

**BIOLOGY**  
**211/211D**  
**Sections 03, 04, 05**  
**BIODIVERSITY, ECOLOGY AND CONSERVATION BIOLOGY**  
**College of Charleston, Department of Biology, Fall 2020**

**Lecture:**      **Sections 03 and 04:** MWF 09:00 am to 09:50 am in RITA 154\*  
                  **Section 05:** MWF 10:00 am to 10:50 am in RITA 152\*

**Discussion:**   **Section 03:** M 1:00 pm to 4:00 pm in RITA 271\*  
                  **Section 04:** W 1:00 pm to 4:00 pm in RITA 271\*  
                  **Section 05:** F 12:00 pm to 3:00 pm in RITA 271\*

\*Or online

**Instructor:** Dr. Christopher (Chris) Freeman

**Email:** freemancj@cofc.edu

**Office (for students) hours:** Virtual (via Zoom or Discord); MW 11:00 am to 1:00 pm  
and by 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. 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:** At the end of this course, students are expected to be able to:

- 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 the evolutionary relationships depicted in phylogenetic trees
  - Build a foundation of knowledge about life's diversity and its interrelatedness
  - Apply ecological and evolutionary principles to the conservation of biodiversity
  - Synthesize knowledge from ecology with social and/or economic systems to address conservation problems
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- Apply the following professional skills: find and use primary literature, generate scientific questions and pose testable hypotheses, analyze and visualize data to evaluate hypotheses, use quantitative models to describe biological processes, and write 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).

### **REQUIRED TEXTBOOK and SUPPLIES:**

*Biological Science* 6<sup>th</sup> Edition by Freeman et al. (not me)

**Please note that this is the big textbook and not the study guide or supplemental review book.**

Notebook or scrap paper for notes and activities in lecture.

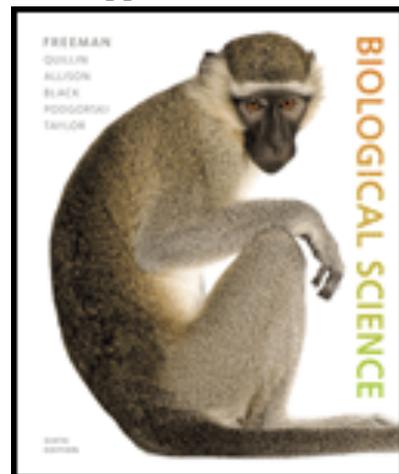
Composition notebook for 211D work

For virtual components:

- 1) A Zoom account\*
- 2) A Discord account and app on phone or tablet\*

\*Links to specific class material on these sites to be announced

Additional supplies for 211D 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 211). Please see me if you have concerns regarding your preparation for this course.

## COURSE POLICIES

### **COMMUNICATION and OFFICE HOURS:**

I will answer emails quickly (generally within 24 hours during the week) and on or potentially before Monday if you send me an email after 5 pm on Friday. Email is the best way to contact me. I am available to help you however I can with this course (or with general questions/concerns) and my office hours are in place to help students. I encourage any students that have questions to use office hours or schedule a time to meet with me

**\*\*\*Students that go over material on a regular basis and ask questions generally do very well in this class. I am also available outside of office hours (by appointment).**

### **OAKS and EMAIL:**

(Log into <http://my.cofc.edu> and click on the link to OAKS)

**\*\*\*Check OAKS and the course calendar on OAKS daily for uploaded quizzes and other materials.**

**I will upload material frequently on OAKS, so I encourage you to activate notifications so that you are emailed when new material has been uploaded, an announcement has been added, or a quiz has been activated. There are links to this online and I am also happy to show you.**

I will upload useful materials (worksheets, activities, papers, lecture slides, quizzes, links, videos, and the syllabus) to OAKS. In addition, important class information and updates will be uploaded in the announcements section on OAKS.

Grades will also be uploaded to OAKS so students can track their progress!

\*All communication pertaining to the class will go through OAKS, the OAKS announcement section, or your CofC email (lots of emails).

### **ONLINE LEARNING:**

Online *lecture* and *discussion* components of this class will be carried out using Zoom and Discord. Students should download both programs on their computers and phones. Both of these programs can be used for online presentations of course material, but we will use Discord to help facilitate discussions and communicate by video and text among students during *lecture* and especially *discussion*. More information on how to use these programs will be provided on OAKS.

### **IN PERSON LEARNING:**

If we do have in person, face-to-face *lecture* or *discussion* this semester, I will send out a revised schedule for hybrid classes. In addition, I will send out expectations and requirements regarding social distancing and mask use in *lecture* and/or *discussion*.

## **FLEXIBILITY in *LECTURE* and *DISCUSSION* DUE TO COVID-19**

Below I will outline expectations for assignments and grading for *lecture* and *discussion*. I fully recognize that these are unprecedented times and that there will be unforeseen challenges that arise over the course of the semester for some students. Therefore, it is my intention to be very flexible with both deadlines and class attendance. I trust you to inform me directly (via email) 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 I will:

- 1) Drop the lowest two OAKS quiz grades for each student over the semester
- 2) Record lectures and upload these to OAKS so that students can still access course material if they are unable to join the synchronous lecture. We will have synchronous lectures and classroom (in person or virtual) attendance is important when possible.
- 3) Your grade will not suffer if you are unable to attend *lecture* (in person or virtual) and therefore miss in-class assignments for that day. If you miss class, you will not receive participation or assignment points for that day, but this will not be counted as a “0” or “F” for the day. Note that if you miss lecture, you will miss helpful class discussions and information, so it is important to contact me to obtain this material. I’m happy to help you make this up.
- 4) If you are unable to attend your *discussion*, please notify me as soon as possible. I teach three discussion sections each week so you may be able to join one of my other sections. Some discussion activities are in groups (even virtually), so we would need to work with your group to make up these activities. We will work on this as needed.
- 5) 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 as soon as you can.
- 6) 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.

### **ASSESSMENTS, and GRADING in *LECTURE*:**

**EXAMS\*:** The *lecture* course will be divided into three sections based on topics. The first two topics will each have an exam (**2 “mid term” exams**). Each exam will take an entire class period. The exams will likely be online and administered via OAKS, but this may change depending on online vs. in-person learning for the semester.

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. This will be administered remotely (more information on this to follow).

\*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 take each one (at least 48 hours). 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 (Think, Pair, Share; short writing assignments; reading articles; reviewing news stories, worksheets, and others).

This assignment grade is heavily weighted by participation (attending in person or virtual 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.

### **RELEVANT ARTICLES and STORIES:**

Scientific inquiry and a growing understanding of global biological systems impact the everyday lives of humans and the functioning of ecosystems on this planet. In order to help link biological science and the process of the scientific method with the lives of students, we will go over some recent interesting or historically important scientific literature and news articles during class. These papers/articles will also be provided on OAKS and, in some cases, students may need to read these prior to coming to class.

## **THE BEST WAY TO TRULY MASTER and UNDERSTAND THE MATERIAL:**

- 1) Print out the lecture slides (multiple per page to save paper, please) or download them prior to class and then actively take notes on the slides based on what I am saying in class. Remember that I am picking the content out of the chapters that I think is most important and most challenging and going over it in lecture, so what I'm saying in class is important to be taking notes on and asking questions about. Just listening to lecture is not an effective learning strategy for most students, but if you know what works best for you please do that.
- 2) Read ahead and take online OAKS quizzes for each chapter. This is an easy source of points (25% of your lecture grade!) and they are open book. This will also introduce you to the material or allow you to review the material to prepare you for class lectures and discussions.
- 3) Take class activities seriously and use them as an opportunity to test your understanding, discuss with other students in the class, and ask me questions. I am here to help you learn and answer any questions that you have.
- 4) Complete worksheets or other written assignments. These are great tools to test your understanding. I will not be posting keys to the worksheets, but there will be time in class to go over them and I am happy to go over them during office hours. Some questions from these worksheets will be on exams.
- 5) Read through notes and your book and try not to get behind.
- 6) Try studying with a group and use any study materials that I provide.
- 7) Please contact me with questions.

## **ATTENDANCE and CLASS ETIQUETTE in BOTH *LECTURE* and *DISCUSSION*:**

You are **expected to attend** each meeting of the *lecture* and 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.

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.

### **"Netiquette" for online classes:**

Even with an online component to the class, we will use Zoom and Discord to engage in discussion and activities with each other (both between professor and students and between students). This will include sharing video, texts, and pictures. Some considerations for online learning:

- 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.

### **Etiquette for in person classes:**

Please 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 during discussion if needed.

Computers are allowed for note taking. Students should bring personal laptops with Excel and PowerPoint to 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 like eating in class.

**ASSIGNMENTS IN BOTH *LECTURE* and *DISCUSSION*:** As outlined above, I will be flexible with assignments and due dates due to the added challenges associated with online learning and COVID. Students should still turn in assignments on time and meet deadlines so as to not get behind. If you are finding it difficult to meet deadlines, please contact me early in the semester.

**All written assignments will be turned in via specific dropbox folders on OAKS. Students can upload scans or clear, in focus pictures of completed worksheets for their assignments.**

### **ASSESSMENTS, and GRADING in *DISCUSSION*: PROJECTS**

You will conduct two 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). In other words, copies of the same figure or data tables should not be turned in for all group members.

The two projects are:

**Project 1: Citizen science “Biocube” 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: Biodiversity hotspots and conservation: research taxonomic groups of interest; gather literature to support the argument to protect an organism, scientific communication.**

### **COURSE and PROFESSOR EVALUATIONS:**

Course evaluations will be completed in class towards the end of the semester

**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](mailto:antoinemp@cofc.edu) or visit the Dean of Students in the 3<sup>rd</sup> 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 will 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 or DISCORD)**

Class sessions will 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/>  
<http://parkj.people.cofc.edu/HonorCode.pdf>

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 211 and 211D). 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 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.

## TENTATIVE LECTURE SCHEDULE

Remember to prepare for lecture by **reading ahead in the assigned chapters in [] below**. 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.

26 <sup>th</sup> August	Syllabus, Introduction to Biodiversity and Conservation [1, 54].
<b>Topic 1: Evolutionary Patterns and Processes</b>	
28 <sup>th</sup> August	Review: Evolution and Natural Selection [22].
31 <sup>st</sup> August	Review: Evolution and Natural Selection [22].
2 <sup>nd</sup> September	Review: Evolutionary Process [22, 23]
4 <sup>th</sup> September	Review: Evolutionary Process [22, 23]
7 <sup>th</sup> September	Speciation and Origins of Biodiversity [24]
9 <sup>th</sup> September	Speciation and Origins of Biodiversity [24].
11 <sup>th</sup> September	Speciation and Origins of Biodiversity [24].
<b>Potential end of online classes; Hybrid class schedule TBD</b>	
14 <sup>th</sup> September	Phylogeny and the History of Life [25]
16 <sup>th</sup> September	Phylogeny and the History of Life [25]
18 <sup>th</sup> September	Phylogeny and the History of Life [25]
<b>21<sup>st</sup> September</b>	<b>EXAM #1</b>
<b>Topic 2: Diversification of Life and Key Adaptations</b>	
23 <sup>rd</sup> September	Domains of Life and Bacteria/Archaea and Viruses [26, 33]
25 <sup>th</sup> September	Domains of Life and Bacteria/Archaea and Viruses [26, 33]
28 <sup>th</sup> September	Bacteria/Archaea, Viruses, and Protists [26, 27, 33]
30 <sup>th</sup> September	Bacteria/Archaea, Viruses, and Protists [26, 27, 33]
2 <sup>nd</sup> October	Protists, Green Algae, and Land Plants [27,28]
5 <sup>th</sup> October	Protists, Green Algae, and Land Plants [27,28]
7 <sup>th</sup> October	Green Algae, Land Plants, and Fungi [28]
9 <sup>th</sup> October	Fungi [29]
12 <sup>th</sup> October	Introduction of Animals [30]
14 <sup>th</sup> October	Introduction of Animals and Protostome [30,31]
16 <sup>th</sup> October	Protostome Animals [31]
19 <sup>th</sup> October	Deuterostome Animals [32]
21 <sup>st</sup> October	<b>Review/Buffer Day</b>
23 <sup>rd</sup> October	<b>EXAM #2</b>
<b>Topic 3: Ecology and Conservation Biology</b>	
26 <sup>th</sup> October	Introduction to Ecology; Behavioral Ecology [49,50]
<b>28<sup>th</sup> October</b>	<b>Last day to withdraw with a “W” as your grade</b>
28 <sup>th</sup> October	Behavioral Ecology [50]
30 <sup>th</sup> October	Population Growth/Ecology [51]
2 <sup>nd</sup> November	Population Growth/Ecology [51]
4 <sup>th</sup> November	Population Growth/Ecology [51]
6 <sup>th</sup> November	Community Ecology [52]
9 <sup>th</sup> November	Community Ecology [52]
11 <sup>th</sup> November	Community Ecology [52]

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13 <sup>th</sup> November	Ecosystem and Global Ecology [49, 53]
16 <sup>th</sup> November	Ecosystem and Global Ecology [49, 53]
18 <sup>th</sup> November	Ecosystem and Global Ecology [49, 53]
20 <sup>th</sup> November	Biodiversity and Conservation Biology [54]
23 <sup>rd</sup> November	Biodiversity and Conservation Biology [54]
<b>23<sup>rd</sup> November</b>	<b>Last date for potential in person instruction for this class</b>
<b>25<sup>th</sup> November</b>	<b>Thanksgiving Break No class</b>
<b>27<sup>th</sup> November</b>	<b>Thanksgiving Break No class</b>
30 <sup>th</sup> November	Biodiversity and Conservation Biology [54]
2 <sup>nd</sup> December	Biodiversity and Conservation Biology [54]
<b>4<sup>th</sup> December</b>	<b>Last Day of Class-Final Review and Course Evaluations</b>
<b>7<sup>th</sup> December</b>	<b>READING DAY-no class. Extra credit due by 5pm</b>
<b>9<sup>th</sup> December</b>	<b>FINAL EXAM for Section 05: 8:00 am to 10:00 am</b>
<b>11<sup>th</sup> December</b>	<b>FINAL EXAM for Sections 03 and 04: 8:00 am to 10:00 am</b>

## TENTATIVE DISCUSSION SCHEDULE/ ASSIGNMENTS

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.**

**Please use this syllabus to see when 211D assignments are due**

Week	Dates (3 sections per week)	Discussion activity	Due in or before class
1	Aug 24, 26, 28	<b>First week-No Discussion Class This Week</b>	
2	Aug 31 Sept 2 and 4	<p><b>Field trip in local ecosystems</b> (depending on where you are, plan on hiking and outdoor clothes, hat, water, rain gear (if needed), sunscreen, sunglasses, bug spray, pen or pencil, phone, and lab notebook).</p> <p><b>Biodiversity activity:</b> observing and cataloging local biodiversity; introduction to ecological communities; comments and feedback on the observations of other students</p>	<p><b><u>By next discussion:</u></b></p> <p>1) Complete biodiversity handout (to be uploaded by start of next discussion)</p> <p><b><u>By next discussion:</u></b></p> <p>Read assigned article; complete discussion questions for this article. On OAKS under “activities and worksheets” <b>(upload by start of next discussion class).</b></p>
3	Sept 7, 9, 11	<p><b>Field trip in local ecosystems</b> (depending on where you are, plan on hiking and outdoor clothes, hat, water, rain gear (if needed), sunscreen, sunglasses, bug spray, pen or pencil, phone, and lab notebook).</p> <p><b>Scientific method activity:</b> observations, asking biological questions, hypotheses; comments and feedback on the observations of other students</p> <p><b>Scientific method activity:</b> Literature searching based on observations</p>	<p><b><u>By start of this discussion:</u></b></p> <p>Upload 1) biodiversity handout and 2) answers to article discussion questions</p> <p><b><u>By next discussion:</u></b></p> <p>1) Complete scientific method activity (to be uploaded by start of next discussion)</p> <p>2) Literature searching worksheet (1 per person) uploaded by <b>start of next discussion.</b></p> <p>3) Datanuggets online activity introduction and review a nugget by assigned groups.</p>

4	Sept 14, 16, 18	<p><b>Null and alternative hypotheses</b> and introduction to graphing</p> <p><b>Scientific method activity:</b> Literature searching and reviewing, citations</p> <p>Introduction to parts of a scientific article and examples</p> <p><b>Datanuggets and online data analysis activity and introduction.</b></p>	<p><b>By end of this discussion:</b> send copy of completed worksheets to professor</p> <p><b>Before next class:</b> complete worksheet on Excel and graphing using data from worksheets on OAKS. Final figures for “Bumpus” data and worksheet should be uploaded by the start of next discussion.</p>
5	Sept 21, 23, 25	<p><b>Data organization, entry, and graphing activity in Excel.</b></p>	<p><b>Before next class:</b></p> <p>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.</p> <p>2) Be prepared for questions and discussion on this topic.</p>
6	Sept 28 and 30 Oct 2	<p><b>Statistical analyses and experimental design/sample size.</b></p> <p><b>Data statistical analysis based on example spreadsheets.</b></p> <p><b>Graphing and data analysis practice quiz.</b></p>	<p>Read and review statistical analysis worksheets <b>before discussion this week.</b></p> <p>Completed statistical analysis worksheet due at <b>the end of this discussion class</b> (one per group).</p> <p>Read citizen science articles and complete worksheet <b>prior to the next discussion class.</b></p>
7	Oct 5, 7, 9	<p><b>Project 1:</b> Introduction to citizen science and practice with online projects (worksheets)</p> <p><b>Project 1:</b> Introduction to Biocubes, biodiversity measurements (quadrats) and indices</p> <p><b>Project 1:</b> Trip to local ecosystems to search for sites for Biocube project</p>	<p><b>Before next discussion section:</b></p> <p>1) Gather supplies to build a Biocube (one per student).</p> <p>2) Preliminary site selections (pick 5 and take photos) for Biocube deployment.</p> <p>3) Biocube individual project hypothesis development</p> <p>4) Upload pictures of your Biocube and sites</p> <p>4) Upload site metadata onto section Biocube data sheet</p>

8	Oct 12, 14, 16	<p><b>Project 1:</b> Biocube data gathering, entry, and organization. Pictures of organisms (and their tentative identification) uploaded to section spreadsheet</p> <p>Data from Biocube uploaded into class section GoogleSheets with metadata</p> <p>Annotated bibliography introduction and worksheet</p> <p><b>Project 1</b> group (2-3 students) formation</p>	<p><b>For next discussion:</b></p> <p>1) Look up 3 peer-reviewed, scientific articles related to organisms you found in your Biocube, interesting trends, or habitats you surveyed.</p> <p>2) Generate an annotated bibliography for each article.</p> <p>3) Start working on group <b>project #1</b> introduction drafts (draft due <b>start of discussion on week of October 26<sup>th</sup></b>). <b>Group projects in person or via GoogleDrive.</b></p>
9	Oct 19, 21, 23	<p><b>Field trip in local ecosystems</b> (depending on where you are, plan on hiking and outdoor clothes, hat, water, rain gear (if needed), sunscreen, sunglasses, bug spray, pen or pencil, and lab notebook).</p> <p><b>Biodiversity activity</b></p>	<p><b>Upload pictures and biodiversity worksheet before end of discussion this week</b></p> <p><b>Project #1 introduction draft from each group due in your discussion next week. Each group will peer review another group's introduction.</b></p>
10	Oct 26, 28, 30	<p><b>Project #1:</b> Introduction peer reviews and then uploaded to professor.</p> <p><b>Project #1:</b> Data synthesis for groups from individual Biocubes. Does biodiversity vary across sites? Why?</p> <p><b>Project #1:</b> Discuss group and class data with professor</p>	<p><b>Project #1:</b> Generate group hypotheses, calculate diversity metrics, generate figures and conduct statistical analyses.</p> <p><b>Project #1:</b> Prepare for final reports</p>
11	Nov 2, 4, 6	<p><b>Project #1:</b> Continued group data analysis and writing</p>	<p>Introductions returned from professor.</p> <p><b>FINAL COPY of PROJECT 1 report uploaded by 5 pm on November 13<sup>th</sup>.</b></p> <p>Read biodiversity hotspot articles and complete worksheet <b>prior to the next discussion class.</b></p>

12	Nov 9, 11, 13	<b>Project 2:</b> Break into groups, hotspot background, pick a hotspot and organisms, research, questions, literature review, presentations, and writing.	<b>Turn in biodiversity hotspot worksheet at start of discussion.</b>  <b>FINAL COPY of PROJECT 1 report uploaded by 5 pm on November 13<sup>th</sup>.</b>  <b>Groups give hotspot presentation in the next discussion class.</b>
13	Nov 16, 18, 20	<b>Project 2:</b> Groups present biodiversity hotspot/organisms.	This is the final discussion meeting of the semester
14	Nov 23, 25, 27	<b>No discussion class-Thanksgiving break</b>	

\* 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.

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**GRADING BREAKDOWN:*****Lecture***

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

***Discussion***<sup>†</sup>

- Project 1: 200 points
- Project 2: 200 points
- Other Assignments and Activities: 200 points

**Total: 1400 Points**

<b>≥93% = A</b>	<b>90-92 = A-</b>	<b>87-89 = B+</b>	<b>83-86 = B</b>
<b>80-82 = B-</b>	<b>77-79 = C+</b>	<b>73-76 = C</b>	<b>70-72 = C-</b>
<b>67-69 = D+</b>	<b>63-66 = D</b>	<b>60-62 = D-</b>	<b>≤59 = F</b>

- 0 due to academic dishonesty = XXF

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.

<sup>†</sup> 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).

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**EXTRA CREDIT:**

Extra credit options are of minor point value. They are available for a **maximum of 20 points** (remember out of your 800 total for lecture). This will equate to ~2.5% 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 December 7th.**

**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 December 7th.**

**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 December 7th.**

**Option #4 (4 points each):** Go to a department (<http://biology.cofc.edu/departamental-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 December 7th.**

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