

BIOLOGY
211/211D
Sections 02/03
BIODIVERSITY, ECOLOGY AND CONSERVATION BIOLOGY
College of Charleston, Department of Biology, Spring 2019

Lecture: MWF 10:00 am to 10:50 am in RITA 152

Discussion: M 1:00 pm to 4:00 pm or W 1:40 pm to 4:40 pm in RITA 271

Instructor: Dr. Christopher (Chris) Freeman

Email: freemancj@cofc.edu

Office hours: M 11:00 am to 1:00 pm and W 11:00 am to 1:40 pm or by appointment

Office: RITA 204

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 a 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 which 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 6th Edition by Freeman et al. (not me)

Note that this is the big textbook and not the study guide or supplemental review book.

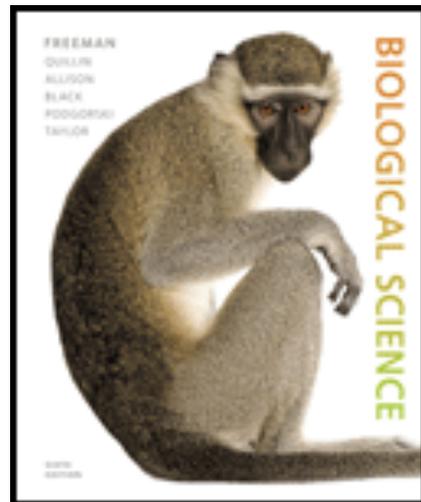
Notebook or scrap paper for notes and activities.

Set up an account on **Poll Everywhere** (its free) by the second class meeting:

<https://www.polleverywhere.com>

Poll Everywhere account to join for in-class activities is:

<https://pollev.com/freemancj>



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 come to office hours or schedule a time to meet with me outside of class.

*****Students that stop by to 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 useful materials (worksheets, activities, papers, lecture slides, quizzes, useful 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 so please check all daily.

*Students are responsible for remaining up to date with OAKS and any email correspondence.

ASSESSMENTS, and GRADING in *LECTURE*:

EXAMS*: The *lecture* course will be divided into three sections that each has an exam (**3 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, lecture notes, and the corresponding textbook material. There is a lot of information in this class, so I urge students to: 1) attend class, 2) take detailed notes and 3) ask questions in class or office hours.

There will also be a comprehensive final exam at the end of the course.

***Make up exams will not be administered except under situations like a documented medical or family emergency. If a situation like this arises, please provide me with a notice from the Absence Memo Office. Missed exams need to be made up as soon as possible (within one week).**

QUIZZES: A quiz will be uploaded to OAKS at the start of each new chapter. These will be **open book** and you will have ample time to take each one. These quizzes are designed to facilitate reading ahead in the book and coming to class with an initial understanding of the material that we will cover. Because of this, there will be a window of time when these quizzes are open on OAKS and they will always end at the start of each new chapter (when lecture starts). **Once the quiz is closed, they cannot be completed*** so make sure that you check the calendar on OAKS and complete them before the deadline.

***If you miss a quiz due to an excused absence, please notify me ASAP.**

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

These are an easy source of points (25% of your lecture grade)!

ASSIGNMENTS:

Poll Everywhere quizzes (using cell phones, laptops, or tablets) will be given frequently in lecture. These quizzes will broadly review material we are going over and, in some cases, relate this 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)! If you forget your phone or are unable to answer Poll Everywhere questions during a class period due to technical difficulties, you can hand in your answers on paper and turn it in at the end of class- but it must be turned in at the end of class.**

Grades from Poll Everywhere quizzes will be based on both participation (completion of questions) and your answers (total points received/ 75% of total available points for the semester). In other words, if we have 48 quiz questions over the course of the semester and you get all of them correct, you will get 48/36 or 133%. This cushion allows you to miss 12 of these questions (if we have 48) without penalty.

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. These activities (Think, Pair, Share; short writing assignments; reading articles; reviewing news stories, and others) will be frequently be handed in at the end of class and graded based on both individual participation and content.

***These assignments cannot be made up if you are late to class or absent (unless by an excused absence-see above information for make up exams).**

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. **Materials from these papers/articles will not be on exams, but these readings may make up part of the assignment points in the class.**

THE BEST WAY TO TRULY MASTER and UNDERSTAND THE MATERIAL:

- 1) Print out the lecture slides (multiple per page to save paper, please) prior to coming to class and then actively take notes on the slides based on what I am saying in class. Remember that I am picking the things out of the chapters that I think are most important and most challenging and going over them 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.
- 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 and 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.
- 5) Read through notes and your book and don't get behind.
- 6) Try studying with a group.
- 7) Come see me with questions!!!!

ATTENDANCE and CLASS ETIQUETTE in BOTH *LECUTRE* and *DISCUSSION*:

Attendance to lectures contributes to your grade and you are **expected to attend** each meeting of the lecture. If you miss a class, you will lose available quiz and activity points and miss important information that will make it difficult to succeed in the course. Students are **required to attend** each 3-hour discussion and are expected to arrive on time and 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. **Being absent from more than 30% of the lectures and discussions will lead to a "WA" (failing grade equivalent).**

Students are responsible for getting notes or any missed information from classmates and/or visiting the professor during office hours if they have questions due to a missed class. I'm happy to go over material with you.

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 (in this class) 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.

All small (cell phones, tablets) electronics must be turned off during class (unless during a quiz). Computers are allowed for note taking, but this will be restricted if students are using their computers for activities not related to class. Students should bring personal laptops (if they have them) with Excel and PowerPoint to discussions. Students without personal computers can use department laptops in discussion.

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

ASSIGNMENTS IN BOTH *LECTURE* and *DISCUSSION*: Assignments must be turned in on time for full credit. Late assignments (without valid and documented excuse-see above) will lose 5% of the total possible points **per day** that the assignment is late, until the assignment is handed back or discussed in class, at which point zero points will be recorded. If you are unable to turn in an assignment during class, please turn it in to me in person/

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

You will conduct four 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. Part of your grade will be based on 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 four projects are:

Project 1: Short litter experiment: scientific method, observations, question and hypothesis generation, data collection, organization, and statistics, graphing, literature searching and review, and starting to write.

Project 2: Citizen science activity: experimental design, literature searching, 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.

Project 4: Winogradsky column: microbial diversity and metabolism, experimental design, repeated data collection and organization, graphing and data interpretation, 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 or visit the Dean of Students in the 3rd floor of the Stern Center.

HONOR CODE AND ACADEMIC INTEGRITY:

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are 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. Plagiarism, lying, cheating or attempted cheating are violations of the College's Honor Code. 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. 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 (rarely if ever). Please be sure that you understand the distinction between collaborating and copying; **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.

TENTATIVE LECTURE SCHEDULE

Remember to prepare for lecture by **reading ahead in the assigned chapters**. In addition to textbook readings, we will discuss several scientific articles during the semester. If an article is assigned, please read before class. Articles will be available via OAKS.

9 th January	Syllabus, Introduction to Biodiversity and Conservation [1, 54].
Evolutionary Patterns and Processes	
11 th January	Review: Evolution and Natural Selection [22].
14 th January	Review: Evolution and Natural Selection [22].
16 th January	Review: Evolutionary Process [22, 23]
18 th January	Review: Evolutionary Process [22, 23]
21st January	MLK Day NO CLASS
23 rd January	Speciation and origins of Biodiversity [24]
25 th January	Speciation and origins of Biodiversity [24]
28 th January	Phylogeny and the History of Life [25]
30 th January	Phylogeny and the History of Life [25]
1 st February	Phylogeny and the History of Life [25]
4th February	EXAM #1
Ecology and Conservation Biology	
6 th February	Evolution to Ecology [49,50]
8 th February	Evolution to Ecology [49,50]
11 th February	Evolution to Ecology [49,50]
13 th February	Population Growth/Ecology [51]
15 th February	Population Growth/Ecology [51]
18 th February	Population Growth/Ecology [51]
20 th February	Community Ecology [52]
22 nd February	Community Ecology [52]
25 th February	Community Ecology [52]
27 th February	Ecosystem and Global Ecology [53]
1 st March	Ecosystem and Global Ecology [53]
4 th March	Ecosystem and Global Ecology [53]
6 th March	Biodiversity and Conservation Biology [54]
8 th March	Biodiversity and Conservation Biology [54]
11 th March	Biodiversity and Conservation Biology [54]
13th March	Biodiversity and Conservation Biology [54]
15th March	EXAM #2
18th March	SPRING BREAK No class
20th March	SPRING BREAK No class
22nd March	SPRING BREAK No class
Diversification of Life	
25 th March	Domains of Life and Bacteria/Archaea [26]
27 th March	Bacteria/Archaea and Protists [26, 27]
29 th March	Bacteria/Archaea and Protists [26, 27]
1 st April	Protists, Green Algae, and Land Plants [27,28]

3 rd April	Protists, Green Algae, and Land Plants [27,28]
5 th April	Green Algae, Land Plants, and Fungi [28]
8 th April	Fungi [29]
10th April	EXAM #3
12 th April	Introduction of Animals [30]
15 th April	Introduction of Animals and Protostome [30,31]
17 th April	Protostome Animals [31]
19 th April	Deuterostome Animals [32]
22nd April	Viruses [33] and Course Evaluations. Buffer day.
23rd April (Tuesday)	LAST DAY of CLASS and REVIEW.
24th April	READING DAY-no class
27th April	FINAL EXAM: 8:00 am to 11:00 am in lecture room

TENTATIVE DISCUSSION SCHEDULE/ ASSIGNMENTS

Although some of the work on these projects will be completed in groups, you will be graded individually on 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 assignment, so check frequently.**

Week	Dates	Discussion activity	Due in or before class
1	Jan 7 or 9	First week-No Discussion Class This Week	
2	Jan 14 or 16	<p>Welcome and review of syllabus.</p> <p>Asking biological questions, generating hypotheses, and introduction to scientific method and literature.</p> <p>Plagiarism discussion.</p> <p>Checks Activity and 50 questions activity.</p>	<p>Checks worksheet (1 per table) and 50 questions worksheet (1 per person) due at end of class.</p> <p><u>By next discussion:</u></p> <p>1) Read article on scientific literature and writing and assigned article; complete discussion questions for this article (due at start of next discussion class).</p> <p>2) Read handouts on microbial metabolism and Winogradsky column experiments</p>
3	Jan 21 or 23	MLK Day-No Discussion Class This Week	

4	Jan 28 or 30	<p>Project 1: project introduction, pair up, observation period in the field, working on question, hypothesis development, and experimental design.</p> <p>Project 4: Winogradsky column introduction and experimental design/building.</p>	<p>Project 1 worksheet with observations, questions, hypotheses, and simple experimental design due at end of class.</p> <p>Before next class make sure you are ready for data collection (any supplies needed must be purchased).</p>
5	Feb 4 or 6	<p>Project 1: Data collection in the field (30-45 minutes).</p> <p>Introduction to graphing.</p> <p>Project 1: Field data gathering, entry, and organization in Excel</p>	<p>Completed graphing worksheet and two final figures (group and class data) due at the start of the next discussion class.</p> <p>Read and review Statistical Primer worksheet and articles before discussion next week.</p> <p>Read articles on scientific writing</p>
5 (cont.)	Feb 4 or 6 (cont.)	<p>Project 1: Data graphing based on greenhouse dataset and group data.</p> <p>Project 4: Winogradsky column data collection and pictures.</p>	
6	Feb 11 or 13	<p>Introduction to statistical analyses.</p> <p>Project 1: Data statistical analysis based on greenhouse dataset and group data.</p> <p>Project 4: Winogradsky column data collection and pictures.</p> <p>Introduction to an introduction, references, literature searching, and scientific writing.</p>	<p>Read and review Statistical Primer worksheet and articles before class this week.</p> <p>Completed statistical analysis and Project 1 conclusion worksheet due at the start of the next discussion class.</p> <p>Prepare for graphing and statistical analysis quiz that will be given in discussion in two weeks.</p> <p>Read citizen science articles and complete worksheet prior to the next discussion class.</p>
7	Feb 18 or 20	<p>Biodiversity trip to Dixie Plantation or Grice Marine Lab.</p> <p>Observations, nature, field methods, diversity.</p>	<p>***Project 4: Each group must collect Winogradsky column data this week. Times will be available (TBD).</p>
8 ^e	Feb	Graphing and statistical analyses quiz.	Citizen science practice worksheet due at

	25 or 27	<p>Project 2: Introduction to citizen science project and practice with online projects.</p> <p>Project 2: Choose citizen science activity and question and formulate basic data collection plan-submit to instructor.</p> <p>Project 2: Locate and check 5 peer-reviewed primary literature articles that are relevant to your citizen science project. Prepare for introduction drafts.</p> <p>Project 4: Winogradsky column data collection and pictures.</p>	<p>end of class.</p> <p>Citizen science worksheet that includes a data collection plan and examples of 5 peer-reviewed articles due at the end of class.</p> <p>Students should review their plan for project 2 introduction with professor before leaving class this week.</p>
9	Mar 4 or 6	<p>Project 2: data collection in the field and any lab analyses. Instructor will be in RITA 271 in case of any questions.</p> <p>Project 4: Winogradsky column data collection and pictures.</p>	<p>At least one student from each group must come to collect Winogradsky column data collection and pictures.</p> <p>Introduction draft from each student due at start of lecture on Wednesday March 6th.</p>
10	Mar 11 or 13	<p>Project 2: Citizen science group presentations</p> <p>Project 4: Winogradsky column data collection and pictures.</p>	<p>Introduction feedback from professor in class.</p> <p>Written part of project 2 due next week for peer review.</p> <p>Read biodiversity hotspot articles and complete worksheet prior to the next discussion class.</p>
11	Mar 18 or 20	No Class-Spring Break	
12	Mar 25 or 27	<p>Project 2: Peer review of paper with detailed feedback</p> <p>Project 4: Winogradsky column data collection and pictures.</p> <p>Project 3: Hotspot background, pick a hotspot and organisms, research, questions, literature review, and writing.</p>	<p>Turn in biodiversity hotspot worksheet at start of discussion.</p> <p>FINAL COPY of PROJECT 2 paper due in lecture on April 3rd.</p>

		Project 4: Winogradsky column data collection and pictures.	
13	Apr 1 or 3	Project 3: Present biodiversity hotspot/organisms. Project 4: Winogradsky column data collection and pictures.	Check Winogradsky column data before end of class. Prepare for Winogradsky column presentations and brief reports.
14	Apr 8 or 10	Group presentations and reports on Winogradsky column data. Review and finish any additional projects or assignments.	
15	Apr 15 or 17	MFT Exam	

* 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.

GRADING BREAKDOWN:***Lecture***

- Exams: 300 Points (100 points each)
- Final Exam: 200 Points
- In Class Quizzes: 200 Points
- In Class Assignments: 100 Points

Discussion †

- Project 1: 100 points
- Project 2: 200 points
- Project 3: 100 points
- Project 4: 100 points
- Other Assignments and Activities: 100 points

Total: 1400 Points

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

- 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.

† 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** (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.

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 handed in to me (by email or hard copy) by 5 pm on Monday April 22nd.**

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 handed in to me (by email or hard copy) by 5 pm on Monday April 22nd.**

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 handed in to me (by email or hard copy) by 5 pm on Monday April 22nd.**

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.

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