

UP 205 Ecology and Environmental Sustainability
Fall 2020, Professor Daniel Schneider
ddws@illinois.edu

Office hours: email me to set up a zoom meeting
TA: Theresa Dunne

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. Lectures will be asynchronous Power Point presentations with my recorded lecture. 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 be held over zoom, synchronously during your assigned class time. These 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
24-Aug	Introduction	
26-Aug	The Ayuquila River	
28-Aug	<i>Discussion: Invading species</i>	Cane Toads (video)
31-Aug	Physical Environment and Niche I Invading Species	
2-Sep	Physical Environment and Niche II Climate Change	
4-Sep	<i>Discussion: Cougar attacks--identifying ecological principles</i>	Discussion Reader Week 2
7-Sep	Natural Selection I Pesticide Resistance	
9-Sep	Natural Selection II Pesticide Resistance	
11-Sep	<i>Discussion: How to read a scientific article</i>	Discussion Reader Week 3
14-Sep	Population Growth I	
16-Sep	Population Growth II	
18-Sep	<i>Discussion: researching scientific information</i>	
21-Sep	Intraspecific competition	
23-Sep	Interspecific competition	
25-Sep	<i>Discussion: The Asian long-horned beetle</i>	Discussion Reader Week 5
28-Sep	Predation and Pest Control	
30-Sep	Predation and Pest Control II	
2-Oct	<i>Discussion--Deer Control in Suburban Areas</i>	Discussion Reader Week 6
5-Oct	Population Regulation I	
7-Oct	Population Regulation II Fishing and the collapse of cod populations	
9-Oct	<i>Discussion: Fishing, tourism and Native American Rights</i>	Discussion Reader Week 7
12-Oct	Review session on Zoom	
14-Oct	1st Exam (covers material up to and including October 12)	
16-Oct	Discussion: No Discussion Section. Work on Paper proposal	
19-Oct	Paper proposal due	
19-Oct	Succession	
21-Oct	Disturbance and the Yellowstone Fires	
23-Oct	<i>Discussion: Southeastern Fires & Longleaf pines</i>	Discussion Reader Week 9
26-Oct	Causes of Diversity	
28-Oct	Ecosystems-- Primary Productivity	
30-Oct	<i>Discussion: Declining Monarch Butterfly Populations</i>	Discussion Reader Week 10
2-Nov	Ecosystems--Secondary Productivity	
4-Nov	Agroecology	
6-Nov	<i>Discussion: Food Systems Planning</i>	Discussion Reader Week 11
9-Nov	Metapopulations	
11-Nov	Landscape Ecology	
13-Nov	<i>Discussion: Lyme Disease</i>	Discussion Reader Week 12
16-Nov	Urban Ecology	
18-Nov	Alternate Stable States	
20-Nov	<i>Discussion: Ecosystem Services and Urban Heat Islands</i>	Discussion Reader Week 13
23-Nov	Thanksgiving Break	
25-Nov	Thanksgiving Break	
27-Nov	Thanksgiving Break	
30-Nov	Restoration Ecology	
2-Dec	Lecture related to student-chosen topic	
4-Dec	<i>Discussion: to be chosen by students</i>	Discussion Reader Week 14
7-Dec	Review session on Zoom	
9-Dec	2nd exam (covers material from October 19 up to and including Dec 7)	
14-Dec	Paper due	

