

Principles of Applied Ecology



LA 441/541 • 4 Credits

Fall 2017 • Tu/Th 1:00 pm - 3:50 pm • 231 Lawrence Hall

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Prerequisites: Undergrad: 1 course in ecology or biogeography. Grad: 1 course in natural sciences.
See the list of recommended [prerequisite courses](#).

Non-majors should contact the Landscape Architecture Office to request enrollment at 541-346-3634 or landarch@uoregon.edu. LA 441 can fulfill requirements for ENV5 and ESCI majors, and for LA and ENV5 Minors. LA 541 can serve as a foundation course for the Ecological Design Certificate (ECD);

Course Objectives:

By the end of the course, the student should be able to apply ecological understanding toward landscape design, planning and management interventions across a range of spatial scales and land-use contexts using concepts and techniques developed in class.

To this end, we will develop an ecological framework for design that can be applied in any landscape context, at any spatial scale, and regardless of the degree of priority given to human uses, ecological function or biodiversity.

By the end of the course, students will have demonstrated their ability to:

- Draw upon multiple ecological frameworks to understand how landscapes function as communities, as living systems, as bundles of pattern and process, and as spatial and temporal hierarchies
- Rigorously apply ecological concepts to solving design, planning and management problems
- Develop spatially explicit recommendations for dynamic landscapes where change over time is intentionally guided by incorporating ecological and cultural processes in their management
- Apply the life history needs of native plants and animals toward design, planning and management within a multi-species framework
- Employ a toolbox of ecological concepts and design techniques across a range of spatial and temporal scales and a variety of land uses, from residential properties to watersheds, and from urban cores to nature reserves
- Apply ecological theory and methodologies to spatially-based problem-solving by reading and interpreting the literature, exploring scientific approaches to answering questions, examining case studies, and applying ecological approaches
- Design landscapes that sustain a wide array native species and important ecological functions while addressing people's desires for beauty and personal engagement in urban settings

Course Mechanics:

The course will meet twice per week. The first two periods (1:00-2:50) will focus on the presentation and discussion of class materials. The final period (3:00-3:50) will serve as a lab, and may include instruction, class exercises or time for teams to work on class projects. Classes will encompass a variety of learning formats from lectures to guided in-class exercises, discussions of ecological literature, and outdoor field exercises. **Students are required to participate in a full-day field trip, scheduled for Saturday 10/14.** Students unable to attend the field trip must clear it in advance with the instructor and perform an equivalent make-up assignment. **Final Project presentations will be held during the final exam period, Tues., Dec. 5, 12:30-3:30 PM; all students must attend.**

Textbooks and other readings

The required texts:

Dramstad, W.E., J.D. Olson and R.T.T. Forman. 1996. Landscape ecology principles in landscape architecture and land-use planning. Washington, D.C.: Island Press. Available as hard copy or e-book.

A course packet will be available at the UO Bookstore.

The optional texts:

Johnson, B. R. and K. Hill. 2002. Ecology and design: frameworks for learning. Washington, D.C.: Island Press. Available as hard copy or e-book. *There are three required chapters for all students, one individualized chapter to read, and others that may be of interest. You may wish to purchase the book. However, required chapters are available on Canvas and there is a AAA Reserve copy for others.*

Forman, R.T.T. 1995. Land mosaics: the ecology of landscapes and regions. Cambridge: Cambridge University Press.

Evaluation

Final project presentations will occur during the final exam period. Each student must attend.

The course is offered as either graded or pass/no pass. In either case, all assignments must be completed satisfactorily and submitted in a timely fashion to achieve a passing grade. Grades will be based on both individual performance and team projects. The written reading assignments count as a single assignment, and you must receive a minimum of 65% to pass that component. Students will be expected to attend all classes and be on time, including the field trip. On-time class attendance counts for 10% of a student's grade. More than two unexcused absences will result in further deduction of points.

Throughout much of the term, students will work in teams of 4-5 people that will serve as the basis for in-class exercises, small-group discussions, and the final project. Students will develop team covenants and conduct a mid-project peer evaluation to help develop good team dynamics. At the end of the term, students will be asked to provide a final peer evaluation of the relative contributions of their team members.

The university requires that graduate students fulfill requirements beyond those of undergraduates in 400/500 level courses. To this end, graduate students will be asked to complete additional reading assignments, and to exercise leadership in class sessions and team projects.

Policy Statement on Academic Honesty and Student Conduct

All work submitted must be your own (or your team's) and originally produced for this course. The use of sources (ideas, quotations, paraphrases) must be properly acknowledged and documented. Students are encouraged to work together and assist one another, but unless an assignment is specifically designated as a team project, each student is expected to complete their own work individually. *Plagiarism* means using the ideas or writings of another as one's own. It includes, but is not limited to: a) the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgement; and b) the unacknowledged use of materials prepared by another person.

Academic Misconduct: The University Student Conduct Code (available at conduct.uoregon.edu) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students' obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at researchguides.uoregon.edu/citing-plagiarism.

Information for Students with Disabilities

The University of Oregon is working to create inclusive learning environments. If there are learning or health considerations that may affect your ability to participate fully in this course, please meet with Prof. Johnson as soon as possible to discuss possible accommodations. If this is a documented disability, please request that the Counselor for Students with Disabilities send a letter of verification. *You are also encouraged to contact the Accessible Education Center in 164 Oregon Hall at 541-346-1155 or uoac@uoregon.edu.*

	Topic and Format	Required Readings	Lab & Prep	Assignments Due
WEEK 1				
TU 9/26	Course Overview & Introduction	Go over course syllabus and course packet	Efficient Reading; Discuss precedents poster	- Turn in student survey
TH 9/28	Ecology as Science- Design as Action	- Howett 1998; Ecology & Design, Ch1 + p. 343-4; Caughley & Gunn 1996; Felson & Pickett 2005;	Lab: Experimental Design Lab Exercise Preparation: Read Experimental Design Notes and Lab Exercise	- Required Written Reading Assignment
WEEK 2				
TU 10/3	Ecological Foundations for Design	- Ecology & Design: Ch 3 and Ch. 13	Go over reading assignments; Perform Precedents Poster exercise	- Precedent Poster Due - Required Written Reading Assignment
TH 10/5	Community Ecology: Species, Habitats and Communities	- Marzluff & Ewing 2001; - Lecture Notes	Lab: Review Species Project, Wildlife Habitat CD & other resources; Assign species to student teams Preparation: Read Species Project	- Required Written Reading Assignment
WEEK 3				
TU 10/10	Landscape Ecology: History and Trajectories of Change	- Boyd 1999; Bachelet et al. 2011; optional Christy and Alverson 2011	Lab: Landscape History Lab Exercise Preparation: Read Lab Exercise. <i>Bring required materials.</i>	- Reading Assignment - Team covenant
TH 10/12	Community Ecology: Plant Community Structure	- Lecture Notes	Lab: Habitat Delineation Lab Exercise Preparation: Read Lab Exercise. <i>Bring required materials.</i>	Saturday Field Trip 9:00 – 4:00 PM.
WEEK 4				
TU 10/17	Landscape Ecology: Hierarchy and Scale	- Review Ecol. & Design p. 63-67 & p. 313-314; - Urban, O'Neill & Shugart 1987; Noss 1990 - Lecture Notes	Lab: Landscape History Results Charrette Preparation: Read Charrette Prep. <i>Bring required materials</i>	- Reading Assignment - Landscape History Lab Exercise results
TH 10/19	From Species to Communities: Lab Exercise	- Read Species-Communities Lab Exercise	Prepare as described and come in costume	<u>Species Project Due 5 PM of the day prior to class</u>
WEEK 5				
TU 10/24	Community Ecology: Disturbance & Succession	- Ecol. & Design p. 58-61; Connell & Slayter 1977; Davison & Kindscher 1999	Lab: Restoring Fire-Adapted Ecosystems Lab Exercise - Making/Using Histograms. Preparation: Histogram and Diversity Notes; <u>Bring selected tree plot data in Excel.</u>	- Required Written Reading Assignment
TH 10/26	Restoration Ecology: Theory & Vegetation Management	- Morrison 1987; Hobbs & Norton 1996; SER Primer & Guidelines - Lecture Notes	Lab: Restoring Fire-Adapted Ecosystems Charrette Preparation: Read Charrette Prep. <i>Bring required materials.</i>	- Required Written Reading Assignment

	Topic and Format	Required Readings	Lab	Assignments Due
WEEK 6				
TU 10/31	Hydrology: Natural Systems Management	- Naiman et al. 1993, Poff 1997; Schroeder handout + Metro PDF from website	Lab: Restoring Flood-Adapted Ecosystems Lab Exercise Preparation: Read Lab Exercise. <i>Bring required materials.</i>	- Required Written Reading Assignment
TH 11/2	Restoration Ecology: Urban Stormwater Management	- Schueler 1994, & assigned manuals from websites - Lecture Notes	Lab: Restoring Flood-Adapted Ecosystems Charrette Preparation: Read Charrette Prep. <i>Bring required materials.</i>	- Required Written Reading Assignment
WEEK 7				
TU 11/7	An Ecological Framework for Design	- Mozingo 1997; Nassauer 2004; Malin 1995; - Lecture Notes	Lab: Residential Design Charrette Preparation: Read Charrette Prep. <i>Bring required materials.</i>	- Reading Assignment
TH 11/9	Landscape Ecology: Concepts and Practice-	- Ecol. & Des. p. 314-318; - Textbook, Dramstad, et al.: p. 7-46; - Lecture Notes	Lab: Landscape Ecology Lab Exercise Preparation: Read Lab Exercise. <i>Bring required materials.</i>	- Turn in mid-project team evaluation sheet
WEEK 8				
TU 11/14	Urban Open Space Networks Planning	- Cook 1991, Croonquist & Brooks 1993; - Lecture Notes	Lab: Landscape Ecology Green Infrastructure Charrette. Preparation: Read Charrette Prep. <i>Bring required materials.</i>	- Required Written Reading Assignment
TH 11/16	Final Project Charrette		Lab: Conceptual Model and Proposal Charrette Preparation: Read Charrette Prep. <i>Bring required materials.</i>	
WEEK 9				
TU 11/21	Urban Ecosystems - Emerging Directions and course wrap-up	- Palmer et al. 2004, Gedge & Gyongyver 2005; Pickett & Cadenasso 2006	Lab: Course Evaluation Conversation & Final Project Meetings	- Required Written Reading Assignment
TH 11/23	THANKSGIVING NO CLASS			
WEEK 10				
	<i>Review Week - no class</i>	<u>Final Projects & Peer Evaluation forms due @ 5 PM the day before presentations</u> <u>Final Project Presentation Tues., Dec.5, 12:30-3:30 PM in final exam period</u>		