

## UP 205 Ecology and Environmental Sustainability

Spring 2024, Professor Rebecca Walker

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Office hours: Mondays 2-3pm (TBH 210)

Tuesday 2-3:30pm (via Zoom -- [sign up here!](#))

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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 will examine an ecological topic in the context of a planning issue. Discussion sections are also timed to coincide with lectures on the appropriate ecological topics. **Reading must be done in advance of Discussion section**, and 3 unannounced quizzes will be given to check that students are doing the reading.

The analytical skills you develop in the 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**—All readings for this class will be posted on the course Canvas site. Readings for lecture are optional but encouraged—think of them as supplemental material to better understand the ecological concepts covered in lecture. They are a great place to turn if there is a topic that we covered in lecture that you find confusing. There is a **required** set of readings for the discussion section, posted within the Canvas Module for each week. Students will read in advance of discussion section. 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. Quizzes cannot be made up unless missed due to an excused absence, approved in advance. Late work will result in a loss of 10 points each day.

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, 1<sup>st</sup> exam for 25%, 2<sup>nd</sup> 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 without a proper citation. Citations must be in APA format. You may use artificial intelligence (AI) for idea generation, but all written work must be your own, and all essays will be passed through AI detection software. When in doubt about what academic integrity requires, ASK! Failure to abide by the principles of academic honesty, including plagiarism and the unauthorized use of AI, will result in a failing grade for the course.

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policy: <https://studentcode.illinois.edu/article1/part4/1-401/>. Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

**Student Conduct** — The Department of Urban and Regional Planning (DURP) is committed to creating an environment of inclusion and opportunity that is rooted in the very goals and responsibilities of practicing planners. Conduct that interferes with the rights of another or creates an atmosphere of intimidation or disrespect is inconsistent with the environment of learning and cooperation that the program requires. By enrolling in class in the Department of Urban and Regional Planning, students agree to be responsible for maintaining a respectful environment in all DURP activities, including classes, projects, and extracurricular programs. We will be governed by the University Student Code. See Student Code Article 1—Student Rights and Responsibilities, Part 1. Student Rights.

**Mental Health** — Significant stress, mood changes, excessive worry, substance/alcohol misuse or interferences in eating or sleep can have an impact on academic performance, social development, and emotional wellbeing. Campus offers a variety of confidential services including individual and group counseling, crisis intervention, psychiatric services, and specialized screenings, covered through the Student Health Fee. If you or someone you know experiences a mental health concern, please contact or visit any of the University's resources provided below. Getting help is a smart and courageous thing to do.

- Counseling Center (217) 333-3704
- McKinley Health Center (217) 333-2700
- National Suicide Prevention Lifeline (800) 273-8255
- Rosecrance Crisis Line (217) 359-4141 (available 24/7, 365 days a year)

If you are in immediate danger, call 911.

**Community of Care** — As members of the Illinois community, we each have a responsibility to express care and concern for one another. If you come across a classmate whose behavior concerns you, whether in regards to their well-being or yours, we encourage you to refer this behavior to the Student Assistance Center (217-333-0050 or <http://odos.illinois.edu/community-of-care/referral/>). Based on your report, the staff in the Student Assistance Center reaches out to students to make sure they have the support they need to be healthy and safe. Further, as a Community of Care, we want to support you in your overall wellness. We know that students sometimes face challenges that can

impact academic performance (examples include mental health concerns, food insecurity, homelessness, personal emergencies). Should you find that you are managing such a challenge and that it is interfering with your coursework, you are encouraged to contact the Student Assistance Center (SAC) in the Office of the Dean of Students for support and referrals to campus and/or community resources.

**Students with Disabilities** — To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor as soon as possible and provide the instructor with a Letter of Academic Accommodations from Disability Resources and Educational Services (DRES). To ensure that disability-related concerns are properly addressed from the beginning, students with disabilities who require assistance to participate in this class should apply for services with DRES and see the instructor as soon as possible. If you need accommodations for any sort of disability, please speak to me after class, or make an appointment to see me or see me during my office hours. DRES provides students with academic accommodations, access, and support services. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 217-333-1970, e-mail [disability@illinois.edu](mailto:disability@illinois.edu) or visit the DRES website at <http://www.disability.illinois.edu/>. Here is the direct link to apply for services at DRES, <https://www.disability.illinois.edu/applying-services>.

**Disruptive Behavior** — Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office for Student Conflict Resolution (<https://conflictresolution.illinois.edu>; [conflictresolution@illinois.edu](mailto:conflictresolution@illinois.edu); 333-3680) for disciplinary action.

**Emergency Response Recommendations** — Emergency response recommendations and campus building floor plans can be found at the following website: <https://police.illinois.edu/em/run-hide-fight/>. I encourage you to review this website within the first 10 days of class.

**Religious Observances** — Illinois law requires the University to reasonably accommodate its students' religious beliefs, observances, and practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements. Students should complete the Request for Accommodation for Religious Observances form should any instructors require an absence letter in order to manage the absence. In order to best facilitate planning and communication between students and faculty, students should make requests for absence letters as early as possible in the semester in which the request applies.

**Sexual Misconduct Reporting Obligation** — The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options. A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: [wecare.illinois.edu/resources/students/#confidential](http://wecare.illinois.edu/resources/students/#confidential).

Other information about resources and reporting is available here: [wecare.illinois.edu](http://wecare.illinois.edu).

	Week	Date	Topic	Readings
	1	W 17-Jan	Introduction	Syllabus; Smith and Smith Ch. 1
		F 19-Jan	Discussion: The Trouble with Wilderness	Cronon, 1995
O R G A N I S M S	2	M 22-Jan	Organisms and their Environment I	Selections from Smith and Smith: 7.3; 13.9-13.11; 17.5
		W 24-Jan	Organisms and their Environment II	
		F 26-Jan	Discussion: Invasive Species	<a href="#">EAB Story map</a> ; Minneapolis newspaper article
	3	M 29-Jan	Selection and Adaptation I	Smith and Smith Ch. 5
		W 31-Jan	Selection and Adaptation II - Case Study: Antibiotic and Pesticide Resistance	Hawkins et al. 2019 (pgs. 135-141)
		F 2-Feb	Discussion: How to Read a Scientific Article	Kostanecki et al., 2021
P O P U L A T I O N S	4	M 5-Feb	Population Growth I	Smith and Smith Ch. 8 and 9
		W 7-Feb	Population Growth II - Metapopulations	Hanski and Gaggiotti, 2004
		F 9-Feb	Discussion: Researching Scientific Information	
	5	M 12-Feb	Populations III - Intraspecific Competition	Smith and Smith Ch. 11
		W 14-Feb	Populations IV - Case Study: Population Management	
		F 16-Feb	Discussion: Deer Control in Suburban Areas	
C O M M U N I T I	6	M 19-Feb	Interspecific Competition	Smith and Smith Ch. 13
		W 21-Feb	Interspecific Competition II - Case Study: Planning for Water Clarity	
		F 23-Feb	Discussion: Fishing, Tourism, Native American Treaty Rights	
	7	M 26-Feb	Predator Prey Interactions	Smith and Smith Ch. 14
		W 28-Feb	Community Structure	Smith and Smith Ch. 16

E S		F 1-Mar	Discussion: Socioeconomic Inequality and Urban Biodiversity		
	8	M 4-Mar	Exam 1 Review Session (via Zoom)		
		<b>W 6-Mar</b>	<b>Exam 1 (covers material up to March 4)</b>		
		F 8-Mar	<b>No Discussion Section</b>		
	9	M 18-Mar	Community Dynamics I - Disturbance	Smith and Smith Ch. 18	
		W 20-Mar	Community Dynamics II - Ecological Succession	Smith and Smith Ch. 18	
		F 22-Mar	Discussion: California Wildfires		
	E C O S Y S T E M S	10	M 25-Mar	Ecosystems and Productivity	Smith and Smith Ch. 20
			W 27-Mar	Secondary Productivity	Smith and Smith Ch. 20
F 29-Mar			Discussion: Wolf Reintroduction		
11		M 1-Apr	Decomposition and Nutrient Cycling	Smith and Smith Ch. 21-22	
		W 3-Apr	Global Systems	Smith and Smith Ch. 27	
		F 5-Apr	Discussion: Social Cost of Nitrogen	Keeler et al. 2016	
L A N D S C A P E S	12	M 8-Apr	<b>No Class - Work on paper assignment</b>		
		W 10-Apr	Agroecology		
		F 12-Apr	Discussion: Food Systems Planning		
	13	M 15-Apr	Urban Ecology		
		W 17-Apr	Landscape Ecology		
		F 19-Apr	Discussion: Ecosystem Services and Urban Heat Island		
	14	M 22-Apr	Ecosystem Resilience		
		W 24-Apr	Restoration Ecology		
		F 26-Apr	Discussion: Restoration, Resilience, and Gentrification		

	15	M 29-Apr	Exam 2 Review Session (second half course material)	
		W 1-May	Exam 2	
	16	M 6-May	Paper Due	