

BIOLOGY 211–07
BIODIVERSITY, ECOLOGY AND CONSERVATION BIOLOGY

College of Charleston, Department of Biology, Fall 2018

Lecture: 9:25 - 10:40 a.m. T, R; RITA 273

Discussion: 12:45 - 3:45 p.m. R; RITA 271

Instructor: Dr. Allison Welch

Office hours: 11:00 a.m. - 12:00 p.m. T

Office: RITA 235

10:30 - 11:30 a.m. W

Email: welcha@cofc.edu

or email me to make an appointment

Phone: 843-953-5451

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. 7).

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* 6th 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. Lecture will be interactive, and you are expected to attend every lecture. If you must miss lecture, be sure to get in-class notes from your classmates. Lecture slides will be posted on OAKS, but they do not provide all of the information that can be obtained in class. *Lecture slides are a supplement, not a substitute for attending, paying attention, and taking notes in lecture!* You are required to attend every 3-hour discussion for its duration. Please arrive on time and prepared to carry out the day's work. Because this course is participatory and interactive, it is very difficult to succeed without regular attendance. 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 – Conduct during all class sessions is expected to be respectful of your classmates, instructor, the learning environment, and yourself. You can expect me to promote a welcoming learning environment for all students, and I expect you to do the same. In this class, we will interact in a way that values each member of our classroom community. This includes using nonjudgmental language, welcoming different perspectives, experiences, and identities, giving our full attention to whomever has the floor, encouraging others to speak, and responding to others with maturity and respect. We will also hold ourselves to high academic standards, by staying on topic during discussions and by distinguishing between evidence and opinion. In addition, please respect our learning environment by keeping electronic devices stowed in your bag during class, by arriving on time, and by waiting until the class period is over to pack up.

Lecture – The best foundation for success is to be present and engaged during every lecture. For most students, taking handwritten notes is the most effective way to engage during lecture. Lecture slides will usually be available at least 24 hours before lecture. Some students get more out of lecture by using the lecture slides to review after class, while others learn more by printing the slides and bringing them to lecture – please consider what works best for your own learning style (experiment, if necessary). Remember, lecture slides are *supplements* to lecture – much of the important content is discussed verbally and is impossible to reconstruct from the slides alone. If you must miss class, be sure to get in-class notes from classmates.

Discussion – You will conduct two multi-week projects as well as assorted other activities and assignments for discussion. Some of the work 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. I strive to be as clear as possible about expectations for group vs. individual work, but if you have any uncertainty please ask for clarification.

Assignments – Assignments should be turned in on time for full credit. If, for any reason, you cannot turn in an assignment on time, please contact me as soon as possible. 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 time the grade will become a zero. If you are unable to turn in an assignment during class, please turn it in to me via OAKS or in person. If you must email me an assignment, do not assume it has been received until you receive a confirmation email in reply. If you leave anything for me in the Biology Department office, please email me right away and be sure to receive a confirmation email. *Please do not slide anything under any office door, where it risks getting damaged or lost.*

Exams – Exams will cover lecture material and assigned readings. Study guides will be provided for each of the three midterm exams and are intended to guide you to a deeper understanding of course material, through critical thinking and problem solving. I encourage you to study in groups – you will learn more if you work together to improve 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 my 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 my 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.

Field trips – Weather permitting, we will take two field trips as part of discussion. Students will be required to sign safety contracts and travel waivers before participating in field trips. Expect biting insects and rugged terrain. You must wear long pants and sturdy closed-toe shoes that you don't mind getting wet and muddy.

Electronic resources – Course information will be available via OAKS, including assignments, articles, and lecture slides. I will use email and OAKS to communicate with you regularly; you are responsible for reading these communications, so please be sure to set up OAKS notifications and check your g.cofc.edu email account frequently. If you have a legitimate need to use an electronic device during class (for example, accommodation for a disability), please discuss this with me ahead of time; otherwise, please keep all electronic devices stowed during class. During discussion, we will have access to Biology Department laptops, but if you have your own laptop, please consider bringing it to discussion.

Getting help – I encourage you 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, speaking and writing labs, and science tutoring.

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

Health, safety, and basic needs – At times, students may experience various difficulties that can interfere with learning, such as physical and mental health challenges, assault or abuse, and food or housing insecurity. If you or someone you know is experiencing any of these difficulties, various resources on campus are available to help. Please contact the Dean of Students (843-953-5522), who can direct you to resources and support. On campus resources include, but are not limited to: Student Health Services, <http://studenthealth.cofc.edu>; Counseling and Substance Abuse Services, <http://counseling.cofc.edu>; Emergency Resources, <http://studenthealth.cofc.edu/emergencies>; Office of Victim Services, <http://victimservices.cofc.edu>; and Student Food/Temporary Housing Assistance, <http://deanofstudents.cofc.edu/student-food-temp-housing-asst>. Furthermore, if you are comfortable notifying your professors about your difficulties, we may be able to help you navigate your coursework while remaining sensitive to your situation.

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, and attempted cheating are all violations of the College’s Honor Code and will be handled as outlined in the Student Handbook. Please be absolutely sure that you understand what the Honor Code requires of you (see <http://studentaffairs.cofc.edu/honor-system/studenthandbook/2018-2019-student-handbook.pdf>, pages 13-14). If you have any questions or concerns about Honor Code expectations or about how to avoid violations, please consult with me before potentially committing a violation.

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 with me if you have any questions or concerns about how to use and cite sources to avoid plagiarism.

Collaboration: Your discussion projects will involve working with other students. Nevertheless, the work you submit must be completed individually and must represent your own independent ideas and work, unless I specifically require a joint product. Please be sure that you understand the distinction between collaborating and copying; ask me if you have any doubts. Unauthorized collaboration is a form of cheating and will be dealt with according to the Honor Code.

Re-using work: 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, using active reading techniques (e.g., outlining, summarizing, making connections with other knowledge), 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. Articles will be available via OAKS.

<u>Week</u>	<u>Dates</u>	<u>Topic</u>	<u>Readings</u>
1	Aug 21	1 Introduction to Biodiversity	Ch 1, 54
		----- UNIT 1: POPULATIONS & SPECIES -----	
	Aug 23	2 Population and Conservation Genetics	Ch 23 (review Ch 22)
2	Aug 28, 30	Population and Cons. Genetics (cont'd)	Ch 23
3	Sep 4, 6	3 Population Ecology	Ch 51
4	Sep 11	Population Ecology	Ch 51
	Sep 13	4 Ecological Sustainability	
5	Sep 18	EXAM 1	
		---- UNIT 2: COMMUNITIES & ECOSYSTEMS ---	
	Sep 20	5 Ecological Communities	Ch 52
6	Sep 25, 27	Ecological Communities (continued)	Ch 52
7	Oct 2, 4	6 Ecosystems	Ch 53
8	Oct 9, 11	Climate and the Biosphere	Ch 49, 53
		----- UNIT 3: BIODIVERSITY -----	
9	Oct 16	7 Origins of Biodiversity	Ch 24 (review Ch 22)
	Oct 18	EXAM 2	
10	Oct 23	Phylogenies: the Tree of Life	Ch 25
	Oct 25	8 Bacteria & Archaea	Ch 26
11	Oct 30	Protists	Ch 27
	Nov 1	9 Plants	Ch 28
12	Nov 6	*** Fall break – no class ***	
	Nov 8	Plants	Ch 28
13	Nov 13	Fungi	Ch 29
	Nov 15	EXAM 3	
14	Nov 20	10 Animals	Ch 30
	Nov 22	*** Thanksgiving break – no class ***	
15	Nov 27, 29	Animals (continued)	Ch 31, 32
	Dec 11 (Tue)	FINAL EXAM: 8:00 - 11:00 a.m.	

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DISCUSSION SCHEDULE

You will conduct two multi-week projects as well as several smaller assignments during discussion. Although some of the work 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.

<i>Week</i>	<i>Dates</i>	<i>Discussion activity</i>	<i>Due*</i>
1	Aug 23	Introduction to scientific literature	
2	Aug 30	Project 1: Research skills review	
3	Sep 6	Project 1: <u>Field trip</u> – Develop research questions	<i>Assignment</i>
4	Sep 13	Project 1: Research planning	<i>Worksheet</i>
5	Sep 20	Project 1: <u>Field trip</u> – Data collection	<i>Mini-proposal</i>
6	Sep 27	Project 1: Workshop	<i>Assignment</i>
7	Oct 4	Project 1: Research Poster Session	<i>Poster</i>
8	Oct 11	Project 2: Library resources and reviewing the literature	<i>Worksheet</i>
9	Oct 18	Project 2: Research priorities and experimental design	<i>Annotated bibliography</i>
10	Oct 25	Project 2: Workshop	<i>Pre-proposal</i>
11	Nov 1	Project 2: Peer editing workshop	<i>Proposal complete draft</i>
12	Nov 8	Major field test	<i>Proposal</i>
13	Nov 15	Position paper discussion	<i>Position paper</i>
14	Nov 22	*** <i>Thanksgiving break – no discussion</i> ***	
15	Nov 29	Project 2: Presentations and Funding Panel	<i>Presentation</i>
	Dec 4	*** <i>Reading day</i> ***	<i>Final proposal</i>

* Assignments will be due at the beginning of discussion, unless otherwise noted.

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, 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 requests. If you are interested in extra credit, please take advantage of opportunities when they are presented. 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%