

BIOLOGY 211–008
BIODIVERSITY, ECOLOGY AND CONSERVATION BIOLOGY

College of Charleston, Department of Biology, Fall 2017

Lecture: 11:20 a.m. - 12:35 p.m. T, R; HWWE 305

Discussion: 1:00 - 4:00 p.m. T; HWWE 305

Instructor: Dr. Allison Welch

Office hours: 10:00 - 11:00 a.m. W

Office: HWWE 202

12:45 - 1:45 p.m. R

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or email to make an appointment

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Course Description: This course focuses on biology at the level of the whole organism and above, including how organisms interact with their environment, how organisms are related, and how human activity affects life on Earth. During the semester, you will be introduced to three areas of focus: (1) population biology, including population ecology and evolution; (2) interactions among organisms and their environments at the community, ecosystem, and biosphere levels, and (3) biodiversity and the study of how groups of organisms are related by common descent. Sustainability will be an organizing theme throughout the course, as we seek to apply biological principles to understand and protect biodiversity and ecological integrity.

Course Structure: Doing biology requires understanding concepts and using practical skills to develop and test those concepts. To address both of these features, this course includes two essential components – lecture and discussion – which contribute to a single grade (see p. 6).

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

Discussion will help you develop practical skills used in doing science. You will gain experience examining primary scientific literature; organizing, visualizing, and analyzing data; identifying research questions and designing experiments; and presenting scientific information in a written proposal, a scientific poster, and an oral presentation. For many students, discussion is the most valuable part of the course.

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 the impact of human resource use on 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 sustainability problems

Please read this syllabus carefully and keep it for future reference. The information in this document is important to your success in this course.

- identify key ways to be more sustainable in your personal life
- demonstrate the following professional skills: use primary literature, generate scientific questions and pose testable hypotheses, analyze data to evaluate hypotheses, use quantitative models to describe biological processes, and write for a scientific audience

Required Text: *Biological Science* (OR *Biological Science Volume 2*) 5th edition, S. Freeman et al.

Prerequisites: Biology 111, 112 – *Please note:* It is highly advised that students earn at least a C in Biology 111 and 112 before enrolling in Biology 211. Please see me if you have any questions or concerns regarding your preparation for this course.

COURSE POLICIES

Attendance – Attendance and participation will contribute to your grade. You are expected to attend every lecture. It is very difficult to succeed in this course without regular attendance in lecture. If you must miss lecture, be sure to get help with the notes from a classmate; *online lecture notes are a supplement, not a substitute for attending lecture!* You are required to attend every 3-hour discussion for its duration, and you are expected to arrive on time and prepared to carry out the day's work. Absence from >1/3 of class meetings (lecture and discussion), whether excused or unexcused, may lead to a grade of "WA," which is equivalent to a failing grade.

Participation and conduct – Your conduct during lecture and discussion is expected to be respectful of your classmates, instructor, the learning environment, and yourself. This means giving your full attention to whomever has the floor and staying on topic during discussions. Please do not disrupt class by using electronic devices, eating or drinking in class, leaving early or arriving late.

Electronic resources – Course information will be available via OAKS, including details of assignments, assigned articles, and lecture notes. I will use email and OAKS to communicate with you regularly; you are responsible for reading these communications, so please be sure to check your g.cofc.edu email account as well as the course OAKS site frequently.

Lecture notes are typically available at least 24 hours before lecture. Some students get more out of lecture by printing the lecture notes and bringing them to lecture, while others will learn more by using the online notes to review after lecture – please consider what works best for your own learning style. *Please note:* Lecture notes are *supplements* to lecture – much of the important content is discussed verbally and is impossible to reconstruct from the notes alone.

During lecture, you are expected to be present and engaged with the class. This means that students should refrain from using electronic devices during lecture unless they have the specific consent from the instructor (for example, in the case of students with visual impairments). During discussion, we will have access to Biology department computers, but any student with their own laptop is encouraged to bring it to discussion.

Exams – You will be tested on lecture material and assigned readings. Study guides will be provided before each of the three midterm exams. I encourage you to study in groups – you will learn more if you quiz each other to test your understanding and ability to apply concepts.

Exams cannot be made up except in the case of a true medical emergency *suffered on the day of the exam*. Other legitimate, unavoidable academic conflicts are at the instructor's discretion and must be approved *well in advance*. Extracurricular activities and travel plans do not qualify – please plan accordingly. Make-up exams will only be given for excused absences with instructor

approval, and must be taken before the exam is handed back to the class and no more than three days after the scheduled exam time.

Discussion articles and assignments – Over the semester you will read several articles that will be the basis for class discussions, both in lecture and discussion. Your grade for these discussions will be based on attendance, active participation, and completion of discussion question assignments. Articles and assignments will be available via OAKS.

Discussion – You will conduct two main projects as well as smaller assignments for discussion. 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 assignments individually, and most of your grade will be based on your own work, for which you alone are responsible.

Assignments – Assignments must be turned in on time for full credit. Late assignments 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 or via OAKS. *Please do not put assignments under any office door, where they risk getting trampled or lost.*

Getting help – All students are encouraged to meet with me during office hours to ask questions. I'm always willing to take time to help you better understand the course material! In addition, the Center for Student Learning (<http://csl.cofc.edu/>) offers a variety of helpful resources, including study strategies workshops and science tutoring.

Disabilities accommodation – Any student eligible for and needing accommodations because of a disability is requested to speak with the instructor during the first two weeks of class or as soon as the student has been approved for services so that reasonable accommodations can be arranged.

Academic integrity – 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 (see pages 13-14 of the Student Handbook, <http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php>). 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. Plagiarism, both intentional and unintentional, is forbidden by the Honor Code. 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. Please be sure that you understand the distinction between collaborating and copying; ask me if you have any doubts. 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.

LECTURE SCHEDULE

Please prepare for lecture by reading the assigned chapters. Lectures will refer to assigned readings, but will not simply repeat what you have read. You will get more out of lecture if you read the material beforehand, and you can reinforce the lecture material by reviewing the reading again afterward. Exam questions will be drawn from both lectures and readings. In addition to textbook readings, we will discuss several scientific articles during the semester. Assigned articles must be read before class, and discussion question (DQ) assignments will be due at the start of lecture. Articles will be available via OAKS.

<u>Week</u>	<u>Dates</u>	<u>Topic</u>	<u>Readings</u>
1	Aug 22	1 Introduction to Biodiversity	Ch 1, 55
		----- UNIT 1: POPULATIONS & SPECIES -----	
	Aug 24	2 Population and Conservation Genetics	Ch 25 (review Ch 24)
2	Aug 29, 31	Population and Cons. Genetics (cont'd)	Ch 25
3	Sep 5, 7	3 Population Ecology	Ch 52
4	Sep 12, 14	Population Ecology	Ch 52
5	Sep 19	4 Ecological Sustainability	
	Sep 21	EXAM 1	Ch 53
		---- UNIT 2: COMMUNITIES & ECOSYSTEMS ---	
6	Sep 26, 28	5 Ecological Communities	Ch 53
7	Oct 3, 5	6 Ecosystems	Ch 54
8	Oct 10, 12	Climate and the Biosphere	Ch 50, 54
9	Oct 17	*** Fall break – no class ***	
	Oct 19	EXAM 2	
		----- UNIT 3: BIODIVERSITY -----	
10	Oct 24	7 Origins of Biodiversity	Ch 26 (review Ch 24)
	Oct 26	Phylogenies: the Tree of Life	Ch 27
11	Oct 31	8 Bacteria & Archaea	Ch 28
	Nov 2	Protists	Ch 29
12	Nov 7	9 Plants	Ch 30
	Nov 9	Fungi	Ch 31
13	Nov 14	Fungi	Ch 31
	Nov 16	EXAM 3	
14	Nov 21	10 Animals	Ch 32
	Nov 23	*** Thanksgiving break – no class ***	
15	Nov 28, 30	Animals (continued)	Ch 33, 34
	Dec 12 (Tue)	FINAL EXAM: 8:00 - 11:00 a.m.	

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DISCUSSION SCHEDULE

You will conduct two projects as well as several smaller assignments during discussion. Although some of the work on these projects will be completed in groups, you will be graded individually on written assignments. Important due dates are noted below; additional details will be given in class. Discussion will be held the first week of the semester.

<u>Week</u>	<u>Dates</u>	<u>Discussion activity</u>	<u>Due*</u>
1	Aug 22	Introduction to biological questions	Worksheet, UN pre-test
2	Aug 29	Article discussion† and introduction to projects	DQs
3	Sep 5	Project 1: Working with and graphing data	
4	Sep 12	Project 1: Statistical analysis of data	
5	Sep 19	Project 1: Data and poster workshop	Quiz
6	Sep 26	Project 1: Research Poster Session	Poster
7	Oct 3	Project 2: Library resources and searching the literature	Worksheet
8	Oct 10	Project 2: Defining research priorities	Annotated bibliography
9	Oct 17	*** Fall break – no discussion ***	
10	Oct 24	Project 2: Experimental design workshop	
11	Oct 31	Project 2: Workshop and group meetings, academic planning	Pre-proposal
12	Nov 7	Project 2: Peer editing workshop	Proposal complete draft
13	Nov 14	Building phylogenies	Proposal
14	Nov 21	Position paper discussion†	Position paper
15	Nov 28	Project 2: Presentations and Funding Panel	Presentation, UN post-test
	Dec 5	*** Reading day ***	Final proposal

* 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 in class.

† Readings will be available via OAKS.

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COURSE ASSESSMENT

Your grade in this course will be based on the components shown below. These components will be worth the following points and percentages of your final grade:

<u>Course component</u>	<u>total points</u>	<u>% of grade</u>
<i>Lecture</i>		
Three midterm exams	275*	33.33%
Cumulative final exam	150	18.18%
Attendance, participation, assignments	50	6.06%
<i>Discussion</i>		
Project 1	100†	12.12%
Project 2	200†	24.24%
Other activities and assignments	50	6.06%
Total	825‡	100.00%

* The midterm exam on which you score the lowest will be worth 75 points instead of 100 points. This means that you will receive the same percent and letter grade on the exam, but it will count as a smaller proportion of your final course grade.

† 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).

‡ A limited number of extra credit assignments will be announced during the semester. Extra credit assignments are offered to complement the academic goals of the course, rather than in response to student need. Extra credit opportunities will be made available to all students equally.

Grading policy –

A:	93.0-100.0%
A-:	90.0 - 92.9%
B+:	87.0 - 89.9%
B:	83.0 - 86.9%
B-:	80.0 - 82.9%
C+:	77.0 - 79.9%
C:	73.0 - 76.9%
C-:	70.0 - 72.9%
D+:	67.0 - 69.9%
D:	63.0 - 66.9%
D-:	60.0 - 62.9%
F:	0.0 - 59.9%