

BIOL 2337/2338: Honors Ecology with Lab

Spring Semester 2012, 4 credits

Instructors

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Overview

This is a problem-based learning class designed to provide you with a working, applied knowledge of the fundamental concepts and practices of ecology. The course is built around a series of five problems that introduce you to techniques such as formulating questions and hypotheses, effective literature searching, experimental design, problem-solving, and effective communication. The activities in this class are designed to support your understanding of processes that structure communities and ecosystems in mechanistic, predictive ways. You will also develop an understanding of patterns of species interactions, human alteration of the biosphere, and the importance of environmental variation in both space and time.

Learning Objectives

By the end of the course, you will develop several skills that will serve you as a scientist and responsible citizen, no matter what profession you choose. These skills include:

1. Understanding essential ecological concepts and the history of their development.
2. Qualitative and quantitative representation of hypotheses.
3. Graphically and verbally specifying vague problems.
4. Performing effective literature searches and experimental methods.
5. Communicating results targeted to your audience, in the most economic and efficient ways possible.

Instructional format

Six hours each week are scheduled for the class. Although lecture and lab are nominally separate, in practice, there will be little difference in activities between these two periods. Very little of the class will be taught in traditional lecture, nor will there be canned labs. Instead, the course consists of five three week modules designed around formulating and solving problems that require ecological knowledge, skills, and approaches. You will work in small cooperative groups of four or five, using both lecture and lab periods to work on your problems. You will design and execute experimental or empirical tests of these problems. Group membership will shuffle during the course of the semester.

The following rules apply to all group work:

1. Everyone is responsible for making sure that all group members understand the problem and contribute to its solution.
2. Everyone must assist one another in understanding the material and in developing skills such as focusing questions, formulating testable hypotheses, performing effective literature searches, and writing.
3. Each group will prepare a joint (single) report. Each member of the group endorses the report by this submission, thereby indicating agreement with the group's conclusions, contribution to the report, and understanding of its contents. Since you will identify all the sources for your information, you must cite your sources. Violation of this policy is a violation of the GT Honor Code.

The instructors are here to facilitate your self- and group-directed learning as you search for, articulate, and present your solutions. Modules will typically begin with an instructor-led introduction to the problem. You will work with other group participants to define the problem, determine what you need to know to solve the problem, act on the problem, and present your findings. Lectures are not preplanned. Instead, the instructors will develop mini-lectures in response to student-identified needs for your learning process.

Course policies

Because of the heavy emphasis on group work accomplished during class, it is **required that you attend each and every class, that you be on time, and that you stay for the entire class period.** You are allowed 1 unexcused absence during the course. Unexcused absences are those other than health related issues or official university functions (e.g. sports). Please note that scheduling an interview, travel arrangements etc. are voluntary on your part and thus are unexcused, although we reserve the right to relax this condition under the right circumstances. Written verification of excused absences is required. Each unexcused absence beyond the first will decrease your final grade by at least 10%.

While much of your work will be in collaborative groups, there will be an individual midterm examination; you may not collaborate with anyone inside or outside of the class on this. Any violations of the GT Honor Code will result in referral to the Office of Student Integrity and penalty ranging from no credit for the assignment in question, to a grade of “F” for the class. We don’t want to see you fail, and we will be glad to answer questions about class activities and the Honor Code.

Grading

Each student in a group will earn the same grade for the group’s work. This will be based on the quality of your written and/or oral presentation. Part of your project grade will be determined by anonymous peer evaluation based on your group interactions, which will be completed after each assignment. The instructors will address any deficiencies noted by your peers with you individually and confidentially, to help you in acting as a more effective group participant. Group project grades will count for 70% of your course grade (5 equally weighted assignments). All grading disputes must be settled within one week of the assignment’s or exam’s return date.

Evaluation

1. Group projects (Five equally-weighted module reports) 70%
2. Midterm examination 20%
3. Learning journal 10%

Text

There are no assigned readings for this course. We suggest the following two references, and they are both available in the Bookstore. Information for the assignments will come from a variety of sources, including primary scientific literature, reference texts, and other materials you identify.

Gotelli, N. 2001. A Primer of Ecology (5th ed.) New York: Sinauer. ISBN 0878932739

Dodson, S. I. et al. 1999. Readings in Ecology. New York: Oxford University Press. ISBN 0195133099

Schedule of Topics and Assignments (subject to modification)

Dates given should be considered guidelines only. In general, you can count on a final paper and oral presentation, or both, being due on the last day of each of the five problem modules.

Week Dates	Topics	Assignments
1 1/9-1/13	Introduction to problem based learning Effective group dynamics Literature searches	
2-3 1/16-1/27	Module 1: Single species Paper and Presentations 1/26 (Paper due 11:55 PM 1/27)*	Problem 1: Black-footed ferret conservation
4-6 1/30-2/17	Module 2: Multi-species interactions Presentations 2/16; Paper 2/17	Problem 2: Building a predator-prey system for introductory ecology classes
7-9 2/20-3/9	Module 3: Communities and human impacts Midterm-3/6 Presentations 3/18; Paper 3/9	Problem 3: Fisheries, invasive species and community disruption
10-12 3/12-4/6	Module 4: Communities-change through space and time Presentations 4/5, Paper 4/6 Break 3/19-3/23	Problem 4: Community composition and change in granite outcrops
13-15 4/9-4/27	Module 5: Ecosystems and human impacts Presentations 4/26; Paper 4/27	Problem 5: Ecosystem health of local Atlanta river environments

* unless otherwise noted, all papers will be due 11:55 the night of the presentations