

Ecology (Biosc 0370/0390)
PLE Summer 2025
Session 1, May 19th – June 6th

Lecture and Lab

Beginning at 9, Lecture usually in the mornings, Lab usually in the afternoons.

Lab and lecture times may change based on weather or other circumstances.

Professor: Castilleja Olmsted
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Teaching

Assistant: Nola Rettenmaier
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Office/Student Hours: TBD
See **Office/Student Hours section**.

Course Canvas Page:

Course Description and Objectives

This course will provide an overview of foundational topics in Ecology, introduce common techniques and skills used in ecological research (including field and lab techniques, data analysis, and scientific communication and writing), and encourage appreciation of our ecosystems in a place-based, bioregionalistic way. Success in the course depends on completion of both lab and lecture. By the end of the course, you will be able to:

- ❖ Define and explain foundational topics in ecology
- ❖ Apply principles of ecology and experimental design to novel situations
- ❖ Identify and draw information from appropriate foundational topics in ecology and evolution to understand current science, classic model systems, and patterns in our local ecosystems
- ❖ Read and discuss primary scientific literature and results, with particular emphasis on interpretation of graphical results
- ❖ Select and apply appropriate statistical tests and graphs to analyze and interpret different kinds of data

Required Materials

Textbook – Traditional textbooks present several barriers to access for students. They are expensive and often not accessible. As an alternative, we will use an open-access textbook available on LibreTexts (Ecology for All! <<https://bit.ly/3R6s17q>>). This book is freely available, has built-in quantitative exercises, and is compatible with screen-readers. For students who prefer a physical textbook, you have the option to order a hardcopy for ~20 dollars.

Computer – Because of the format of the textbook and the quantitative in-class activities, there are class periods where you will need access to a computer. You will also need access to a computer outside of class time to complete assignments. If you do not have a personal computer, we will arrange for you to use the computer lab. The computer lab at the Sanctuary Lake site is also available to you outside of class hours.

Scientific papers and other readings – Discussion of scientific and other related literature will be a key part of this class. All assigned papers and other assigned readings will be uploaded to the course Canvas page. You will need access to these papers in class discussions, so bring a printed copy or a digital copy with you. Many of the other readings will be drawn from two books – *A Sand County Almanac & Sketches*

Here and There by Aldo Leopold, and *Braiding Sweetgrass* by Robin Wall Kimmerer. Scans will be available to you, but if you prefer to bring your own physical copies to read from, you are welcome to do so.

Lunch: We will break for lunch most days at the Sanctuary Lake site, but occasionally we will have lunch in the field. Students living on campus will have the opportunity to pack a lunch in the morning. Students commuting should plan to bring lunch each day.

Lab and Field notebook: We will provide you with a Rite-in-the-Rain field notebook for use in the course; you need to provide a **pencil** (most pens will smear).

Appropriate field gear: This class will give you an introduction to how ecology works, and field work is an important part of ecology. Barring hazardous conditions, we will be outside almost every day, rain or shine. It is your responsibility to come to class equipped for the weather and other conditions we may encounter. This includes bringing water bottles, durable footwear, and rain gear. We also recommend bringing sunscreen and insect repellent. PLE is located in an area the CDC has identified as high-risk for Lyme disease, so I strongly encourage you to treat clothes with permethrin before coming to PLE and to take other precautionary measures such as applying DEET-based repellents to skin, tucking pants into socks, and performing regular tick checks. We will cover procedures for this in class.

Assessments, Assignments, and Grading

Lecture		Lab	
5 Quizzes	5 x 10%	Field Notebook Checks	10%
Final Exam	30%	2 Mini-Reports	2 x 20%
Creative Mastery Assignment	20%	Reading Discussions	30%
		In-lab assignments	20%
Total	100%	Total	100%

Grading scale for both lecture and lab (%):

A+ = 97-100	A = 92.5-96.9	A- = 89.5-92
B+ = 87-89.4	B = 83-86.9	B- = 80-82.9
C+ = 77-79.9	C = 73-76.9	C- = 70-72.9
D+ = 67-69.9	D = 63-66.9	D- = 60-62.9
	F = <59.9	

You cannot pass the class without successful completion of both lab and lecture. The grading policies in this class encourage mastery-based learning and emphasize that the assignments and concepts are not arbitrary and not optional.

Because of the ample opportunities for improving your grade through corrections and cumulative assessments, there will be no curved grading in this class. I strongly encourage you to talk with me if a situation arises that is negatively impacting your ability to learn. While you are responsible for your own learning, my role as your instructor is to help make learning Ecology a positive and constructive experience and to support your growth as individuals. I care about whether you will retain information, ideas, and skills from this class long-term.

Score floor: A single zero can have a disproportionate impact on a grade and make it harder for students to raise their grade even if they complete all other work diligently. To mathematically account for this, I set a “floor” for failing grades at 50%. Failing to complete and submit assignments by the end of the course will result in zeros.

Participation: Although there is no separate “participation” category, participation is expected and factors into lecture and lab grades in various ways. Conventional participation grades are inequitable; therefore, in this class there are many ways for students to demonstrate engagement with course material. Examples include, but are not limited to, speaking in class, participating in small group discussions, completing all course assignments, and attending office/student hours or review sessions. Other ways of demonstrating participation and engagement are welcome.

Lecture:

Quizzes and Exam: There will be five [5] quizzes and one [1] cumulative final exam. Students who receive a grade lower than a C on a quiz are **required** to submit annotated corrections. All students are **strongly encouraged** to complete annotated corrections to regain up to ½ of the points missed. Correction due dates are listed on the schedule.

Annotated corrections should include:

- ❖ Why you missed the question (What was the breakdown in understanding? What could you have done differently?)
- ❖ What would your revised answer be, and why?

To encourage and reward mastery of the course material, students who perform better on a subsection of the final than they did on the corresponding midterm quiz may replace their lowest midterm grade with their final subsection grade – i.e., if you earned a 70% on the first quiz (post-corrections) but scored an 85% on the unit 1 subsection of the final, you would receive an 85% for the first quiz as part of your final grade.

Creative Mastery Assignment: On the first day of class, we will be visiting several different ecosystem types and making natural history observations. For this project, you will revisit your natural history observations and select one ecosystem type, organism, or ecological concept covered in the class for further exploration. You will create a creative, multimedia “final product” – a paper, short documentary, natural history collection, series of mock tinder profiles, or propose another option – and prepare a 5–10-minute oral presentation to share your project with the class. Every student needs to select and lead their own project, but you are encouraged to collaborate (at the end of your presentation, you must acknowledge each other, and your TA as applicable, for any assistance received). Projects ranging from natural history observation to experimental data collection are welcome. You will propose your project idea to your instructors (see course schedule) to make sure it fulfills project requirements (see the assignment page and rubric) before beginning work.

Extra credit: Finally, because we emphasize the importance of science communication in this course, you may earn extra credit for attending research talks offered on Wednesday evenings. You may earn 1 percentage point extra credit for each talk you attend, up to 3 percentage towards your final lecture grade. You must write a 1-page summary of the research question, approach, and key findings and submit your summary within two days of attending the talk.

Lab:

Mini-reports: We will complete five projects as a class. You will select two of these and prepare a mini report for each. Your first drafts of the mini-reports will receive **qualitative feedback** from your instructors; you are expected to revise the mini-reports in line with this feedback and resubmit for a final grade. Deadlines are listed on the course schedule.

Field notebook checks: You are expected to maintain a field notebook during all of our field trips and labs. This must include, at minimum, data and metadata collected during the labs. In addition to notes about the day's work, weather, etc., you are strongly encouraged to include observational sketches, pressings, and other multimedia. You are welcome to use this notebook for ecological observations beyond lab activities.

In-lab assignments: The nature of lab assignments may vary, but these include contributing to data collection and data entry, producing figures during data analysis, and answering comprehension questions.

Paper discussions: Scientific papers are the primary way science is communicated, but there can be a steep learning curve in understanding how to approach reading them. To help with this challenge, we will discuss 3 papers related to course content throughout the course. For each paper, you will complete a Paper Box (<http://heatherlerner.com/Paper%20Box%20Instructions.pdf>) to help you learn to identify key information and summarize the paper for discussion. You should fill this out before coming to class, but you may revise it during the discussion.

Course and University Policies:

Classroom Community:

I expect all students to approach this class from a collaborative and constructive perspective. You are here to learn and to support each other's learning. To that end, please keep in mind the following:

- ❖ Give each other the benefit of the doubt and ask for clarification. It's easy to mis-speak in a classroom discussion, and while we need to address problems, we should also hold space for self-correction and growth.
- ❖ Be fully present in class. You can use electronic devices insofar as they facilitate your learning, but you must stay on-task.
- ❖ Healthy disagreements and conflict are important in group work and in science! Carefully support your perspectives and listen to your peers with the intention of understanding their arguments rather than reacting to their positions rapidly or reflexively. Discussions should be an opportunity to reach mutual understanding.
- ❖ There is a zero-tolerance policy for violence and hate speech. You have a right to a classroom environment that is respectful and challenging in a constructive way. You have a responsibility to help create this environment for others.

The University of Pittsburgh does not tolerate any form of discrimination, harassment, or retaliation based on disability, race, color, religion, national origin, ancestry, genetic information, marital status, familial status, sex, age, sexual orientation, veteran status or gender identity or other factors as stated in the University's Title IX policy. The University is committed to taking prompt action to end a hostile environment that

interferes with the University's mission. If there are instances of discrimination or harassment, please contact the Title IX Coordinator, by calling 412-648-7860, or e-mailing titleixcoordinator@pitt.edu. Reports can also be filed online through [Pitt Concern Connection](#). You may also choose to report this to your instructor, TA, or PLE faculty/staff members; we are responsible employees and are therefore required to communicate this to the University's Office of Diversity and Inclusion or Title IX as appropriate. If you wish to maintain complete confidentiality, you may also contact the University Counseling Center (412-648-7930).

Late Work and Make-ups:

With the exception of exams and quizzes, I will accept late assignments with a 10% reduction for lateness. This is to encourage you to complete all assignments for the course even if you need to turn them in late. All the assignments for this course have value for your learning and form part of cumulative skillsets you will work to develop throughout the class. All late work that was due in the first two weeks of class must be submitted by June 2nd. No late work will be accepted after the last day of class.

Attendance and Health and Safety:

This is an intensive course, and you are expected to attend every class. Missing a single day of class in this course is equivalent to missing a full week of a semester-long course, and it is extremely difficult to get caught up in classes of this kind. If there are unavoidable circumstances requiring you to be absent, please meet with me to explore your options. G grades are assigned to students who have been attending a course, have been making regular progress, and are prevented (by circumstances beyond their control) from completing the course after it is too late to withdraw. If you wish to petition for a G grade, you must submit a request for this grade and documentation of your reason(s) in writing to your instructor at least three days prior to the last class. Because the class runs on such a tight schedule and most students are living together in field station housing, please be mindful and do your best to keep yourself and your peers safe. It is extremely important that you abide by the public health regulations, the University of Pittsburgh's health standards and guidelines, and Pitt's Health Rules. These rules have been developed to protect the health and safety of all of us. PLE follows Pitt's policies on health and safety; if you do not comply, you will be asked to leave class. If you are required to isolate or quarantine, become sick, or are unable to come to class, contact me as soon as possible to discuss arrangements.

Office/Student Hours:

Office hours are time that is specifically set aside for the students in a course, which is why some people refer to them as student hours. I will be there whether or not anyone attends, so please stop by – I'd rather talk with you about science! Come to ask specific questions, to sit in the room and work on an assignment in case you have a question, or just to talk about science and your career plans. Office hours will be held at the PLE housing site in the dining hall – commuters are also welcome at the housing site.

Academic Integrity:

All students are expected to adhere to the standards of academic honesty. Students enrolled in courses at PLE are expected to abide by the academic integrity policies of both the University of Pittsburgh and, where applicable, the other institution through which they enrolled. If you are unsure if you are appropriately citing/attribution

information, please come and ask me. I do not want any student to accidentally plagiarize because of a misunderstanding. Any student engaged in cheating, plagiarism, or other acts of academic dishonesty would be subject to disciplinary action. You will receive a zero for a first offense; after any subsequent incidents you will fail the course. Any student suspected of violating this obligation for any reason during the course will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity.

Accommodations and Accessibility:

If you need accommodations, please let me know and reach out to the Office of Disability Resources and Services (DRS), as early as possible. DRS will verify your disability and determine reasonable accommodations for this course. I am happy to discuss the logistics of navigating field work safely or brainstorm possible ideas for nontraditional assignments with you during office hours or in a 1-1 meeting. Because these courses are short and DRS procedures can take time, I will consider offering informal accommodations in consultation with the PLE Program Administrators. Lists of possible accommodations for a variety of situations can also be found on askjan.org. Please also refer to the department's field safety manual for further discussions of considerations related to health and disability in field biology:
https://www.ple.pitt.edu/sites/default/files/Documents/pitt_biological_sciences_field_safety_manual.pdf.

If I anticipate class content as being potentially triggering (unlikely in ecology, but possible) I will give the class a heads-up in advance. If you have a specific or uncommon trigger and feel that a heads-up about that content in class would benefit your learning and facilitate your engagement with the material, please let me know and I will work with you.

Canvas:

All registered students can access the course website on Canvas. The class files on Canvas will contain handouts from class, announcements, information about assignments, grading rubrics, etc. Students should check Canvas frequently for course announcements and other information.

Email:

I may send out announcements through email and/or Canvas. Given that this is an intensive course, I expect you to read emails sent to your University of Pittsburgh email account (or the email account provided upon course registration for non-Pitt students) daily during the work week (Monday through Friday). Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an email forwarding service that allows students to read their email via other service providers (e.g. Gmail). Students that choose to forward their email from their pitt.edu address to another address do so at their own risk. If email is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University email address. To forward email sent to your University account, go to <http://accounts.pitt.edu>, log into your account, click on 'Edit Forwarding Addresses', and follow the instructions on the page. Be sure to log out of your account when you have finished.

Statement on Classroom Recording:

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

Other Student Resources:

There are many resources available to support students. This site provides links to food, health, employment, housing, and support resources both at Pitt and within the Pittsburgh Community: <https://pitt.libguides.com/c.php?g=764210&p=5481767>

Disclaimer: This syllabus and the following schedule are subject to change in the event of unforeseen circumstances and to improve student learning. Updated versions will be announced in class and posted on the course Canvas page.

Course Schedule

*Subject to change, especially for inclement weather

Date		Topics and Activities	Due today
Week 1	5/19 Mon.	Morning: <ul style="list-style-type: none"> • Introduction to Ecology • Levels of organization • Biomes and Biogeography Afternoon: <ul style="list-style-type: none"> • Natural history observation day • Introduction to data visualization 	Before Class: Ch. 1-2, 21 In Class: Pre-class survey Data visualization handout
	5/20 Tues.	Morning: <ul style="list-style-type: none"> • Intro to Evolution • Niches and adaptation Afternoon: <ul style="list-style-type: none"> • How to read a paper • Stream invertebrates 	Before Class: Ch. 3-5 (Leopold) Foreword (Wall Kimmerer) Preface (Leopold) Geese (Wall Kimmerer) Honorable Harvest In Class: Data entry
	5/21 Wed.	Morning: <ul style="list-style-type: none"> • Life histories • Population growth Afternoon: <ul style="list-style-type: none"> • Paper Discussion 1 • Graveyard demography 	Before Class: Paper 1/Paper Box 1 Ch. 6-10 Prairie Birthday (Leopold) In Class: Quiz 1
	5/22 Thurs.	Morning: <ul style="list-style-type: none"> • Reproductive ecology • Behavioral ecology Afternoon: Dragonfly-damselfly mating behavior (Crystal Lake canoe trip, swing to Wed, Fri, Tues based on weather)	Before Class: Ch. 11-13 Collateral Damage (Wall Kimmerer) In Class: Data entry
	5/23 Fri.	Morning: Species Interactions 1: <ul style="list-style-type: none"> • Predation • Herbivory Afternoon: Data analysis	Before Class: Quiz 1 corrections Ch. 14, 16 (Wall Kimmerer) Teachings of Grass (Leopold) Good Oak In Class: Quiz 2 Data analysis Notebook Check 1

	5/26 Mon.	No Class – University Holiday – Memorial Day Weekend	
Week 2	5/27 Tues.	Morning: Species Interactions 2: <ul style="list-style-type: none"> • Parasitism • Diseases Afternoon: Red Queen game (indoor, flex for rain)	Before Class: Ch. 16 (Wall Kimmerer) Council of Pecans (Leopold) Thinking Like a Mountain In Class: Mini-report 1 draft Red Queen data entry
	5/28 Wed.	Morning: Species Interactions 3: <ul style="list-style-type: none"> • Mutualism • Competition Afternoon Patterns of species distribution	Before Class: Quiz 2 corrections Ch. 15, 17 (Wall Kimmerer) Asters and Goldenrod (Wall Kimmerer) Umbilicaria (Leopold) Study as Sport In Class: Quiz 3 Data entry and analysis
	5/29 Thurs.	Morning: Community Ecology 1: <ul style="list-style-type: none"> • Coexistence • Trophic cascades • Intro to species ID Afternoon: Paper Discussion 2 Creative Mastery Assignment - introduce	Before Class: Ch. 18-19 Paper 2/Paper Box 2 (Leopold) Land Pyramid (Wall Kimmerer) Sitting in a Circle In Class: Plant detectives activity Creative Mastery proposal
	5/30 Fri.	Morning: Community Ecology 2: <ul style="list-style-type: none"> • Disturbance • Succession Afternoon: Tryon-Weber part 1: Communities	Before Class: Ch. 18 (Wall Kimmerer) Mother's Work In Class: Quiz 4 Data entry

Week 3	6/2 Mon.	<p>Morning: Biodiversity and Ecology in the Anthropocene</p> <p>Afternoon: Tryon-Weber part 2: Ecosystem Ecology</p> <p>Final deadline for late work from Weeks 1 and 2</p>	<p>Before Class: Quiz 3 corrections Ch. 20-21 (Leopold) Odyssey</p> <p>In Class: Notebook Check 2 Data analysis</p>
	6/3 Tues.	<p>Morning: Ecosystem Ecology</p> <p>Afternoon: Ecosystem Ecology</p>	<p>Before Class: Mini-report 2 draft Quiz 4 corrections Ch. 22-24 (Wall Kimmerer) Indigenous to Place (Wall Kimmerer) Silverbells (Leopold) Cheatgrass (Leopold) November</p> <p>In Class: Bio-Blitz species list</p>
	6/4 Wed.	<p>Morning: Lecture catch-up Creative Mastery Assignment work time</p> <p>Afternoon: Mini-report and data analysis workshopping</p>	<p>Before Class: (Wall Kimmerer) Sacred and Superfund (Leopold) Substitutes for a Land Ethic</p> <p>In Class: Quiz 5</p>
	6/5 Thurs.	<p>Morning: Catch-up reading discussions Workshop Day</p> <p>Afternoon: Creative Mastery Assignment Presentations (part 1)</p>	<p>In Class: Creative Mastery Presentations</p>
	6/6 Fri.	<p>Morning: Final Exam</p> <p>Afternoon: Creative Mastery Assignment Presentations (part 2, if needed)</p> <p>Final deadline for late work from Week 3.</p>	<p>Before Class: Final mini-reports Quiz 5 corrections</p> <p>In Class: Final Exam End-of-class survey Creative mastery final product</p>