAL COPY of PROJECT 2 paper uploaded by 5 pm on April 8<sup>th</sup>**  
- Draft paper due by next discussion for peer review |
| 12   | March 30<sup>th</sup> | **In classroom**  
- **Project #2**: Peer review in class  
- **Project #2**: finalize paper based on comments from peers | For next discussion section:  
- **FINAL COPY of PROJECT 2 paper uploaded by 5 pm on April 8<sup>th</sup>** |
| 13   | April 6<sup>th</sup> | **Field trip** (bring waders or boots/water shoes, towel, jacket, dry shoes, hiking or outdoor clothes, hat, water, snacks, rain gear (if needed), sun protection, sunscreen, sunglasses, pen or pencil, phone, and lab notebook).  
**Location: TBD**  
**Biodiversity activity** | Show pictures and biodiversity worksheet to instructor before end of discussion this week  
**FINAL COPY of PROJECT 2 paper uploaded by 5 pm on April 8<sup>th</sup>**  
Read biodiversity hotspot articles and complete worksheet **prior to the next discussion class. Upload worksheet to OAKS dropbox.**
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 13th</td>
<td><strong>In classroom</strong></td>
<td><strong>Project 3:</strong> Break into small groups, hotspot background, pick a hotspot and organisms, research, questions, literature review, presentations, and writing. Groups give hotspot presentation in the next discussion class.</td>
</tr>
<tr>
<td>April 20th</td>
<td><strong>In classroom</strong></td>
<td><strong>Project 3:</strong> Present biodiversity hotspot/organisms. This is the final discussion meeting of the semester</td>
</tr>
</tbody>
</table>

* Assignments will be due at the *beginning* of discussion, unless otherwise noted. In-class worksheets will be due at the *end of discussion*, unless otherwise noted.

**SCIENCE TUTORING LABS:**
http://csl.cofc.edu/labs/
http://csl.cofc.edu/labs/science-lab/index.php

**Center for Student Learning:** I encourage you to utilize the Center for Student Learning’s (CSL) academic support services for assistance in study strategies, speaking & writing skills, and course content. They offer tutoring, Supplemental Instruction, study skills appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at http://csl.cofc.edu or call (843)-953-5635.

**ACCOMODATING DISABILITIES:**
The college and professor will make any reasonable accommodations for students with documented disabilities. If students need these accommodations (outside class exams/extended time/etc…), they should see the Center for Disability Services/SNAP (located on the first floor of the Lightsey Center, Suite 104) and get a formal notice from SNAP to the professor as soon as possible so that we can make necessary arrangements. Let me know if you have questions.

**NAME and PRONOUN PREFERENCE**
I will gladly honor your request to address you by the name and gender pronouns of your choice. Please advise me of this early in the semester via your college-issued email account or during office hours so that I may make the appropriate notation on my class list.

**FOOD and HOUSING INSECURITY**
If you are housing or food insecure, there are programs through the College that may help. Students can contact Mark Antoine at antoinemp@cofc.edu or visit the Dean of Students in the 3rd floor of the Stern Center.

**WEATHER CLOSING**
If the College of Charleston closes and members of the community are evacuated due to inclement weather, students are responsible for taking course materials with them in order to continue with course assignments consistent with instructions provided by faculty. In cases of extended periods of
institution-wide closure where students have relocated, instructors may articulate a plan that allows for supplemental academic engagement despite these circumstances.

**CONTINUITY of LEARNING** (for hybrid classes with face-to-face meetings)
Due to social distancing requirements, this class may include a variety of online and technology enhanced components to reinforce continuity of learning for all enrolled students. Before the drop/add deadline, students should decide whether the course plan on the syllabus matches their own circumstances (see information for this class in syllabus).

**RECORDING of CLASSES** (via ZOOM)
Class sessions may be recorded via both voice and video recording. By attending and remaining in this class, the student consents to being recorded. Recorded class sessions are for instructional use only and may not be shared with anyone who is not enrolled in the class.

**HONOR CODE AND ACADEMIC INTEGRITY:**
Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code. Academic integrity is essential at the College of Charleston and to the practice of science. You will therefore be held to a high standard of integrity in this course. Any Honor Code violations that occur will be handled as outlined in the Student Handbook. Please be absolutely sure that you understand what the Honor Code requires of you:

http://studentaffairs.cofc.edu/honor-system/

http://studentaffairs.cofc.edu/honor-system/studenthandbook/


If you have any questions or concerns about Honor Code expectations or about how to avoid violations, please consult with the instructor.

**Plagiarism:** Plagiarism is any use of words or ideas produced by another person without proper attribution and includes failing to paraphrase adequately or to cite sources properly (this is the biggest challenge in 213 and 213D). The Honor Code forbids plagiarism, both intentional and unintentional. Please consult the instructor if you have any questions or concerns about how to use and cite sources to avoid plagiarism.

**Collaboration:** Many of your discussion projects will involve working with other students. Nevertheless, the work you submit must be completed independently and must represent your own independent ideas, unless the instructor specifically requires a joint product (rare). Please be sure that you understand the distinction between collaborating and copying and **ask me if you have any doubts. Identical copies of figures or text count as copying so please turn in your own work.** Suspicions of unauthorized collaboration will be dealt with according to the Honor Code.

**Re-using work:** Please be aware that using work that you or anyone else has done for this or any other class or project, either in whole or in part is a violation of the Honor Code, even if the work is revised. Biology 211/213 instructors keep copies of assignments submitted by students in previous semesters, and reuse or revision of such will result in reporting to the Dean of Students.
Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student’s transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

GRADING BREAKDOWN:

Lecture
- Exams: 300 Points (2 midterms; 150 points each)
- Final Exam: 200 Points
- Quizzes: 200 Points
- In Class Assignments: 100 Points

Discussion†
- Project 1: 100 points
- Project 2: 300 points
- Project 3: 100 points
- Other Assignments and Activities: 100 points

Total: 1400 Points

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥93%</td>
<td>A</td>
</tr>
<tr>
<td>90-92</td>
<td>A-</td>
</tr>
<tr>
<td>87-89</td>
<td>B+</td>
</tr>
<tr>
<td>83-86</td>
<td>B</td>
</tr>
<tr>
<td>80-82</td>
<td>B-</td>
</tr>
<tr>
<td>77-79</td>
<td>C+</td>
</tr>
<tr>
<td>73-76</td>
<td>C</td>
</tr>
<tr>
<td>70-72</td>
<td>C-</td>
</tr>
<tr>
<td>67-69</td>
<td>D+</td>
</tr>
<tr>
<td>63-66</td>
<td>D</td>
</tr>
<tr>
<td>60-62</td>
<td>D-</td>
</tr>
<tr>
<td>≤59</td>
<td>F</td>
</tr>
</tbody>
</table>

I do not curve grades on exams, assignments, or final scores in the class, but there are opportunities (other tests, quizzes, and assignments) to make up points if you do poorly on a single test or assignment. If, at the very end of the semester, your final grade is near (<0.5 points) a letter grade threshold, I will round up. As an example, if you have a 79.6, I will round up to an 80 and you will have a B- in the class. In comparison, if you have a 79.5 or below, your grade will remain a C+. This cutoff system is the only way that I can maintain a consistent treatment of grades across students, so there will be no exceptions.

† Each project will be graded as a portfolio, including the final products and all work leading up to those products (e.g., worksheets, quizzes, participation).
EXTRA CREDIT:
Extra credit options are of minor point value. They are available for a maximum of 20 points. This will equate to ~1.5% added to your final grade. Some extra credit questions may also occasionally appear on the exams for a couple of extra points. Note that your time is better spent studying the material than doing extra credit. If you have taken a class with me before (like BIOL 111), please do a new assignment for this (do not reuse your previous extra credit assignment).

Option #1 (10 points each): Read a peer-reviewed, published scientific article on a subject that interests you (not one from class or that we talk about in class). Write a one page (double spaced) summary of the article. For full credit, make sure to outline why the authors did the research, what their hypotheses or predictions were, the methods they used to test their hypotheses, and their results and conclusions. Also make sure to mention why you were interested in the article and attach a copy of the article to your summary to receive full credit. The article and summary must be uploaded by 5 pm on April 26th.

Option #2 (10 points each): Go to: http://www.iucnredlist.org and find an organism that is of interest to you. Write a one page (double spaced) summary of the organism and why it is of interest to you. For full credit, only include an organism that has been evaluated by the IUCN and discuss what its status is, how that status was determined, what the major threats to its survival are, where it is found and its current/historical range, how many of the species are left in the world, its common and scientific name, and what, if anything is being done to protect it. This must be uploaded by 5 pm on April 26th.

Option #3 (10 points each): Watch a TED Talk: https://www.ted.com/talks on some sort of Biological Science/Conservation Biology/Ecology/Biodiversity/Chemistry subject and write a one page (double spaced) summary of it. For full credit, include a link to the talk, discuss who gave it, why they decided to give it and/or why they were the best person to talk about the subject, give a summary of the main take home messages, how it relates to a subject we talked about in class, and why it is important to be discussing right now. This must be uploaded by 5 pm on April 26th.

Option #4 (4 points each): Go to a department (http://biology.cofc.edu/departmental-seminars/) or Grice Marine Laboratory (http://gricemarinelab.cofc.edu/research/marine-science-seminar/index.php) seminar. To receive credit you must hand in a typed 5 sentence summary of the seminar that you participated in which also includes a description of what you learned from this seminar. This must be uploaded by 5 pm on April 26th.

*Note that this syllabus or an assignment is subject to change over the course of the semester.