

ECOLOGY

Shaw University, Department of Natural Sciences
Spring 2004

Class meets: 1:00-3:30 p.m., T, Th; 214 Science Building

Instructor: Dr. Allison Welch

Office: 216 Science Building (go through prep room to room 215)

Email: welcha@unc.edu

Office Hours: 12:00 – 1:00 p.m. T, Th
3:30 – 4:00 p.m. T, Th
or by appointment

Course website: <http://www.unc.edu/~welcha/ecology>

Course Description: Ecology is the study of the distribution and abundance of organisms in the natural world and of the processes that generate these patterns. This course will cover basic ecological concepts at the level of organisms, populations, communities, and ecosystems. We will study how interactions among organisms and between organisms and their physical environment shape the natural world. This course will also address how ecological concepts can be applied to current issues like conservation and disease.

Required Text: *Ecology: Concepts and Applications*, 2nd edition. 2001. Molles, M. C., Jr. McGraw-Hill.

Course Objectives: The goal of this course is to enable you:

- to explain how organisms interact with each other and with the environment.
 - to analyze how these interactions influence patterns of distribution and abundance.
 - to analyze the structure of and changes in populations, communities, and ecosystems.
 - to apply ecological concepts to novel situations, especially real-life issues.
 - to read scientific journal articles critically and evaluate the authors' conclusions.
 - to give oral presentations that synthesize information on ecological topics.
 - to develop questions and pose hypotheses about ecological patterns and processes.
 - to collect and analyze ecological data in order to evaluate hypotheses.
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COURSE POLICIES

Attendance – Your attendance at every class meeting is required. Not only will important information be presented in lecture, class will often include interactive activities. Many in-class activities and assignments will be graded, as will participation in discussions and other activities. Unexcused absences from these activities will forfeit these points. Additionally, important information about how to complete class assignments and prepare for exams will be given in class. Finally, in order to perform well on exams, you will need to understand information presented in class. If you must miss class, consult me in advance.

Participation – One of my goals with this class is to make it interactive. I believe that you will learn more if you are actively engaged in the material. Therefore, lectures will be supplemented with in-class activities. You will be expected to participate in these activities in a way that is respectful of yourself, your classmates, and our learning environment (i.e., take it seriously). Please note that serious participation in class activities will contribute to your grade.

Technology – E-mail and a course website will be used to facilitate communication and to disseminate information. You must have an email account and check email on a regular basis. Assignments and course information will be posted on the course website (<http://www.unc.edu/~welcha/ecology>); check this site regularly!

Collaborative learning – For many assignments in this course, it may be helpful (or required) to work with other students, and I encourage you to do so. However, you are responsible for the ownership of your work.

Academic honesty – Plagiarism, cheating, and other forms of academic dishonesty will not be tolerated. In a case of academic dishonesty, the student will receive zero credit for the affected exam, assignment, or activity (in accordance with University policy). Blatant or repeated cases of academic dishonesty will be turned over to the University administration. **Please note:** Plagiarism is ANY use of words or ideas produced by another person without proper attribution. This includes, but is not limited to, turning in work not solely produced by yourself, failing to give proper credit to sources of information or ideas, and presenting someone else's words as your own (i.e., by failing to paraphrase adequately).

Respectful conduct in class – You are expected to be respectful of others during class. Please do not cause disruptions, including interrupting someone who is speaking, chatting with your neighbors, allowing cell phones to ring, or arriving late for class.

Assignments – Assignments must be turned in on time for full credit. Assignments that are less than 12 hours late will lose 5% of the total possible points. After that, assignments will lose 10% of the total possible points for each day the assignment is late. NO points will be given for assignments turned in after the assignment is discussed in class, handed back, or a key posted.

ASSIGNMENTS

Textbook readings – Reading assignments will be posted on the course website. Read the assigned sections of the text *before* the class period for which it is assigned. Lectures and in-class activities will presume that you have read the assignment.

Discussions – Six times during the semester you will be assigned to read and discuss a popular essay or journal article from the primary literature. Before each discussion, you will turn in a pre-discussion report that includes responses to questions that will be given to guide your reading as well as questions or comments that you have about the article. You will be responsible for leading one discussion during the semester. Material covered in discussions is likely to appear on exams.

Peer teaching presentations– For each of the set of peer teaching presentations, you will be assigned a specific topic. You will research the topic and then teach the rest of the class about your topic. Information presented during these peer teaching activities may appear on exams.

Applied ecology presentation – Your presentation will be a formal oral report on an aspect of applied ecology (i.e., how an ecological concept is relevant to a real-world issue). For this assignment, you will need to independently research your topic and synthesize your findings into a cohesive report.

Research reports – You will write research reports on the phenotypic plasticity lab and the biodiversity lab, in the style of scientific journal articles. The first research report will be a simplified version will include an abstract, methods, and results. Your second research report will be a complete scientific research report, containing an abstract, introduction, methods, results, and discussion as well as references to relevant primary literature.

Independent research project and presentation – Individually or in groups of two, you will conduct an independent research project that follows up one of our labs, field trips, or in-class activities. You will be responsible for posing a novel question, stating the question as a hypothesis, designing an experiment to address your hypothesis, collecting and analyzing data, and presenting results in our independent research symposium.

In-class activities and short assignments – During the semester, we will have a variety of in-class activities, including labs and field trips as well as hands-on simulations. The goal of these activities and assignments is to give you the opportunity to apply material from lectures in hands-on activities and real-life settings. Your participation in these activities is required. Most activities will include a brief assignment to assess your understanding of the activity.

Exams – There will be three exams in this course – *two midterm exams* and a *comprehensive final exam*. Exams will include a variety of question types, including multiple choice, short answer, and essay questions. Each exam will also include a section of problems drawn from a study guide that you will receive at least a week before the test.

TENTATIVE COURSE SCHEDULE

<u>Date</u>	<u>Topic</u>	<u>assignments due</u>
Jan 13	Course introduction; What is ecology?	
Jan 15	Phenotypic plasticity lab	<i>pre-discussion report 1</i>
Jan 20	Discussion 1; Phenotypic plasticity lab	
Jan 22	Peer teaching presentations	<i>peer teaching presentation</i>
Jan 27	--snow day--	
Jan 29	Discussion 2	<i>pre-discussion report 2</i>
Feb 3	The abiotic and biotic environment	
Feb 5	Natural selection and adaptation	<i>phenotypic plasticity report</i>
Feb 10	Population dynamics; Review	
Feb 12	EXAM 1	
Feb 17	Population growth 1	<i>pre-discussion report 3</i>
Feb 19	Discussion 3; Population growth 2	
Feb 24	Biodiversity lab	
Feb 26	Population regulation	
Mar 2	Biodiversity lab; Peer teaching presentations	<i>peer teaching presentation</i>
Mar 4	Peer teaching presentations; Discussion 4	<i>pre-discussion report 4</i>
Mar 9	Biodiversity lab	
Mar 11	Life tables; Species interactions	<i>biodiversity synopses</i>
Mar 16	Predation; Review	
Mar 18	EXAM 2	
Mar 23 & 25	***** <i>Spring break – no class</i> *****	
Mar 30	Human demography lab	<i>biodiversity research report</i>
Apr 1	Human demography lab (<i>meet in computer lab</i>)	
Apr 6	Discussion 5; Trophic relationships and ecosystems	<i>pre-discussion report 5</i>
Apr 8	Ecosystem research; Competition	
Apr 13	Discussion 6; Competition and the niche	<i>pre-discussion report 6</i>
Apr 15	Biodiversity; Begin independent projects	
Apr 20	Applied ecology presentations; Biogeography	<i>applied ecology presentation</i>
Apr 22	Continue independent projects	
Apr 27	Independent project symposium; Review	<i>indep. research presentation</i>
Apr 29	Fort Fisher field trip	
May 4	FINAL EXAM	

GRADING

The components of the course described above will be worth the following points and percentages of your final grade:

Course component	total points	% of grade
Discussions (6 x 25)	150	15%
Peer teaching presentation (2 x 25)	50	5%
Applied ecology presentation	50	5%
Research report 1	100	10%
Research report 2	150	15%
Independent project and presentation	80	8%
In-class activities	120	12%
Exam 1	100	10%
Exam 2	100	10%
Final exam	<u>100</u>	<u>10%</u>
Total	1000	100%

Grading scale –

90% - 100% = A

80% - 89.9% = B

70% - 79.9% = C

55% - 69.9% = D

0% - 54.9% = F

If you earn 90% or more of the possible points, you are guaranteed an A in this course, and so on. You will get the grade you earn, regardless of others' performance.
