

Landscape Ecology

GRG 335N

Unique 36665

Spring 2015

TTH 3:30 – 5:00 PM

WAG 420



Instructor: Paul Holloway

Department of Geography and the
Environment

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Office hours: T 12:00 - 1:00 PM, TH 2:00-3:00 PM, or by appointment

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Course Overview & Goals

Landscape ecology is the study of both the spatial patterns in the Earth's biosphere, and of the processes that shape these patterns. An interdisciplinary approach, it draws heavily from both geography and ecology, but is also increasingly shared by foresters, wildlife biologists, social scientists, hydrologist, and architects, due to the current need to assess the impact of rapid, multi-scale changes to the environment. We will examine the current state of knowledge and research on the patches and corridors that constitute landscape mosaics. We will explore the need to quantify landscape pattern, and the various models used to quantify and link both pattern with process. Finally, we will explore practical applications of landscape ecology, on both natural environments and those managed by human activities. Throughout the course, we will regularly discuss the possible causal explanations for landscape structure from geographical and ecological points of view.

The overarching goal of this course is to develop in you the ability to think like a landscape ecologist. This means, by the end of the semester, you will be able to define and describe heterogeneous landscapes using the patch-corridor-matrix model, account for scale, interpret the effect of process on patterns (and vice versa) using quantitative and qualitative approaches and identify when a landscape ecology approach can be used in real-world situations.

It is each student's responsibility to attend lectures regularly, read the assigned chapters, and participate in class activities and discussions. The exams will test vocabulary, concepts, theory, and the ability to apply this knowledge to real-world situations and formulate solutions. In-class activities will provide an opportunity for hands-on, interactive learning. The final project will evaluate your ability to explain landscape ecology patterns and processes using technical writing skills. The final project replaces the final exam, and so needs to demonstrate mastery of the entire course. The project is to be done independently and is due on the last day of class.

Prerequisites

Assumes background in physical geography or ecology

Required textbook

M.G. Turner, R.H. Gardner, and R.V. O'Neill. 2001. *Landscape Ecology in Theory and Practice: Patterns and Processes*. Spring, New York. (ISBN 0-387-95123-7, paperback). Available for purchase at the UT Co-Op.

Readings

Kupfer, J.A. 2011. Theory in landscape ecology and its relevance to biogeography. In *The SAGE Handbook of Biogeography*, eds. A. Millington, M. Blumer, and U. Schickhoff, 57-74. London: SAGE Publications, Inc.

Kupfer, J.A. 2012. Landscape ecology and biogeography: Rethinking landscape metrics in a post-FRAGSTATS landscape. *Progress in Physical Geography* 36, 400-420.

Turner, M.G. 2005. Landscape ecology: what is the state of the science? *Annual Review of Ecology, Evolution and Systematics* 36, 319-344.

Wu, J. 2013. Landscape sustainability science: Ecosystem services and human well-being in changing landscapes. *Landscape Ecology* 28, 999-1023.

Short essays that describe Landscape Ecology <http://www.usiale.org/what-landscape-ecology>

Grading and Assignments

Exam 1	25%
Exam 2	25%
In-Class Projects	20%
Final Project	25%
Participation and attendance	5%

Final letter grades for the course are assigned by percentages of the total possible points: >92%=A; 90-91.99%=A-; 88-89.99%=B+; 82-87.99%=B; 80-81.99%=B-; 78-79.99%=C+; 72-77.99%=C; 70-71.99%=C-; 68-69.99%=D+; 62-67.99%=D; 60-61.99%=D-; <60=F.

Exams are designed to assess your progress towards course goals, and exam material will be based on the assigned readings, lectures, PowerPoints, class discussions and projects. In-class projects are low-stakes interactive activities that will allow you to experiment and delve more deeply into the principles of landscape ecology. The final project will consist of a 5-6 page paper on a specific topic. More details will be provided as we progress through the semester.

Course Policies

Attendance and Participation: Students are expected to attend every class and actively participate in discussions and in-class projects. There will be no make-up exams or assignments. Late assignments will lose 50% credit per day. Extreme situations will be considered if brought to the instructor's attention as early as possible. The instructor reserves the right to give unannounced quizzes if attendance dwindles noticeably.

Documented Disability Statement: The University of Texas at Austin provides upon request appropriate academic adjustments for qualified students with disabilities; for more information, contact the Office of the Dean of Students at 512-471-5017 or deanofstudents@austin.utexas.edu.

Religious Holy Days: By UT Austin policy, you must provide notification of a pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class day for this reason, you will have an opportunity to complete the missed work within a reasonable time period.

Honor Code: Students are expected to uphold the University of Texas' Academic Honor Code: "As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity."

Intellectual integrity is expected in all work. Collaboration and the use of a wide range of references are encouraged, but any plagiarism, use of un-cited materials, or un-credited project assistance will result in a recommendation of course failure. If you have any questions about what is acceptable and what is not, please ask. Also see:

<http://www.lib.utexas.edu/services/instruction/learningmodules/plagiarism/>

Violations of the UT honor code, including cheating or plagiarism, will result in: 1) a zero for the assignment/exam; 2) an assigned 'F' for the final grade; and/or 3) notification to the UT Academic Judiciary Committee for further disciplinary measures.

Use of e-mail for Official Correspondence to Students: E-mail is recognized as an official mode of University correspondence; therefore, you are responsible for reading your e-mail for university and course-related information and announcements. You are responsible to keep the university informed about changes to your email address. You can find UT Austin's policies and instructions for updating your email address here: <http://www.utexas.edu/its/policies/emailnotify.php>.

Behavior Concerns Advice Line (BCAL): If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual's behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counselling and Mental Health Centre (CMHC), the Employee Assistance Program (EAP), and the University of Texas Police Department (UTPD). Call 232-5050 or visit <http://www.utexas.edu/safety/bcal>.

Decorum: Computers and phones should be silenced (no vibration or ring). If you take notes on a laptop, the expectation is that you are fully engaged with the class and not reading the news, checking social media sites, doing homework for another class, or otherwise browsing the internet.

Course Schedule

Date	Topic	Readings
Week 1 1/19	Course Intro	Ch. 1, IALE essays
Week 2 1/26	Patch-Corridor-Matrix Model	Kupfer, 2011
Week 3 2/02	Landscape Patterns	Ch. 4
Week 4 2/09	Landscape Dynamics	Ch. 7
Week 5 2/16	Scale	Ch. 2
Week 6 2/23	Review EXAM 1 on Thursday, 2/26	
Week 7 3/02	Pattern Analyses	Ch. 5, Kupfer 2012
Week 8 3/09	Landscape Models	Ch. 3 & 5
Week 9 3/16	Spring Break	
Week 10 3/23	Species in Landscapes	Ch. 8, Turner 2005
Week 11 3/30	Ecosystems and Watersheds	Ch. 9
Week 12 4/06	Land Use	Ch. 10
Week 13 4/13	Review EXAM 2 on Thursday, 4/16	
Week 14 4/20	Land Change Science	Ch. 11
Week 15 4/27	Sustainability	Wu, 2013
Week 16 5/04	Landscape Futures Project due Friday, 5/08	