

Landscape Ecology and Conservation: WIS 4203C

Course Syllabus, Spring 2025, 3 Credits

Lecture: MW, period 4 (10:40-11:30), McCarty B 3096

Lab: Th, periods 6-7 (12:50-2:45), McCarty B 3086

Instructor

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Course Description

In this course, we will identify and evaluate the central constructs and methods of landscape ecology and their relevance to conservation and management. Landscape ecology is a relatively new branch of ecology that focuses specifically on how spatial heterogeneity influences ecological patterns and processes. Landscape ecology has both basic and applied elements, and it is predominately grounded in interpreting ongoing anthropogenic change and providing guidance for conservation and management. In the first half of the semester, we will learn common frameworks for studying landscape ecology, how to quantify landscape pattern, and we will identify general drivers of landscape pattern. In the second half of the semester, we will focus on how landscape patterns influence wildlife ecology, management, and conservation. Throughout, we will discuss both real-world problems in ecology, management, and conservation, as well as basic theory relevant for using landscape ecology as an effective framework for ecology and conservation.

Course Objectives

There are several major objectives for this course. Specifically, the objectives are for students to:

- 1) Identify the historical events leading to the development of landscape ecology;
- 2) Learn and implement basic designs and tools (e.g., Geographic Information Systems, GIS) relevant to studying landscape ecology;
- 3) Determine ways in which landscape ecological perspectives can be applied to wildlife management and conservation;
- 4) Critically evaluate important, current issues facing landscape ecology; and 5) Develop and refine critical thinking and communication skills.

Prerequisites

One upper division course in ecology (FOR 3153C, PCB 3601C or PCB 4044C; and FOR 3434C), one in statistics (e.g., STA 2023), and one course in GIS (GIS 3043, GIS 3072C or URP 4273).

Assigned Readings and Course Notes

There are no required textbooks, but the following text may be useful:

Turner, M. G., and Gardner, R. H. 2015. Landscape Ecology in Theory and Practice: Pattern and Process. Springer-Verlag, New York.

Selected articles and book chapters from recent literature in landscape ecology will be required most weeks, which I will make available on *E-Learning*. Lecture notes and lab information will also be available there. Simply point your browser to <http://elearning.ufl.edu/>, and on the right-hand portion of the site, select the *LOG IN TO E-LEARNING*, and then use your GatorLink user name and password to login.

Assessments, Grading, and Policies

There will be a variety of assessment tools used during this course, ranging from lab assignments, to debates, to exams. The following table breaks down how each type of assessment will be weighted in your final grade:

| | <u># of points</u> | <u>% of Grade</u> |
|--|--------------------|-------------------|
| <i>Lecture:</i> | | |
| Weekly lecture quizzes (6 pts/quiz) | 60 | 8 |
| Debate (bibliography = 15; synthesis = 30; participation = 10) | 55 | 7 |
| <i>Lab:</i> | | |
| Lab assignments (lab handouts; 15 pts/assignment) | 135 | 18 |
| Lab practical | 70 | 10 |
| <i>Exams:</i> | | |
| Exam 1 (potential exam questions = 5; exam = 125) | 130 | 18 |
| Exam 2 (potential exam questions = 5; exam = 125) | 130 | 18 |
| Cumulative Final Exam (potential exam questions = 5; exam = 150) | 155 | 21 |
| Total Points | 735 | 100% |

Grading Scale: A ≥ 92%, A- = 90-91.9%, B+ = 87-89.9%, B = 82-86.9%, B- = 80-81.9%; C+ =77-79.9%, C =72-76.9%, C- = 70-71.9%; D+ = 67-69.9%, D = 62-66.9%, D- =60-61.9%, E<60%

Lab assignments—Throughout the course there will be a number of lab assignments relevant to each week’s material that will be completed in lab or handed in the Monday following class. *There will be no make-up labs, but you will be able to drop the lowest score of your lab assignments.*

Lab practical—The last lab of the semester will be devoted to a lab practical. The goal of the practical is for you to show how to use GIS to solve landscape-scale problems. This practical will involve short-answer questions regarding the use of GIS for wildlife management and conservation.

Lecture quizzes—Each week, there will be short, online quizzes that will cover the lecture material for that week. You will be quizzed on lecture material to make sure that you keep up with topics (either in person or via online lecture videos). *Quizzes will generally be due on Thursdays before lab (11 am), except for exam weeks (due Wednesday before class; 11 am). There will be no make-up quizzes, but you will be able to drop the lowest score of your quiz assignments.*

Debates—In class, we will have a Socratic seminar-style debate on a contentious topic in landscape ecology. *Each student will synthesize literature to argue points for **and** against the sides of the debate.* Prior to the

debate, students will hand in an annotated bibliography of two relevant, peer-reviewed articles that the student plans to use in developing arguments for the debate. For each article, the bibliography should be ~0.5 page (double-spaced, 12 point font), and it should include a short summary of the article that emphasizes the points that the student will use in the debate to argue for their group. All students will present at least one of the arguments synthesized from their independent research into the topic during the Socratic seminar, which will be evaluated for the participation portion of this grade along with student responses to other arguments raised. After the debate, students will submit a 500w essay synthesizing arguments from the debate and demonstrating their mastery topic. Essays will be evaluated for their logic, ability to draw on relevant science-based information, and cogency of language.

Exams—There will be two exams and one final exam. *The first two exams will not be cumulative, but the final exam will be cumulative.* Exams will include a combination of short answer, multiple choice, and essay questions. Questions may test you on your knowledge of the topic, your ability to reason through a problem related to landscape ecology, and, in some cases, the ability to express your understanding using symbolic logic (graphs and figures).

Students will actively contribute to the exam materials. Monday prior to each exam, *each student will be required to hand-in two potential questions to be included on the exam.* These questions should reflect your perspective on the important materials over the covered time period. The purpose of this exercise is not for students to necessarily produce ‘easy’ or ‘tricky’ questions for other students. Instead, it is an opportunity for students to review the material and determine crucial pieces of information that he/she thinks all students should know in landscape ecology.

Exam grading policy—If there is an adding error on an exam, see me immediately and I’ll change the score. Otherwise, the overall quality of your test answers relative to the answers of others in the class is probably accurately reflected in the test score you receive. When possible, I always give partial credit if the possible number of points for a question is greater than one, but I also use the full range of possible points to reflect differences in the quality of answers that I read. If you believe you have been graded unfairly and wish for the exam to be re-evaluated, I am willing to do so but will regrade the ENTIRE test, not only the questions of concern. Simply note the question(s) of particular concern, and note why you feel the scoring may have been incorrect. I will review every question, with an eye toward finding errors due to both overly lenient and overly harsh grading. Point gains and/or point losses will be noted, and the new point total recorded. I will then return the re-graded test in a day or two.

General notice to students

Academic Honesty—UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. [Click here to read the Honor Code](#). Furthermore, you are

obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

UF Counseling Services—Resources are available on campus for students having personal problems or lacking clear career and academic goals which interfere with their academic performance. These resources include:

1. *U Matter, We Care*: If you or someone you know is in distress, please contact umatter@ufl.edu, 352392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.
2. *Counseling and Wellness Center*: [Visit the Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.;
3. Career Resources Center, Reitz Union, 392-1601; see the [Career Resources Website](#); career development assistance and counseling.

Students requesting classroom accommodation must first register with the Dean of Students' Office. The Dean of Students' Office will provide documentation to the student, who must provide this to the Instructor when requesting accommodation.

Sexual Harassment— It is the policy of The University of Florida to provide an educational and working environment for its students, faculty, and staff that is free from sex discrimination and sexual harassment. In accordance with federal and state law, the University prohibits discrimination on the basis of sex, including sexual harassment. Sex discrimination and sexual harassment will not be tolerated, and individuals who engage in such conduct will be subject to disciplinary action. The University encourages students, faculty, staff, and visitors to promptly report sex discrimination and sexual harassment. If you believe you have been subjected to sex discrimination or sexual harassment please report the incident to me or any University official, administrator, or supervisor. The Office of Human Resource Services investigates all complaints. Incidents should be reported as soon as possible after the time of their occurrence (larry-ellis@ufl.edu).

Software Use—All faculty, staff and students of the University are required to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Academic resources

E-learning technical support: Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: [Visit the Student Honor Code and Student Conduct Code webpage for more information.](#)

On-Line Students Complaints: [View the Distance Learning Student Complaint Process.](#)

Class demeanor—Students are expected to be punctual, to engage professionally online (See Online Course Policy Guidelines above), and to **turn off or put away their cellular telephones** off prior to the commencement of lectures.

Late policy for assignments—Without an authorized extension, students will lose 10% each day that they are late. There will be no make-up labs, but you will be able to drop the lowest score of your lab assignments.

Important dates

| Date | Topic/event |
|-----------|--------------------------------------|
| Jan 13 | First day of class |
| Jan 18 | Drop/add closes at 11:59 p.m. |
| Jan 20 | <i>M.L. King Day—no class</i> |
| Feb 6 | Exam 1 |
| Mar 3 | Debate Bibliography Due |
| Mar 14 | Debate Synthesis Essay Due |
| Mar 15-22 | <i>Spring Break—no class</i> |
| Mar 27 | Exam 2 |
| Apr 11 | Withdrawal deadline |
| Apr 17 | Lab practical assigned |
| Apr 23 | Last day of class, lab practical due |
| May 1 | Final Exam 12:30-2:30pm |

Lecture and Lab Schedule - Subject to Change

| Week of | Topic | Readings & Assignments Due |
|-------------------------------|--|--|
| (1) Jan 13 | Topic: Intro to landscape ecology; Scale Lab 1: GIS Introduction, goals, tools, overview, etc | Turner 1989 |
| (2) Jan 20 No class Monday | Lecture: Quantifying landscape pattern Lab 2: Scaling issues | Wiens 1989 Lab 1 due 1/20 Quiz due 1/20 |
| (3) Jan 27 | Lecture: Quantifying landscape pattern; Causes of pattern Lab 3: Landscape and patch metrics, sampling designs | Gustafson 1998 Lab 2 due 1/27 |
| (4) Feb 3 | Lecture: Causes of landscape pattern Lab: First Exam | Franklin and Forman 1987 Quiz due 2/3 Lab 3 due 2/3 Exam Q due 2/5 |
| (5) Feb 10 | Lecture: Scientific method & models in landscape ecology Lab 4: Causes of pattern | |
| (6) Feb 17 | Lecture: Wildlife response to pattern: fragmentation Discussion--experiments in landscape ecology (Ims 2005) Lab 5: Sampling across landscapes | Ims 2005 Lab 4 due 2/17 |
| (7) Feb 24 | Lecture: Landscape context and connectivity Lab 6: Connectivity | Fahrig 2003 Quiz due 2/24 Lab 5 due 2/24 |
| (8) Mar 3 | Lecture: Fragmentation debate; Animal behavior and movement Lab 7: Animal movement | Beier et al. 2008 Lab 6 due 3/3 Quiz due 3/3 Bibliography due 3/3 |
| (9) Mar 10 | Lecture: Habitat suitability & species distributions Lab 8: Habitat suitability | Knowlton and Graham 2010 Lab 7 due 3/10 Quiz due 3/10 Synthesis essay due 3/14 |
| (10) Mar 17-21 | <i>Spring break</i> | |

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| (11) Mar 24 | Lecture: Metapopulations Lab: Second Exam | Brooks 1997 Lab 8 due 3/24 Exam Q due 3/26 |
| (12) Mar 31 | Lecture: Source-sink dynamics & working landscapes Lab 9: Landscape prioritization and conservation planning | Lab 8 & Exam Q Due Mar 31 |
| (13) April 7 | Lecture: land-use planning and working landscapes Lab 10: Hotspots, land use, and conservation planning | Fischer et al. 2008 Lab 9 due 4/7 Quiz due 4/7 |
| (14) Apr 14 | Lecture: Landscape genetics in human-modified landscapes Discussion—the value of genetics for conservation Lab 11: Lab practical | Keyghobadi 2007 Lab 10 due 4/14 Quiz due 4/14 |
| (15) Apr 21 | Lecture: Conclusions & conservation directions | Lab practical due 4/23 Exam Q due 4/23 |
| May 1 | Final Exam 12:30-2:30pm MCCB 3096 | |