Landscape Ecology

NR 220, Fall 2022
Wednesdays 12:00-3:00 PM
Delahanty Hall 219

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Office Hours: Tuesdays 3-4 at my office or on Teams

Welcome to Landscape Ecology. This course will consider the critical role that landscape pattern plays in shaping the ecological communities and the relationships between people and ecosystems. Landscape Ecology has risen in importance as ecologists have recognized how important spatial processes are to population dynamics, community assembly, and ecosystem functions. Space also matters critically to conservation of species and biodiversity, and to the myriad ways that people interact with nature. We will learn the foundations of Landscape Ecology, what they teach us about how nature works over broad scales, and the ways we can manage landscapes to support both biodiversity and people.

Learning objectives
At the end of this course, students will be able to:
- describe the foundational concepts and theories of landscape ecology
- discuss how this field is advancing through the scientific literature
- apply landscape ecology concepts to issues of conservation, human well-being, and social justice.
- use simple software and field methods to test landscape ecology principles

Course design
The course will comprise lectures, discussion of peer-reviewed scientific papers, computer labs during class times, and quick field labs during class right on campus. In general, each week will cover a different topic within Landscape Ecology. This is not a GIS-based course; we will focus on concepts and illustrative analyses instead of specific tools like GIS. But we will use mathematical functions, statistics, graphs, and some rather fancy analyses in Excel to illustrate and explore concepts.

Course modality and software platforms
This is a highly interactive course, with frequent small groups and discussions, so it will be taught in person. I expect all students to participate in person each week unless illness or another circumstance prevents it. If COVID worsens and too many people (or I) have to isolate or quarantine, we will shift to a full remote modality, where everyone joins class virtually at the usual meeting times.

We will keep technology platforms simple and familiar. We will use Blackboard for course schedule, readings, materials, and assignments. And we will use Teams if necessary for

virtual participation. I may record specific class sessions for students who are unable to attend live. We will discuss and refine this plan on the first day of class with your input.

Please read this technology check list to make sure you are ready for classes. https://www.uvm.edu/it/kb/student-technology-resources/. Students should contact the Helpline (802-656-2604) for support with technical issues.

COVID-19

Following UVM guidelines for Fall 2022 semester, masks will be optional during class meetings. Please respect individual comfort levels and decisions regarding masks. UVM expects students, faculty, and staff to remain compliant with all COVID-19 recommendations and measures in place for UVM, the State of Vermont, and the City of Burlington. We will revisit masks and other COVID precautions during the semester as conditions warrant.

Pre-requisites

- Senior or graduate standing.
- An introductory ecology course: NR 103 or BCOR 102.
- Familiarity with math, functions, statistics, and interpreting data and graphs.
- Comfort and facility with Excel, including formulas, references, and macros.
- No GIS knowledge required.

Expectations

To make the semester go smoothly for all, it's worth being clear about my expectations of students. Please:

- Attend every class. I expect all students to attend each meeting in person. If COVID or another issue intervenes, we can arrange synchronous participation on Teams. If you must participate virtually or miss class, you must tell me ahead of time. One-third of your grade is for class participation, so this is important.
- Be prepared for class. I expect every student to do and understand readings ahead of class, and will assume you've done so.
- Participate in class. I will ask lots of questions and ask you to help me explain things. That means you need to fully present and ready to contribute.
- Turn in assignments on time. I will deduct 10% from the score for each day a lab report or exam is late.
- Silence your phone and close other laptop windows. We all need your full attention.

Respect and inclusion

In this class, we will maintain a learning community that is inclusive and respectful. I expect everyone to encourage and appreciate expressions of different ideas, opinions, and beliefs. This requires mutual respect, willingness to listen, and open-mindedness to opposing points of view. Conduct that substantially or repeatedly disrupts our ability to learn together may result in my asking a student to temporarily leave the classroom. See Undergraduate Catalogue - Classroom Code of Conduct (p. 443-444).

Evaluation and Grading
Students will be evaluated based on lab reports, a final exam, and class participation.
- Lab reports: 40 points
- Final exam: 30 points
- Class participation and prep: 30 points (15 for literature questions, 15 for participation).

Graduate and Undergraduate students will complete the same assignments worth the same total number of points each, but each assignment and exam will have extra questions that will be required for graduate students. Graduate students will also play a few leadership roles during field labs and in class.

Extra credit: each student can earn extra credit in one of two ways.

- Read one of the EXTRA readings and write a 1-page summary answering three questions: What is the main finding of this paper? What general methods did the authors use? What, in your opinion, is the most interesting contribution this study makes to Landscape Ecology? Summaries are due at the beginning of class on the day for which that reading is assigned.
- Attend campus talks that I identify for extra credit, and write a 1-page summary answering three questions: What was the main thesis of the talk? What, in your opinion, was the most interesting point made by the speaker and why? How did this talk contribute to your understanding of Landscape Ecology? Summaries are due at the beginning of class at our next meeting after the talk.

Each extra credit summary is worth 2 points toward the participation portion of your grade. Limit 3 total (readings and talks combined) per student for the course.

Course readings
- Turner, Gardner, O'Neill. 2015. Landscape Ecology in Theory and Practice. Springer-Verlag. (individual chapters assigned as PDF's and posted on Blackboard)
- Assorted papers from the primary literature, posted on Blackboard.
- Video lectures, available online and links posted on Blackboard.

Labs
Labs will be interactive, challenging ways to understand Landscape Ecology principles and techniques. Half will be computer-based and half will be field-based. Computer and field labs will be conducted during class time, either in the classroom or outside on campus. We will need to move quickly during lab sessions, so it is crucial that you do the advance reading/videos ahead of time. The more you get done in class, the less homework you'll have!

Lab reports will be due at the beginning of the next class meeting. Each lab team will submit a single lab report. It will be up to each group to complete the assignment together outside of class and designate someone to submit it via Blackboard on time. All group members share the same grade, including any penalty for being late.

Each lab report will consist of two files:
- a completed Excel or other data file

- a completed Word file, with answers to questions

Important: please name your files uniquely by adding " _GROUPNAME" (whatever your group name is) to the end of the file names of the documents provided. I will deduct points from groups who don't follow this naming convention.

Class discussions of literature

Literature discussions will give us practice reading and critiquing scientific papers closely, and a chance to see how science actually advances. Each time, I will assign 1 or 2 papers and will divide the class into four groups, each with a graduate student as discussion leader. Near the end of the session we will reconvene as one group to share take-homes and critiques.

I will also assign a simple set of questions for each set of papers we read together. You are expected to submit short answers to these questions before the start of class. Your participation grade will be based in part on consistently submitting answers to class and participating in the subsequent discussion.

Final exam

The final exam will cover material from lectures, labs, scientific papers, and textbook chapters. It will tend to emphasize content in that order (i.e., lectures most emphasized, textbook least, but all fair game). It will cover material from the entire semester. We will have at least one review session before the exam, and I will give you clear guidance about how to prepare.

Sources of course material

This course is built in part from material published or graciously shared by several colleagues. I am grateful to:

- Terri Donovan and Jed Murdoch at UVM
- Sarah Gergel at U. British Columbia
- Dean Urban at Duke University
- Monica Turner at U. Wisconsin

Research and Citation Help

For help selecting research topics, finding information, citing sources, and more, ask a librarian. The UVM Libraries are eager to help. You may ask questions by phone, e-mail, chat, or text, or make an appointment for an individual consultation with a librarian.
Howe Library: https://library.uvm.edu/askhowe

Important UVM Policies

Academic integrity

Offenses against the Code of Academic Integrity insult the integrity of the entire academic community. Any suspected violations of the Code are taken seriously and will be forwarded to the Center for Student Conduct for further intervention. To read the Code of Academic Integrity and learn more about the Center for Student Conduct, visit their website.

Learning accommodations:
In keeping with University policy, any student with a documented disability interested in utilizing ADA accommodations should contact Student Accessibility Services (SAS), the office of Disability Services on campus for students. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. Contact SAS: A170 Living/Learning Center; 802-656-7753; access@uvm.edu ; www.uvm.edu/access

Religious holidays:
Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please let me know in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time. https://www.uvm.edu/registrar/religious-holidays

Health & safety resources
Center for Health and Wellbeing: https://www.uvm.edu/health
Counseling & Psychiatry Services: (802) 656-3340
If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office at 802-656-3380, or anonymously online at https://www.uvm.edu/studentaffairs.

Statement on Alcohol and Cannabis in the Academic Environment
I want you to get the most you can out of this course. You play a crucial role in your education and in your readiness to learn and fully engage with the course material. Alcohol and cannabis have no place in an academic environment. They impair your ability to learn and retain information for up to 48 hours. In addition, alcohol and cannabis can:

- Cause issues with attention, memory and concentration
- Negatively impact processing and storage of information
- Affect sleep patterns, which interferes with long-term memory formation

It is my expectation that you will do everything you can to optimize your learning and to fully participate in this course.