

Landscape Ecology

GEOG 4170/5170 [10927/10928], 3/4 credits

Spring 2018-2019

T Th 3:05-4:25

103 Clippinger

This course utilizes Blackboard

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Office Hours: MWF 10:45-noon, T 4:30-5:00, or by appt.

The spatial distributions of species, and the resources upon which they depend, create “environmental patterns.” Landscape Ecology is an applied science that focuses on the development and consequences of these patterns, and their management. This course explores the reciprocal relationship between *pattern and process*: how pattern is created on the landscape, its implication for populations, communities, and ecosystems, and how spatial pattern changes through time. Since humans are an important influence on landscape pattern, landscape ecology recognizes anthropogenic aspects of landscape pattern and change. An understanding of the principles of landscape ecology is critical for conservation biology, resource management, and other applied fields.

Learning Outcomes:

1. Understanding the importance of landscape pattern on ecological processes.
2. Awareness of technological tools (GIS, remote sensing, statistical approaches) used in assessing pattern on the landscape.
3. Understanding the implications of habitat loss and fragmentation for biological conservation.
4. Appreciation of addressing current issues such as corridors, fragmentation, and ecosystem management from a landscape perspective.

Text: There is no required textbook for the course; readings will be made available via Blackboard. Assigned readings (see schedule below) are designed to provide an overview of lecture topics, and/or provide relevant examples. Most are journal articles, and have been selected in part because of their “accessibility.” Students should read the articles prior to lecture as preparation; exams will include questions from the readings.

Grading: There will be **two exams** covering lecture and readings: a midterm and a non-cumulative final, **each worth 100 points**. The format of the exams will be primarily short essay, with additional definition/terminology fill-ins, so you will need to provide blue (or green) books or lined paper. Graduate students will be held to a higher standard on exams. Additionally, a **research assignment** is required of all students, also **worth 100 points**. Details are provided on a separate sheet*. Finally, there will be **~6 assignments based on in-class activities**, some requiring additional analysis and writing outside of class time. These assignments amplify lecture topics and are **worth 10-25 points each**. Your final grade is based on the percentage of points you earn on all these assignments. It is a good practice to save all of your graded and returned assignments until you receive your grade for the course.

**I am receptive to a project-based alternative assignment that utilizes landscape-ecology theory or approaches. The choice of topic for the project is not restricted; for graduate students, the project ideally would provide an opportunity to augment your current thesis/dissertation work, for example, an analysis of spatial pattern of vegetation or land use in a study area. If you are considering pursuing this option, you must get approval the first week of the semester.*

Course Expectations

Instructor:

- Listen and respond to student questions and concerns
- Have reasonable demands on work outside of class time
- Be available for assistance outside of class time
- Apply consistent and fair grading criteria
- Provide useful and timely feedback on student work
- Through the presentation of material and activities, provide an atmosphere that facilitates learning, critical thinking, and intellectual growth

Student:

- Show up to class and be on time
- Complete assignments
- Ask the instructor to clarify material that is unclear
- Monitor your e-mail for correspondence related to the course, and respond as necessary in a timely manner
- Work to your potential, and turn in your best work.

Grading scale:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93-100%	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	≤59

Students having any special needs or disability that might affect their performance in this class are encouraged to speak to me at the start of the semester to discuss necessary arrangements.

“Seventy percent of success in life is showing up” - Woody Allen. Although not a direct basis for student grades, good attendance is essential for success in this class and is expected. If any topic is unclear after lecture, please do not hesitate to see me as soon as possible, individually or in a group. Feel free to e-mail me with questions as well. Please note, I do not give out copies of my lecture notes. If you miss class, you will need to get notes from a fellow student (which I can go over with you later.) It is a good idea to contact me before the next class so that I can tell you what we covered.

Classroom etiquette: It is disruptive to arrive late, or to get up and leave while class is still in session. (If for some reason you can't get to class on time or must leave early, please inform me beforehand.) Stay engaged with the material during class, especially regarding use of cellular devices. Unless special arrangements are made with me in advance, laptop computers are not permitted during class.

Special Circumstances

If you are unable to take any exam on the specified date (e.g., because of an OU-sanctioned activity), notify me ASAP and you may be able to take the exam early. If you miss an exam for some highly compelling reason, contact me within a day of the missed exam about a possible make-up.

⚠ Cheating and plagiarism are dishonest and unethical. Academic dishonesty will not be tolerated. Anyone caught cheating on exams, or who submits exercises prepared totally or in part by another, will receive a zero for the assignment. Plagiarism (presenting the ideas or the writing of someone else as your own) on your papers will result in a grade of “F” for the course. All incidents of academic dishonesty may be reported to the Office of Community Standards and Student Responsibility, which may impose additional sanctions. (Students may appeal any academic sanctions through the grade appeal process.) For an elaboration on what constitutes academic misconduct, refer to the Student Code of Conduct: <https://www.ohio.edu/student-affairs/community-standards/students/student-code-of-conduct>.

TENTATIVE LECTURE SCHEDULE. *Readings are available on Blackboard*

Week 1 - Jan 15/17

- Course Introduction: What is landscape ecology?..... *Wiens 2008*
- Landscape “patches” *Pickett & Rogers 1997*

Week 2 - Jan 22/24

- Edge effects *Harper et al. 2005*
- Quantifying landscape pattern *Slonecker et al. 2012*

Week 3 - Jan 29/31

- Technological tools: remote sensing & GIS
- Issues of scale *Wiens 1989*

Week 4 - Feb 5/7

- Scaling techniques
- Corridors *Anderson & Jenkins 2006;*
Hilty et al. 2006a

Week 5 - Feb 12/14

- The matrix and habitat fragmentation *Hansen & DeFries 2007*

Week 6 - Feb 19/21

- Agents of landscape pattern: environmental gradients and abiotic controls *Swanson et al. 1988*

Week 7 - Feb 26/28

- The “physical template” *cont.*
- Agents of landscape pattern: biotic processes *Sprugel 1991*

Week 8 - Mar 5/7

- The “biotic template” *cont.*
- **MIDTERM EXAM (March 7)**
[covering material through “the physical template”]

March 12/14

- SPRING BREAK

Week 9 - March 19/21

- Agents of landscape pattern: disturbance *Turner et al. 2003;*
McEwan et al. 2011

Week 10 - March 26/28

- Disturbance *cont.*

Week 11 - April 2/4

- Effect of landscape pattern on organisms: Metapopulations *Hilty et al. 2006b*
- NO CLASS THURSDAY APRIL 4: AAG (Geography)
Conference in D.C. Group work on presentations.

Week 12 - April 9/11

- Effect of landscape pattern on organisms: Conservation genetics .. *Forman 1995*

Week 13 - April 16/18

- “Applied” landscape ecology – GROUP PRESENTATIONS

Week 14 - April 23/25

- Field trip to the Ridges Land Lab (T or Th, depending on weather)
- “Future landscape ecologies:” Implications of global warming
- In-class evaluations

FINAL EXAM: Thursday, May 2, at 12:20 p.m.