

EAS 509: Ecology: Concepts and Applications Fall 2021

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What to do if you are lost, confused, behind, don't get it, and/or can't find it:

- See **Canvas course site** for all links and updated information on this course:
<https://umich.instructure.com/courses/467425>
- Check "How this course works" or ask a question on 509 GroupMe or respond to Canvas announcements

Course Goals: What should you walk out of this course with? (See Learning Goals in each unit for more details)

1. A basic understanding of the key parts and processes of ecological systems relevant for evidence-based design, planning, and decision-making in the real, changing, and diverse world.
2. Skills in communication (the ability to use and understand a variety of ecological sources of information), research process and quantitative literacy (field observation, experimental design, data analysis, and interpretation), systems thinking (use of frameworks and logic models), and collaboration (team problem-solving and cooperative learning).
3. Inspiration and preparation to take more natural science courses in SEAS.

Overview of Course Content: What is this course about?

Through interactive content, discussions of real-world cases, and inquiry-based guided and independent field labs we will study the basic parts and processes of ecological systems – how organisms respond to their physical environment, interact with each other in populations and communities across the landscape, and affect the movement of energy and nutrients through terrestrial and aquatic ecosystems. This will include topics and questions relevant to global change, such as:

- *Evolutionary Ecology*: What is a species? What is the time scale of evolution? How is genetic variation important in conservation, restoration, agriculture, and public health?
- *Physiological Ecology*: How can organisms tolerate or respond to changes in climate, salinity, or acidity? How can indicator species inform citizen-science site assessments?
- *Population Ecology*: How can hunting-related changes in age distribution affect population growth? How can we estimate maximum sustainable yield to inform fisheries management?
- *Community Ecology*: How do species compete for limited resources? Why are some species invasive? How can restoration ecologists change the direction of a community over time?
- *Landscape Ecology*: What are organisms' patterns of migration and movement? What are the consequences of connecting or fragmenting habitats in the landscape?
- *Ecosystem Ecology*: How can nutrient fluxes lead to fish kills? How can salmon feed forests? How will climate change affect crop productivity?

Course materials: What will you need for this course?

The 509 Canvas site <https://umich.instructure.com/courses/467425> has all the details of the four main parts of this course:

1. Lecture: We meet on Zoom (remote) every Monday and Wednesday 11:30am (sharp) to 12:50 . You can find the link in each Mon/Wed module or in your Canvas calendar and in the Modules.

***To successfully join any Zoom session for this course, you must be logged into your U-M Zoom account via Single Sign-On (SSO) in your browser or app. ***

2. Modules and assignments between lectures: BEFORE every Monday and Wednesday meeting you must complete the Module content that is listed before that date. Module content is organized to reflect the logic and structure of the course material and includes both the Zoom meetings and the assignments you complete on your own in between meetings. Each Unit starts with a Study Guide doc with key goals and terms and relevant optional textbook background pages. Each Unit ends with a graded Quiz that also draws on previous unit material. Every Monday or Wednesday that a Quiz is due, we will use the class meeting time for "Questions in the Commons" (see Canvas for more information).

Schedule at least 1 hour between class times to complete required Module material on your own.

3. LABS: Ecology happens outdoors, not on Zoom or in a room! Because of its different schedule and assignments, it is normal for lab to feel like another course all together - but it parallels and builds on lecture material to complete your ecological literacy and skills. Each week you have a 3-4-hour blocked off time as your lab section time. How you use that time will depend on the week, your section, and whether you enrolled as remote or in-person (see site for details).

4. Learning Support and Opportunities: the 4th major chunk of the course are the underlying support and supplements for your learning in this course, including:

- **Your instructors!!** Teaching EAS 509 is a team effort. Though you will be working most closely with your lab GSI (Graduate Student Instructor), you can get to know and reach out to any/all of the instructors. Read a little more about each of us on the Canvas site!
- **509GroupMe** - you are invited to join a group chat for the class. You can ask and answer (crowd source!) questions and post comments, pictures, etc. at any time on this course platform. Such as: Did anyone else not understand Question 7 in Quiz 1? Help - my video for module 2.3 isn't loading. or - Look at this cool example of succession! Personal questions can instead be directed to your GSI or, as needed, the instructor, via email.
- **Study Buddies** - We will use an evidence-based matching system to provide you with a group of 5 student with whom you can regularly meet to study. You will have in-class time for these meetings (Questions in the Commons, see above), or can meet outside of class time.
- **Recommended (not required) Textbook:** Stiling, Peter. 2014. *Ecology: Global Insights and Investigations*. Second Edition. McGraw Hill. ISBN 9780073532509. You can buy a used copy (1st edition) for as little as \$10. **Relevant page numbers are provided in the Goals and Terms Study Guide for each module on Canvas.**
- **Supplementary Resources linked from the Canvas course home page**, including basic Biology and Chemistry background, and the Statistics & Excel Help Page.

***Overall, expect to spend 7-10 hours per week on EAS 509. Use all class scheduled time for completing 509-related work even when you are not meeting, but also schedule regular 1-2 hour blocks between classes to work independently or meet with your study buddies. Not taking the time you need for the course = not getting your money's worth for your education + uninformed decision-making in your career. Establishing regular work times = good sustainability professional habits + informed and impactful career. ***

Grading Breakdown and Rationale (500 pts total)

1. **Unit Quizzes** (5 x 30pts + last one is 50pts = **200pts**): *What?* Take-home, untimed “quizzes” on course material especially of the previous 2 weeks, but also cumulative. *Why?* Integrate, apply, and process lecture and lab material, and to make the material stick for later professional use. You have the option to submit twice, with the highest grade saved. The first attempt should be on your own without any sources; second attempt can be using other sources including talking with others. Answers are revealed 1 week after due date (no credit for completing more than 1 week late).
2. **Discussions** (4 x 10 = **40pts**): *What?* An opportunity to talk ecology with your peers on guided topics of your choice. *Why?* The goal of this class is ecoliteracy. That does not mean just stating your opinion, but crafting ecologically informed and credible arguments. This is essential for your interdisciplinary career.
3. **Simutext Assignments** (4 x 10pts = **40 pts**): *What?* Online interactive chapters with questions on particular topics. *Why?* Opportunity to engage (including using simulations) with some important topics/skills on your own. These are graded mostly to acknowledge that they take more time to complete than most of the other module content.
4. **Research Skills (Lab & Independent Project assignments – 220pts)**: *What?* Find and interpret primary literature, observe ecology, collect data, do statistical analysis and create graphs (basic excel skills), draw conclusions, communicate research in abstracts and presentations, and design and execute your own research based on your interests and the needs of local practitioners. *Why?* These skills are useful for being able to use and interpret scientific sources in your career, as well as work in interdisciplinary teams.
 - a. **Core field lab activities (3 x 40 pts each – 120pts)**: 5 for pre-lab activity, 20 for attending in-person lab or completing remote guided lab, 15 for post-lab activity (details on Canvas)
 - b. **Independent project (100pts)**: **Plan** (20 pts), **Presentation** (65 pts), and **Abstract** (15 pts)

We are not aiming to weed you out, but we aim for everyone to achieve mastery in basic concepts, and exposure beyond basics. (See [Let's teach for mastery not test scores](#)).

Ungraded activities help you practice and graded activities are designed *to help you self-assess and learn*. There are many different assignments and options to correct your answers, so ***please do not be a point grubber (argue over minor point adjustments)***. Percentage point letter grade cut-offs will be set to close to standard cut offs at the end of the term to maximize fairness and accuracy (e.g. adjust for any grading discrepancies among sections).

Important Course Policies and Expectations

- **You must let your GSI know if you will be absent from in-person or remote Lab meetings and why.** You are responsible for making up missed work by using the asynchronous remote options.
- **Late Policy for Assignments:** Unless there are extenuating circumstances, assignments will **lose 5% per day after the due date and will not be accepted more than one week past the due date.** This allows us to provide prompt feedback to those students who have completed the assignment on time.
- **Technology and attention:** Please make sure you are prepared for class with all the equipment/gear and connectivity that you need. *Attending online sessions on your phone while you are at the grocery store is not acceptable.* If you cannot give your full attention and use a device that allows you to see and access shared files, then please do not waste your or your classmates' time. If you are absolutely unable to attend with attention, please use the asynchronous recording instead.
- **Recording:** Lectures will be recorded and made available to other students in this course. As part of your participation in this course, you may be recorded. If you absolutely do not wish to be recorded, please send a private note to an instructor the first week of class to discuss alternative arrangements.
- **Course material use:** Students are prohibited from recording/distributing any class materials without written permission from the instructor, except as necessary as part of approved accommodations for students with disabilities. Any approved recordings may only be used for the student's own private use.
- **Safety:** For the safety of all students, faculty, and staff on campus, it is important for each of us to be mindful of safety measures that have been required for our protection. By returning to campus, you have acknowledged your responsibility for protecting the collective health of our community. Your participation in this course on an in-person basis is conditional upon your adherence to all safety measures mandated by the State of Michigan and the University, including maintaining physical distancing from others, and properly wearing a face covering when indoors.
- **Academic integrity:** The point of group work and discussions are to exchange ideas with others and refine your own, however, you must not submit the same thing as your friend! You are expected to [understand what plagiarism is, both accidental and deliberate](#), and to be familiar with the [University of Michigan standards on professional academic behavior](#). *Plagiarism is grounds for expulsion from the program.*

You come to SEAS with diverse academic backgrounds. For some, the course may feel too fast, for others parts will feel too basic. You may need to either:

- a) Share your knowledge/expertise with others if parts of this are what you already know, and/or
- b) Be a self-directed graduate learner and use supplemental resources as needed.

Regularly attending office hours and reading the text will be necessities for some – and all can benefit from using all the resources you have available to you while you are here!

Student Support, Resources, & Accommodations

SEAS students represent a diversity of individual academic and cultural backgrounds, beliefs, and experiences. A diverse, equitable, and inclusive classroom is essential to your professional training. I do not wish to exclude anyone from a positive and productive learning environment. Your 509 instructors use a variety of teaching approaches and examples, and in every activity we expect every member and instructor of this class to show respect for others. Please approach me, another instructor, and/or other resources on campus to voice concerns or suggestions about an event, comment, or course content that affects your own or another student's comfort or learning experience. Here are some excellent on campus resources to optimize your experience and performance:

- If you think you need an accommodation for a disability, let me know as soon as possible, so that we can work with the [Services for Students with Disabilities \(SSD\)](#) office to help us determine appropriate and helpful academic accommodations. 734-763-3000;
- If English is not your first language and you may find it challenging to either understand or communicate well in this course. Please meet often with instructors and definitely use both the [English Language Institute](#), which provides a variety of resources for international students
- The [Sweetland Center for Writing](#) is a great place for anyone to receive feedback to improve clear communication in your written work.
- The [UM Library](#) provides a wealth of free primary literature at your fingertips, you just need to make sure you do your searches while logged in or via the library home page, even if you are using Google Scholar to reach the source for free (look for **MGet IT** links).
- The [Scholar Space](#) is an excellent resource for doing anything digital – image manipulation, citation management, web publishing, doc formatting, multimedia creation, text mining, etc.
- [Consulting for Statistics, Computing and Analytics Research \(CSCAR\)](#) provides consulting services and training in data science, statistics, and advanced research computation.
- [Counseling and Psychological Services \(CAPS\)](#) provides free and confidential support options for any issue including experiencing stress, mood changes, problems with eating and/or sleeping.
- [CEW+](#) provides immediate, ongoing services and financial support, especially to women and nontraditional students, but also to any students who encounter education and career obstacles based on their non-linear paths to, and experiences within, the University community.
- The [Students with Children](#) website is dedicated to the needs of student caregivers at the University of Michigan who juggle parenting, other family care, work, and study.
- [Students of Color of Rackham](#) (SCOR) is a network for graduate and professional students dedicated to the social, cultural, and academic well-being of students of color.
- [Spectrum Center](#) works toward enhancing the campus climate and support services for LGBTQ+ students, staff, and faculty at the University through education, advocacy, and community building.
- For additional resources see also the **Diversity, Equity, and Inclusion offices** of the [University of Michigan](#) and of [SEAS](#).

Course Schedule: One-page overview

See Canvas for the *complete* and up to date course content and schedule. Due dates will automatically appear in your Canvas calendar. Key general due dates:

- Module material is due before every lecture meeting (includes graded Discussions and Simutext assignments and ungraded videos and practice quizzes).
- A graded quiz is due the last day of every unit – do your first attempt before you come to class, so you can discuss it in study groups.
- A pre-lab quiz is due the day of your lab meeting, and a post-lab assignment is due one week after your lab meeting.

2021	Module Unit (Mon/Wed Lecture)	Tues/Thurs Labs
M, 8/30	Biodiversity: Origins, study and state	No lab meetings first week
W, 9/1		
M, 9/6 - No Class		Observing Biodiversity: What determines the abundance and distribution of insects?
W, 9/8		
M, 9/13	Physiological Ecology	Aquatic systems: What are the determinants and indicators of water quality?
W, 9/15		
M, 9/20		
W, 9/22		
M, 9/27	Population Ecology	Forest Succession: Is this forest changing?
W, 9/29		
M, 10/4		
W, 10/6		
M, 10/11	Community Ecology	No lab meetings - Optional Field Trip tba to Crosswinds Marsh
W, 10/13		
M, 10/18 - No Class		Independent Project Planning Meetings
W, 10/20		
M, 10/25	Ecosystem Ecology	Independent Project Data Collection
W, 10/27		
M, 11/1		Independent Project Analysis & Presentation Prep Meetings
W, 11/3		
M, 11/8	Ecosystems over space (Landscape Ecology) and time (Succession)	Independent Project Research Symposium
W, 11/10		
M, 11/15		No lab meetings
W, 11/17		
M, 11/22	Measuring & Managing Changing Systems: Climate Change	
W, 11/24 - No Class		
M, 11/29		
W, 12/1		
M, 12/6		
W, 12/8		

Please keep in mind that with over 125 students enrolled, it is difficult to respond to and meet all of students' individual requests, so we ask that you also take the initiative to tap into the existing resources, crowd-support, and flexibility already built into the course to independently meet your schedule or information needs. Thank you!