UP 205 Ecology and Environmental Sustainability
Spring 2017
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Description--Ecology is the scientific study of the interactions of organisms with each other and their environment, or ecosystem. Humans play a critical role in these interactions. Manipulation of these interactions for agriculture, forestry, energy production, or settlement is at the basis of human society. We need to have an understanding of these ecological interactions in order to plan development, land use, recreation, or conservation in a way which will be environmentally sustainable, protecting the functioning of ecosystems. This course provides an introduction to the scientific study of ecosystems, focusing on how natural ecological systems operate, how human activities affect these systems, and how constraints on these systems affect society.

There are two main sections to the course. Lectures will cover fundamental ecological concepts and the biological, chemical, and physical processes important in ecological systems. We will cover ecological systems at several scales of organization: the individual, population, community, ecosystem, and landscape. Each topic will be illustrated with a case study illustrating the applications of ecological knowledge to planning, environmental conservation, management, or restoration. We will also cover the ecology of specific habitats, aquatic and terrestrial, and will examine the human impact on these habitats.

Discussions will allow you to analyze case studies of planning problems and apply the ecological concepts you have learned in lecture to the understanding of and perhaps solution to these problems. Case studies include problems of growth management, urban landscape, public health, equity planning, wildlands management, and sustainable development. Readings for discussion section include two types of material. We will read and analyze a newspaper or magazine article that raises planning problems. We will then examine a scientific article that covers ecological background necessary for understanding the planning problem. Discussion sections are also timed to coincide with lectures on the appropriate ecological topics. Students will also divide into groups, and each group will present its analysis of one planning problem over the course of the semester. Reading must be done in advance of Discussion section and occasional unannounced quizzes will be given to check that students are doing the reading.

The analytical skills you develop in discussion section will be applied to a paper assignment. You will take a topic involving ecological issues from a newspaper. You will then identify the important ecological issues raised, and will research those ecological issues in the scientific literature and write a 5-7 page paper summarizing the planning problem and application of scientific information. We will discuss the paper assignment in detail in Discussion.

Readings--There is a **required** set of readings for the discussion section, with links on the course Compass site. Students will read in advance of discussion section each week. Material from the discussion section readings may appear on the exams. There is an **optional** textbook, *First Ecology* by Alan Beeby and Anne-Maria Brennan. It is available at Funk/ACES Library Reserve or through online booksellers. Readings in the textbook are coordinated with the lectures to help you understand the material, but material from the textbook alone will not appear on the exams. Chapter listings in the syllabus refer to this book.

Requirements--There will be five major requirements; two exams, a paper, the group project, and participation in the discussion section. Participation will be based on attendance and performance on several unannounced quizzes. Grades will be based on a scale of A+>98>A>92>A->90>B+>88>B>82>B->80>C>70>D>60>F. Participation in the discussions, including quizzes, will count for 20% of the grade, group projects for 10%, the 1st exam for 20%, the Paper for 25%, and the 2nd Exam for 25%. You must complete all requirements of the course to receive a passing grade. There is no final exam scheduled during exam week. The 2nd exam is not cumulative.

Academic Honesty--You are strongly encouraged to discuss class assignments with others, but your work in papers and exams must be your own. Do not quote directly or paraphrase from published works (including the world wide web) without a proper citation. Footnote ideas and information that are not common knowledge. When in doubt about what academic integrity requires, ASK! Failure to abide by the principles of academic honesty will result in a failing grade for the course.

Rights and Responsibilities in DURP Learning Environments--The DURP learning environment includes dialogue, collaborative work, and service-learning. By enrolling in a course in the Department of Urban and Regional Planning, students agree to be responsible for maintaining a respectful environment in their academic and professional training. The expectations outlined in this code apply to all people participating in DURP activities, including classes, projects, and extracurricular programs.

Rights in the DURP learning environment. All participants in DURP activities have the right to feel comfortable sharing in the conversation, to be free of intimidation or ridicule, and to face no discrimination on the basis of their views. Through classroom discussions, opinions are questioned and challenged and may be strengthened or revised. In group project work, students have the right to be included, to contribute, and to have their voices heard by team members. Group projects prepare students for working with a wide variety of colleagues and allow for the opportunity to learn from classmates.

Responsibilities in the DURP learning environment. Students, faculty, and staff are responsible for maintaining an inclusive, respectful environment and all are expected to respect the opinions and backgrounds of others. In order to have successful dialogue, basic rules of courtesy should be followed.

Students and faculty are also responsible for dialogue that meets the standards of academic and professional planning settings, where opinions are valid when they are supported with appropriate evidence and logical arguments. Students and faculty may speak from personal experience, but should not make arguments based on uninformed stereotypes, misrepresented information, or unsupported assertions.

In group work, participants are responsible for providing the opportunity for each group member to contribute. Ideas and contributions should be valued and considered equally as long as they meet the basis of accepted academic and professional standards for planning work.

Date	Lecture	Readings
18-Jan	Introduction to Ecology and Planning: The Ayuquila River	
20-Jan	Discussion: Invading species	Cane Toads (video)
23-Jan	Physical Environment and Niche I Invading Species	Chapter 2
25-Jan	Physical Environment and Niche II Climate Change	Chapter 2 (cont.), Chapt 8.3
27-Jan	Discussion: Cougar attacks--identifying ecological principles	Discussion Reader Week 2
30-Jan	Natural Selection I Pesticide Resistance	Chapter 1
1-Feb	Natural Selection II Pesticide Resistance	Chapter 1 (cont.)
3-Feb	Discussion: How to read a scientific article	Discussion Reader Week 3
6-Feb	Population Growth I	Chapter 3
8-Feb	Population Growth II	Chapter 3 (cont.)
10-Feb	Discussion: researching scientific information	
13-Feb	Intraspecific competition	Chapter 4, Chapter 7.2
15-Feb	Interspecific competition	Chapter 4 (cont.)
17-Feb	Discussion: The Asian long-horned beetle	Discussion Reader Week 5
20-Feb	Predation and Pest Control	Chapter 4 (cont.)
22-Feb	Predation and Pest Control II	Chapter 4 (cont.)
24-Feb	Discussion: Work on Group Projects	
27-Feb	Population Regulation I	Chapter 3.3
1-Mar	Population Regulation II Fishing and the collapse of cod populations	Chapter 3.3
3-Mar	Discussion: Fishing, tourism and Native American Rights	Discussion Reader Week 7
6-Mar	**Review for 1st exam**	
8-Mar	**1st exam (covers material up to and including March 3)**	
10-Mar	Discussion: Group I–People and lions in African National Parks	Discussion Reader Week 8
13-Mar	Succession	Chapter 5
15-Mar	Disturbance and the Yellowstone Fires	Chapter 5 (cont.)
17-Mar	Discussion: No Discussion Section--Work on group projects	
17-Mar	**Paper proposal due**	
20-Mar	**Spring Break**	
22-Mar	**Spring Break**	
24-Mar	**Spring Break**	
27-Mar	Causes of Diversity	
29-Mar	Ecosystems-- Primary Productivity	Chapter 6
31-Mar	Discussion: Group II--Southeastern Fires	Discussion Reader Week 10
3-Apr	Ecosystems--Secondary Productivity	Chapter 6 (cont.)
5-Apr	Food Webs	Chapter 6 (cont.)
7-Apr	Discussion: Group III--Deer Control in Suburban Areas	Discussion Reader Week 11
10-Apr	Metapopulations	Chapter 3.6-3.7
12-Apr	Landscape Ecology	Chapter 8.1, Chapter 9
14-Apr	Discussion:Lyme disease, ecology and public health	Discussion Reader Week 12
17-Apr	Alternate Stable States	Chapter 9.3
19-Apr	Agroecology	Chapter 6.5
21-Apr	Discussion: Group IV–Ecosystem services	Discussion Reader Week 13
24-Apr	Urban Ecology	
26-Apr	Restoration Ecology	Chapter 7.3
28-Apr	Discussion: Endangered species in urban/suburban environments	Discussion Reader Week 14
28-Apr	**Paper due in Discussion Section**	
1-May	**Review for 2nd Exam**	
3-May	**2nd exam (covers material from March 10 to May 1)**	