Landscape Ecology

Geography 335N, Fall 2015
TTh 8-9:15 AM, CLA 1.102

Dr. Kenneth R. Young
Department of Geography and the Environment, UT-Austin
kryoung@austin.utexas.edu; CLA 3.422; 512/232-8311
Office hours: Tuesday, 1 PM, or by appointment

TA: Sara Diamond
Department of Geography and the Environment, UT-Austin
sdiamond@utexas.edu; CLA 3.400 #22
Office hours: Tuesday, 2-4 PM

Course goals
Landscape ecology is the study of spatial patterns in Earth's biosphere and the processes that produce those patterns in landscapes, typically portions of Earth measured in square kilometers. This interdisciplinary approach draws from ecology and geography, but is also a perspective increasingly shared with hydrologists, foresters, wildlife biologists, social scientists, landscape architects, and others. We will examine the current state of knowledge and research on the patches and corridors that constitute landscape mosaics. We will cover the possible causal explanations for landscape heterogeneity from geographical and ecological points of view. Finally, we will explore practical applications of landscape ecology to the study of natural environments and those managed or altered by human activities.

The overarching goal of this course is to help develop the ability to think like a landscape ecologist. This will be done by examining heterogeneous landscapes using the patch-corridor-matrix model, accounting for scale, and interpreting the effect of process on patterns (and vice versa) using quantitative and qualitative approaches.

Students are expected to read the assigned chapters and participate actively in class. The exams will test knowledge, vocabulary, and the ability to apply concepts to novel situations. The class projects, final essay, and its presentation to the class will test the ability to explain landscape ecology patterns and processes as applied to real-world examples.
Prerequisites
Assumes background in physical geography or ecology.

Required textbooks


Readings


Additional essays that describe landscape ecology are available: [http://www.usiale.org/what-landscape-ecology](http://www.usiale.org/what-landscape-ecology)

Grading
1.) Two exams (vocabulary, short answer, short essay) ---100 points each.
2.) Six in-class projects—10 points each project.
3.) One independent essay---40 points.

Final letter grades for the course are assigned by percentages of the 300 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.

My lecture notes will not be available if you should miss a lecture; lecture powerpoints will be posted after the week of the respective class. The exams are based on the assigned readings, the lectures, the powerpoints, and the class discussions and projects. Class attendance is very important for doing well.
Class projects
The six 10-point projects are each based on participation in a group class exercise during the class period, and are designed to complement the assigned readings. They are meant to be low-stakes interactive activities that allow you to put landscape principles into perspective.

Independent final project
The final 40-point project is a 4 to 5 page essay (doublespaced) based on one research article chosen by you from among the research articles published in 2014 or 2015 in the journal Landscape Ecology. Note that you must pick an article to write about that is not already chosen by a fellow classmate (there will be a sign-up sheet sent around in the last several weeks of the semester to register your chosen article). This project is to be done independently and is due on the last day of class, along with a brief informal oral presentation of findings to the class done on either 1 or 3 December (the presentation is worth 10% of the 40 points).

This assignment replaces the final exam, and so needs to demonstrate mastery of the entire course. Specifically, using your knowledge of landscape ecology and all the materials of the course, evaluate the particular research article you have chosen in terms of landscape ecology principles, methods, and implications for further research or for the management of landscapes. Make sure you explain clearly which article was chosen, what was done in terms of the research, what data was utilized, what analysis was carried out, and what conclusions were reached. If appropriate, feel free to also critique the article and/or suggest likely future research based on that work.

The essays will be graded based on the quality of the technical writing, their originality, and their relevance to the class. Format of any citations used should be given in the text as “Smith (1999) hypothesized that . . .” or “. . .can be hypothesized (Smith, 1999)”. References used should be listed completely at the end of the essay: author, date, title, journal or book chapter, pages, using the style found in Annals of the Association of American Geographers.

Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
<th>In-Class Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 8/27</td>
<td>Course Introduction</td>
<td>Ch. 1; Turner 2005</td>
<td>None</td>
</tr>
<tr>
<td>Week 2</td>
<td>9/1-3</td>
<td>Patch-Corridor-Matrix model</td>
<td>Ch. 1, 4</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>-----------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Week 3</td>
<td>9/8-10</td>
<td>Landscape Patterns</td>
<td>Ch. 4; Kupfer 2011</td>
</tr>
<tr>
<td>Week 4</td>
<td>9/15-17</td>
<td>Landscape Dynamics</td>
<td>Ch. 7, 2; Perfecto et al. 1, 2</td>
</tr>
<tr>
<td>Week 5</td>
<td>9/22-24</td>
<td>Scale, Analyses</td>
<td>Ch. 2, 5</td>
</tr>
<tr>
<td>Week 6</td>
<td>9/29-10/1</td>
<td>Review</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EXAM 1 on Thursday, 10/1</td>
<td></td>
</tr>
<tr>
<td>Week 7</td>
<td>10/6-8</td>
<td>Pattern Analyses</td>
<td>Ch. 5; Kupfer 2012</td>
</tr>
<tr>
<td>Week 8</td>
<td>10/13-15</td>
<td>Landscape Management</td>
<td>Perfecto et al. 3, 4</td>
</tr>
<tr>
<td>Week 9</td>
<td>10/20-22</td>
<td>Landscape Models</td>
<td>Ch. 3, 6</td>
</tr>
<tr>
<td>Week 10</td>
<td>10/27-29</td>
<td>Species in Landscapes</td>
<td>Ch. 8</td>
</tr>
<tr>
<td>Week 11</td>
<td>11/3-5</td>
<td>Ecosystems and Watersheds</td>
<td>Ch. 9, 10; Perfecto et al. 5</td>
</tr>
<tr>
<td>Week 12</td>
<td>11/10-12</td>
<td>Review</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EXAM 2 on Thursday, 11/12</td>
<td></td>
</tr>
<tr>
<td>Week 13/14</td>
<td>11/17-24</td>
<td>Land Change Science</td>
<td>Ch. 10, 11; Wu, 2013; Perfecto et al. 6</td>
</tr>
<tr>
<td>Week 15</td>
<td>12/1-3</td>
<td>Independent Project Presentations</td>
<td>Written Project due Thursday, 12/3</td>
</tr>
</tbody>
</table>
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, although extreme situations will be considered if brought to the instructor’s attention as early as possible.

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.

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.