

EEB 422 – Landscape Ecology

Spring 2023 – Fully Online – CRN: 33789 – 3 credits

Class ----- Tuesday & Thursday – 4:05pm to 5:20pm
Instructor ----- Diane Le Bouille – dlebouille@utk.edu
TA ----- Renata Beco – rpereir4@vols.utk.edu
Zoom ID ----- Zoom Id: 965 4491 9554
<https://tennessee.zoom.us/j/96544919554>

Communication with your instructor (Dr. Le Bouille) and TA (Renata Beco)

You can always contact us by email (allow 24 hours for a response).

If you need to meet out of class time, please email any or both of us using your UTK e-mail with a list of 3 days/times when you are available and we will work out something!

Course Description

■ **Catalog Description**

Online course that broadens the spatial scale of ecological study to consider influence of landscape-level patterns on ecological processes. Important issues, concepts, and methodologies relevant to landscape ecology. Students will a) research scientific literature and present findings in short oral presentations; b) research popular writing related to landscape ecology and present findings in short oral presentations; c) perform, analyze, and orally communicate computer simulation experiments.

Prerequisites
BIO 150 (or equivalent)

Textbook
None

■ **Objectives**

Whether you are a future ecologist, sustainability professional, landscape architect, natural resource manager, or conservationist, the goal of this online Landscape Ecology course is to enable you to apply the principles of landscape ecology to your discipline. If you fully engage with the content, discussions, and projects, by the end of this course you will be able to:

1. Identify and recognize core ideas from the study of landscape ecology;
2. Generate, analyze and explain landscape ecology data;
3. Compare and contrast the history, meaning and methods of landscape ecology to those of related fields;
4. Evaluate how major insights from landscape ecology affect conservation, urban, and regional planning;
5. Connect concepts and practices of landscape ecology to your field.

Canvas

All readings and assignments will be posted on Canvas: <http://utk.instructure.com/>

Make sure you have access to the course's home page. You will need to regularly check the home page and inbox for weekly announcements related to this class. I will send a "Welcome to EEB 422" announcement on the first week of class: if you have not received it by the time we have our first discussion, let me know immediately!

Course Structure

■ Timeline

Modules are comprised of various tasks, which are not necessarily graded tasks. When a task is ungraded, it is up to you to decide what schedule for completing it is best for you. Just remember that the ungraded tasks prepare you for graded tasks, so I strongly encourage you to make time for them and reach out to me if you have questions while working on them.

By Thursday, noon:

- Read the Module Overview 5 min
- Watch the Lecture (and take notes)..... 1.5 hrs
- Read Real World Application..... 10 min
- Read the assigned Scientific Article (and take notes) 1.5 hr
- Answer the Discussion Prep questions..... 10 min

Class (Thursday - 4pm)

- Participate in the Zoom Discussion class 1 hr

By Saturday, 11:59pm

- Study your notes 1 hr
- Take the Quiz, based on lecture and reading 30 min

A piece of advice:

Watching the Lecture and reading the Scientific Article are the two tasks that will take you the most time every week. Make sure to organize your week so that you do not have to rush those: take your time going through them, and take extensive notes while you do. Spending time and efforts on taking notes now will make studying for quizzes and exams easier and faster down the line, so it is a worthwhile investment!

In addition, doing those two things in advance of the class means that you will have time to email me with questions, should you have any, before we meet. This will help you navigate the Discussion Prep questions and will save you time down the line, when it comes to studying for quizzes and exams!

■ Tasks description

Lecture, Scientific Article, and Real World Applications

With pauses for careful notes and review, you can expect Lectures to take ~2 hours of your time.

Real World Applications are short (4 sentence or so) summaries of real-world applications of landscape ecology. Budget 10 minutes to read about it, longer if you follow the links. Expect a question on the Quiz to be about those.

Scientific article readings will illustrate or discuss some application of landscape ecology. Budget a good chunk of time, probably 1.5-2 hours every week, to read those and take notes. At this stage of your education/career, it is perfectly normal to find scientific or professional articles difficult to read. Do your best to understand the article. Anything you do not fully get or have questions about, write it down, so we can address it in class. I do not expect you to always perfectly understand the articles, but I do expect you to have read them well enough to bring good questions and interesting thoughts to the Zoom Discussion class that follows.

Discussion Prep questions

(6 pts) Before class, you will have to answer the Discussion Prep questions, which are higher-level questions that ask you to apply and synthesize that week's material. These questions are from a Google doc linked in each module. Write your answers into the Discussion Prep assignment in your own Google doc copy and share the link on Canvas

Class Zoom Discussions

(3 pts) Synchronous Class Zoom Discussion will be held every Thursday evening, 4:30-5:45pm. Discussions are a place for you to deepen your learning, make connections and hear others' points of view.

Make sure to come prepared with thorough notes from watching the Lecture and reading the Scientific Article, as well as thoughtful answers to the Discussion Prep questions.

I want to encourage you to attend class with your camera on, so we can all see each other instead of being talking to a void. I will take a screenshot of my Zoom call screen, at the end of the class: all those who have their camera on throughout the class will be directly recorded as having attended that class. For those who could not turn their camera on, I will assign at a random time during discussion an exit ticket that you will have to post to the Class Zoom Discussion assignment after class to prove attendance.

Quizzes and Exams

(10pts) Quizzes provide you with an incentive to review material as the semester progresses, as well as making sure you remember older material (several questions on each quiz will pull from previous modules). They are due at 11:59pm on Saturdays.

(60pts) There will be 2 exams in the semester: the midterm and the final. Both quizzes and exams also provide you with feedback on what you have learned.

To prepare, you should read the assigned material, watch the assigned lectures, and participate in discussions. Quizzes and exams are both open-note, but they are also timed. To do well, you will need have taken notes and studied the material before starting the quiz or exam. You will not be allowed to work with someone else during a quiz. For each quiz, you will be able to see the answers after the module for that quiz the next Monday at noon.

■ Special Projects

We will have 3 special projects throughout the semester: that will break up the routine a bit!

Land Cover Project (12pts)

Landscape ecologists and those who use the products of landscape ecology need to be able to consider landscape structure in a thoughtful way. Measuring landscape structure requires not only technical skill, but also careful consideration of what those metrics communicate (or, as is often the case, miscommunicate) about underlying mechanisms.

This week-long project will give you exposure to common tools for measuring landscape structure and an opportunity to analyze and evaluate issues with metric choice. For this project, you will need to download and use two freely available software packages, FRAGSTATS and R. You will receive detailed, step by step instructions for this project and two workshops will be scheduled that week, during which you can receive help downloading and running the software and analyzing your data. No prior experience with FRAGSTATS or R is required, and nothing needs to be done prior to this week to prepare for this project.

Landscape Ecology Experiment (20pts)

A common issue in landscape ecology is the difficulty of conducting true experiments at the landscape scale. Not many landscape ecologists get the chance to completely alter entire landscapes in order to test their

hypotheses. But you will. At least, you will manipulate virtual landscapes in a computer simulation. Not only that, but you will also manipulate virtual “species” to test the effects of a variety of species traits on sensitivity to landscape structure.

This two-week-long project will give you exposure to landscape ecology simulations which you will use to develop hypotheses that will be discussed during subsequent lectures. For this project, you will need to download and use NetLogo, a freely available computer simulation software package, to run an experiment. You will use R to summarize the results of your experiment. As with the Land Cover Project, you will not need to prepare for this project ahead of time. You will receive detailed, step by step instructions for this project and several workshops will be scheduled during both weeks to help you complete this assignment. No prior experience with NetLogo or R is required.

Interview with a Professional (133 pts)

We will seek connections between landscape ecology and other fields as we go through this semester, but you will have to do the finishing work to really connect the concepts and practices of landscape ecology to your particular field or interests. An excellent way to discover the real-world applications of landscape ecology is to question those who are using landscape ecology in the real world. Your group will find and interview a professional who uses landscape ecology in their work and share the interview with the class.

You won't need to do anything for your interview until Module 6. You'll spend parts of Module 6 and 7 figuring out who your group is and who you want to interview. The interviews and associated work will take place during Modules 13-16 (the last weeks of class). During finals week (Module 16), you will complete the Interview Critical Reflection, in which you will take information collected from other groups' interviews to synthesize concepts gained throughout the semester. See the Interview with a Professional Overview on Canvas for schedule, roles, and exemplars.

Course Schedule

■ Key Dates

- Jan 30 - Last day to drop without a “W”
- April 17 - Last Day to Drop with a “W” (WP/WF)
- May 9 - Last Day for a Total Withdrawal from the University Deadline

■ Grading

Final letter grades will be determined by the total percentage of XXXX points accumulated as follows:

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

■ Special Tuesday Zoom Meetings

The only Tuesdays we will be meeting are the following ones – please save the date!
(All other classes will be on Thursdays)

- Feb.14, Module 4, Land Cover Project Zoom Workshop
- Mar. 7, Module 7, Interview Zoom Conferences
- Mar. 14, Module 8, Landscape Ecology Experiment Workshop
- Mar. 21, Module 9, Landscape Ecology Experiment Workshop

■ Schedule of learning activities

- Tentative and subject to change: I reserve the right to alter this schedule, usually in favor of giving students more time. Any changes will be announced on Canvas and through email.

Week of:	Module	Topic	Assignments
Jan 23	1	Getting Started	
Jan 30	2	What is Landscape Ecology?	Discussion Prep
Feb 6	3	How to Do an Empirical Study in Landscape Ecology	Discussion Prep
Feb 13	4	Land Cover Data Project Using FRAGSTATS and R	FRAGSTATS + R Workshop
Feb 20	5	Thoughtfully Measuring Landscape Structure	Discussion Prep
Feb 27	6	Use of Models in Landscape Ecology	Discussion Prep + Interview interest discussion
March 6	-	Interview Conferences & Midterm Exam	Interview First Email + Midterm Zoom Review
March 13	-	(No class/quiz – Spring Break)	
March 20	8	Landscape Ecology Experiment (Preliminary Runs)	NetLogo + R Workshop
March 27	9	Landscape Ecology Experiment (Final Runs)	Discussion Prep
April 3	10	Effects of Habitat Loss on Biodiversity	Discussion Prep
April 10	11	What Predicts Sensitivity to Habitat Loss? (Reproduction and Mobility)	Discussion Prep
April 17	12	What Predicts Sensitivity to Habitat Loss? (Matrix and Fragmentation)	Discussion Prep
April 24	13	What Size is a Landscape? & Final Exam	Exam review discussion
May 1	14	Interviews	
May 8	15	Interview Summaries and Critical Evaluation	Survey and Feedback

Course Policies

Disability Accommodations

If you require additional time for quizzes, or any other learning accommodations, please reach out to me now. Please also contact the Office of Disability Services at 865-974-6087, in 2227 Dunford Hall, to coordinate reasonable accommodations for exams. ***I will need a message from them before the first exam.***

Late Assignments

Projects' deadline will be communicated as the class progress. If you happen to need extra time to complete one of those assignments, please contact me as soon as possible, so we can work around your constraint.

Late assignments without excuse

When they do not affect your peers, late assignments will be penalized 5% per calendar day (including weekends). However, if an assignment is meant to be collaborative and a collaboration is ineffective due to the lateness of your assignment, you can expect to get no more than 50% of the points.

Discussion Prep questions and Quizzes

They are due at noon on Thursdays and at 11:59pm on Saturdays, respectively. There are no make-ups for those.

Course Etiquette

Participate actively to group projects and get materials to your group-mates in a timely manner.

Respect diversity: This course is a safe space for all genders, races, sexual orientations, political affiliations, abilities, ages, and religions. No form of harassment will be tolerated.

Be polite: Show each other intellectual respect by engaging with and challenging each other's ideas. In groups and during discussions, disagree (politely) when you can so things stay interesting. Acknowledge the points made with which you agree and suggest alternatives for those with which you don't. Criticism must be constructive, well-meaning, and well-articulated. Rants and profanity are not acceptable in this space.

Plagiarism

By enrolling in the course, you agree that written work may be examined using plagiarism detection software at the discretion of the instructor. Plagiarism is using the intellectual property of someone else without giving proper credit. The undocumented use of someone else's words or ideas in any medium of communication (unless such information is recognized as common knowledge) is a serious offense. Plagiarism software will be used to check some of the written assignments for this class. Committing plagiarism will result in a zero (0) on that assignment and may result in a report to the Office of Student Conduct.

Specific examples of plagiarism are: collaborating on a quiz or exam without instructor's approval / using materials from someone who took this class before to complete graded tasks rather than trying to come up with answers on your own / borrowing a classmate's assignment and copying their answers rather than trying to come up with answers on your own / copying texts excerpts directly from an internet search rather than trying to come up with answers on your own.