

UP 205 Ecology and Environmental Sustainability
Spring 2022, Professor Daniel Schneider
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Office hours: email me to set up a zoom meeting
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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. **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.

Requirements--There will be 4 major requirements; two exams, a paper, 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 25% of the grade, 1st exam for 25%, 2nd exam for 25%, and the Paper 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 exams are 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. See the student handbook, http://studentcode.illinois.edu/article1_part4_1-401.html, which is incorporated into the syllabus.

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.

If you are having troubles in the course or in your life more generally, please use the resources available on campus. The FAA Associate Dean for Undergraduate Academic Affairs--Student Affairs is Mary Edwards who can be reached at 217.333.3211 or mmedward@illinois.edu. The Student Assistance Center can be reached at 217.333.0050. The Counseling Center is committed to providing a range of services intended to help students develop improved coping skills in order to address emotional, interpersonal, and academic concerns. The Counseling Center provides individual, couples, and group counseling. All of these services are paid for through the health services fee. The Counseling Center offers primarily short-term counseling, but they do also provide referrals to the community when students could benefit from longer term services. <https://counselingcenter.illinois.edu/>.

Date	Lecture	Reading
19-Jan	The Ayuquila River	
21-Jan	Discussion: Invading species	Cane Toads (video)
24-Jan	Physical Environment and Niche I Invading Species	
26-Jan	Physical Environment and Niche II Climate Change	
28-Jan	Discussion: Cougar attacks--identifying ecological principles	Discussion Reader Week 2
31-Jan	Natural Selection I Pesticide Resistance	
2-Feb	Natural Selection II Pesticide Resistance	
4-Feb	Discussion: How to read a scientific article	Discussion Reader Week 3
7-Feb	Population Growth I	
9-Feb	Population Growth II	
11-Feb	Discussion: researching scientific information	
14-Feb	Intraspecific competition	
16-Feb	Interspecific competition	
18-Feb	Discussion: The Asian long-horned beetle	Discussion Reader Week 5
21-Feb	Predation and Pest Control	
23-Feb	Predation and Pest Control II	
25-Feb	Discussion--Deer Control in Suburban Areas	Discussion Reader Week 6
28-Feb	Population Regulation I	
2-Mar	Population Regulation II Fishing and the collapse of cod populations	
4-Mar	Discussion: Fishing, tourism and Native American Rights	Discussion Reader Week 7
7-Mar	Review session	
9-Mar	1st Exam (covers material up to and including Mar 7)	
11-Mar	Discussion: No Discussion Section	
11-Mar	Paper proposal due	
21-Mar	Succession	
23-Mar	Disturbance and the Yellowstone Fires	
25-Mar	Discussion: Southeastern Fires	Discussion Reader Week 9
28-Mar	Causes of Diversity	
30-Mar	Ecosystems-- Primary Productivity	
1-Apr	Discussion: Monarch butterflies	Discussion Reader Week 10
4-Apr	Ecosystems--Secondary Productivity	
6-Apr	Agroecology	
8-Apr	Discussion: Food System Planning	Discussion Reader Week 11
11-Apr	Metapopulations	
13-Apr	Landscape Ecology	
15-Apr	Discussion: Lyme Disease	Discussion Reader Week 12
18-Apr	Urban Ecology	
20-Apr	Alternate Stable States	
22-Apr	Discussion: Ecosystem Services and Urban Heat Islands	Discussion Reader Week 13
25-Apr	Restoration Ecology	
27-Apr	Lecture related to student-chosen topic	
29-Apr	Discussion: to be chosen by students	Discussion Reader Week 14
2-May	Review session	
4-May	2nd exam (covers material from Mar 21 up to and including May 2)	
6-May	Paper due	