

Ecology

Biology 206

Block 3 February 21 - March 15, 2000

Classroom: Olin

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Textbook

The Economy of Nature, Fourth Edition, Robert E. Ricklefs, 1997, W.H. Freeman & Co.

About This Course

This course covers the fundamental principles of ecology from an evolutionary perspective. All of the ecosystems and ecological relationships we observe today are the result of billions of years of biological evolution on Earth. We will first cover the fundamental principles of energy flow and material cycles in ecosystems, consider various kinds of interactions between species, discuss the structure and dynamics of ecological communities, and consider the growth and regulation of populations of organisms. We will next discuss some basic principles of evolution, and look at some examples of adaptation and coevolution.. The last section of the course will consider the geographical distributions of species, communities, and ecosystems; the diversity of organisms and ecosystems on Earth; and finally the interactions between humans and ecosystems and the implications of ecology for human societies.

Throughout the course we will be mixing theoretical, observational, and applied approaches to the study of ecology. We will take two field trips to observe nearby ecosystems. I will be showing a lot of slides from ecosystems around the world to illustrate general principles.

This course is designed for biology majors and advanced nonmajors; please note the prerequisites for the course. Class attendance is required of all students. As you are well aware, the schedule on the block plan is highly compressed compared to a course taught during a full semester at most other colleges, and the reading load is heavy. Please plan to keep up with the reading! All assigned reading should be read **before** the lecture for which it is assigned. Please also note that we will not cover topics in exactly the same order in which they are covered in the textbook, so you will have to check the reading schedule daily to make sure you are reading the right chapters for the next class. Your grade will be based on two exams, a project, and participation (see last page of syllabus for details of evaluation and grading).

Course Objectives

- 1) Learn the fundamental principles of ecology;
- 2) Develop a more informed understanding of the interactions between humans and ecosystems and the implications of ecology for human societies
- 3) Practice observing ecological patterns in the field and develop observational skills;
- 4) Practice designing experiments and collecting data to test ecological hypotheses;
- 5) Carry out an ecological research project and communicate the results orally.

Class Format

Class will begin every morning at 9:00 AM unless otherwise noted. We will usually have a combination of lecture-style presentations and class discussion. Morning sessions will usually last until 12:00 noon. On some days, as noted on the tentative schedule, we will have local field trips or time for research in small groups;

Tentative Schedule

<u>Week 1</u>	<u>Topic/Activity</u>	<u>Reading</u>
Mon., Feb. 21	Course introduction; science; systems; the "stuff" of ecosystems	Ch. 1; Ch. 2 (29-42)
Tues., Feb. 22	Energy in ecosystems; food chains & webs	Ch. 6; Ch. 22 (510-513)
Wed., Feb. 23	Biogeochemical cycles	Ch. 7
Thu., Feb. 24	Species interactions	Ch. 18, 19, 20
Fri., Feb. 25	Garden of the Gods field trip	

Tentative Schedule -- continued

<u>Week 2</u>	<u>Topic/Activity</u>	<u>Reading</u>
Mon., Feb. 28	Population dynamics; research project briefing, form teams	Ch. 15
Tue., Feb. 29	Communities & community dynamics	Ch. 4 (90-93); Ch. 22 (499-510); Ch. 23
Wed., Mar. 1	Catamount field trip (All day, 8:30 AM to 4 PM bring sack lunch, water, warm clothes)	
Thu., Mar. 2	Catch-up & review; research proposals due	
Fri., Mar. 3	Exam I	
 <u>Week 3</u>		
Mon., Mar. 6	Evolution & adaptation	Ch. 17 (369-385); Ch. 21 (474-476, 483-495, omit Box 21.1)
Tues., Mar. 7	No class -- fieldwork by teams	
Wed., Mar. 8 (263-275);	Evolutionary ecology, coevolution,	Ch. 11 (241-253); Ch. 12
298)	Behavior as adaptation	Ch. 13 (283-287 & 290-
Thurs., Mar. 9	Biogeography & biomes (**possible change to afternoon class meeting**)	Ch. 4 (79-83); Ch. 5; & special section between pp.38-39
Fri., Mar. 10	Biodiversity & its conservation	Ch. 24 (546-551; 560-564; 568-570); Ch. 26
 <u>Week 4</u>		
Mon., Mar. 13	Project presentations & papers due	
Tue., Mar. 14	Ecology and contemporary problems	Ch. 27
Wed., Mar. 15	Exam II	

Note: field trip dates may change due to weather

Evaluation & Grading

Your grade in this course will be based on the following activities. Details about each of these activities will be given in class

• Exams (2)	60%
• Team Research Report	25%
- Written Report = 15%	
- Oral Presentation = 10%	
• Participation, engagement, contribution to class	15%
TOTAL	100%

Letter grades will correspond with the common percentages, i.e.: 90-100% = A; 80-89% = B; 70-79% = C; 60-69% = D; less than 60% = F.

Exams are the main evaluation tool in this course. Exam questions will be mainly short-answer, fill in the blank, and multiple choice. Exam questions may deal with material from reading only, lecture only, or material that was covered in both reading and lecture (with the latter being the most likely to be on an exam).

Team Research Report: (ADD FROM JIM)

Participation is critical to your success in the class. It includes contribution to the learning environment of the class through showing interest and being engaged in the subject matter, asking questions, and making comments. Participation also involves getting help from me if you need it. Attendance is also part of participation; you are expected to attend every class meeting; if you must be absent, please let me know in advance if possible.

Honor Code

The Colorado College Honor Code applies to all aspects of this course. This includes, but is not limited to, doing your own work on written assignments, acknowledging all sources of ideas and information used in your work, and honestly and fairly evaluating the work of your classmates if asked to do so. Refer to the Constitution of the Honor Code if you have questions, or talk with me. Remember that it is the responsibility of the student to clarify ambiguous situations; in other words, if you are not sure, ask me.