Ecology & the Environment

BIO/ENVI 170 & Lab Spring 2024 MACALESTER COLLEGE

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COURSE INFORMATION
Lecture: section 01 = MWF; 9:40-10:40 AM; section 02 = MWF; 10:50-11:50 AM; both meet in Theater 205

Lab: Tuesdays, 8-11:10 AM *or* Thursdays, 8-11:10 AM *or* 1:20-4:30 PM; all meet in OLRI 284
WEEKLY LABS ARE REQUIRED! You must attend the section for which you registered.

This course counts towards the Quantitative Thinking graduation requirement as Q3 and contributes to the Food, Agriculture & Society concentration

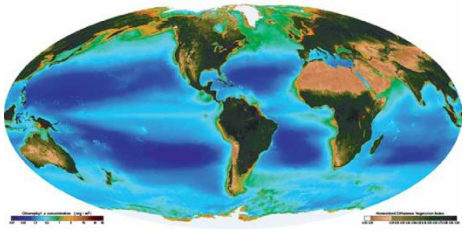
See Moodle or this link for Student Appointment Times in Olin Rice 210 with Jerald Dosch.

COURSE OVERVIEW

Ecology and the Environment serves Biology and Environmental Studies majors as well as all interested in macrosystem biology. During the semester, we dive into a range of topics to study how species, populations, communities, ecosystems, and biomes function. The course will emphasize biological nutrient and energy cycling, population dynamics, animal and plant species interactions, disturbances and responses to disturbances, and ecology in urban and agricultural landscapes. We will examine Ecology under four 'lenses': ***Climate Change, Environmental Justice, Land Use, and Ecosystem Services***. These lenses provide critical insight into how scientists, policymakers, land managers, and other stakeholders evaluate complex ecological and environmental systems.

MATERIALS

- There is no textbook.
- Guided Outline Booklet
- Primary literature, popular science articles, and media will be made available on Moodle.
- We will use Google Sheets and potentially R/RStudio to analyze datasets.
- All course materials will be made available through Moodle.



WHAT QUESTIONS DRIVE ECOLOGY?

- What are the common patterns, processes, and drivers across different species, communities, and ecosystems? What environmental and biological variables drive differences between species, communities, and ecosystems?
- How do climate change & land use change impact ecological processes and functions?
- What will future ecosystems look like and how will they function?
- How can science and Environmental Justice inform each other?
- What services do ecosystems provide and how do they vary across systems?
- Do 'pristine' ecosystems exist? Should they be 'spared' or 'shared'?

OUR LEARNING GOALS

- Work productively in groups and create supportive, effective communities based on open communication, engagement, and sharing of responsibilities.
- Present information confidently through graphic, written, and spoken forms.
- Develop effective preparation, study, and review habits for different assessments.
- Be able to teach new content learned in class to peers and non-peers.
- Connect and synthesize ecological and environmental science content and ideas.
- Engage in and help develop a collaborative, supportive learning environment.
- Read and critically synthesize and evaluate primary literature.
- Measure, collect, organize, and analyze new ecological data.
- Synthesize and present original data in groups.
- Evaluate ecological case studies and research through different 'critical lenses'.
- Connect processes associated with climate change and land use change to predict likely outcomes of ecosystems

COURSE ASSESSMENTS / GRADING

Assessment	Due	%
Graph of the Week (Small Group)	Once during semester	5%
Attend 2 EnviroThursdays or Bio Seminars	By end of term	2%
MiniQuizzes (1 dropped)	Weekly on Mondays	10%
Discussions	Variable	3%
Data Sheets (1 dropped)	Weekly on Wednesdays	10%
Lab Activities	Variable	15%
Distributed Exams	roughly biweekly, Monday by midnight	35%
Case Study Infographic	Check Moodle & Calendar	5%
Case Study Essay	Check Moodle & Calendar	10%
Case Study Group Presentation	Check Moodle & Calendar	3%
Case Study Synthesis of other groups	Check Moodle & Calendar	2%

ATTENDANCE IS EXPECTED FOR ALL CLASS MEETINGS & LABS!

BRIEF ASSESSMENT DESCRIPTIONS

Video lectures - Most Mondays and Wednesdays there will be an asynchronous lecture to watch before class. These vary in length from ~20-60 minutes. You are welcome to post comments to the videos if you have questions, or bring your questions to class C/NC.

EnviroThursdays & Bio Seminars-You are required to attend one EnviroThursday and one Biology Department Seminar (2 total) over the course of the semester. Both are held over the noon hour on Thursdays. You can choose which ones to attend. Submit a short (*one paragraph*) write-up of the seminar you attend, including what you learned and what surprised you to Moodle. These must be submitted by the last day of class.

MiniQuizzes - MiniQuizzes are short "quizzes" that will take place in class on Mondays. After completing the quiz (~10 min), students will work in small groups to discuss answers, after which we will discuss them as a class. They are graded C/NC. 1 will be dropped.

DataSheets – DataSheets are active learning activities in class on Wednesdays in which you will engage with figures from the primary literature. They are graded C/NC. 1 will be dropped.

Friday Discussions – On Fridays we will have a mix of group active learning activities that might include responding to readings, research articles, media, or documentaries. You are expected to prepare for a group discussion and answer questions afterward, engaging with a topic up for debate, or reflecting on a visitor's guest lecture in class. These will all be graded C/NC.

Graph of the Week! Weekly, students will do a short, low-stakes presentation about a 'Graph of the Week' to their peers in small groups. The audience will complete their Graph of the Week pages during these presentations, which will be checked monthly by TAs. Pages graded C/NC, presentation graded from 0-10.

Distributed Exams – Instead of big tests, small tests, or "DEs" will occur ~biweekly. They are open-notes. You will have unlimited time to complete these between Friday after class and Monday by midnight. DEs are for credit and graded for correctness, completion, and understanding of the content. They will occur on online, on Moodle.

Case Study Analysis & Infographic - Groups will tackle case studies representing issues and ecosystems around the world.

(1) Individual Case Study Essay: Within groups, groups will assign a critical lens (so that all 4 lenses are covered by the group) with which to evaluate the case study, and then will choose a 'supporting lens' from the remaining three. Based on the two critical lenses, students will individually analyze the system drawing from ~5 references. The analysis will describe the system briefly, identify and describe the stakeholders involved, and then assess the case study based on their two lenses. The analysis will be 750 words, and will include references.

(2) Case Study groups will develop and create a visual infographic representing the case study that will be displayed via a website (more specific details on Moodle). The infographic will be visually striking and communicate and inform facts about the system to a broad audience.

(3) Case Study Presentation: Teams will 'present' via a live presentation, guiding the class through what they learned for ~6 minutes. Based on these, the rest of the class will complete a synthesis response of this work to turn in (a series of open-ended questions).

Labs!
Lab section will be a semester-long exploration of the process of *doing* ecological science - you'll get out into the field at Mac's Katharine Ordway Natural History Study Area, gather data, interpret that data to ask and answer scientific questions, and generally dive into the process of producing new scientific knowledge. Plus, hopefully have a blast along the way! **Attendance for all labs is required.**

Extensions
If any deadlines pose conflicts with your life or other classes, talk to your professor about alternative deadlines ***at least 24 hours* before the deadline**. Extensions will be granted in 3 day intervals. There are no extensions for group presentations and Case Study poster.

WEEKLY ROUTINES, NORMS AND EXPECTATIONS

Minute Mingle!
At the start of each class, we will meet each other in random groups of 2-3. This is your chance to listen and learn about your peers and discuss silly topics.

Check Ins, Office Hours, and supporting each other's learning
This is an introductory class, and many of you are cultivating practices that you will carry on to upper level courses. You are also busy with activities, clubs, jobs, family and friend responsibilities, and figuring out who you are and what you want to be. We expect you all to be respectful, and kind to each other and use this course as an opportunity to model best practices of student interactions. We strongly encourage you to do "check ins" during office hours. These will let us figure out what is working and not working for you and develop plans for success. It is also an opportunity to share your goals in and out of the class individually and in small groups.

Out of class work expectations
Readings and daily assignments should take ~1.5+ hours per class period. Longer assignments and group work will require more time to be scheduled. If you are having trouble working in a group setting due to work or class scheduling conflicts, let us know as soon as possible. ***We are especially mindful of how the pandemic has impacted our lives, and the expectation is to extend grace and generosity to everyone.***

Developing your voice in science
Science requires a balance of courage and humility – this is as true for undergraduates as it is for researchers at leading institutions. You need courage and confidence to pursue and develop new ideas and approaches, confidence to critique others' ideas, and confidence to follow your curiosity. But science also requires humility – identifying limitations, asking for advice, help and guidance, accepting appropriate criticism from others, and reflecting on potential improvement. Science is a process of realizing you don't have all the answers, seeking information from other sources, and developing new questions to build on existing experience.

COURSE ENVIRONMENT AND RESOURCES

Learning environment and inclusivity. Our goal is to promote an inclusive learning environment where diverse perspectives are recognized, respected, and contribute to our strength as a class. If something in or about this class makes you feel unwelcome, please see Jerald, Mike, a TA, or a college administrator.

Names and pronouns. You should be addressed in the manner that you prefer. If you want to make sure we address you with a particular name and/or pronoun please let us know through the pre-class survey.

Title IX. Macalester College is committed to providing a *safe learning environment* for all students that is free of discrimination, sexual harassment, sexual assault, domestic violence, dating violence, and stalking. Further details are explained in the college's Title IX regulations (https://www.macalester.edu/titleix). If you, or someone you know, experiences a Title IX violation, know that Macalester has staff trained to support you. Macalester faculty members are "responsible employees," which means that if you tell us about a Title IX violation, we must share that information with the Title IX Coordinator. Still, you will control how your case is handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need (Title IX Office, 651-696-6258) including, if you wish, confidential sources on campus who are not subject to the mandatory reporting requirement (see list of "Confidential On-Campus Support" at https://www.macalester.edu/health-and-wellness/sexual-respect/).

Accessibility. We want all students to have fair and equitable access to the learning opportunities in this course. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or to accurate assessment of achievement, please notify us as soon as possible. Students are also welcome to contact the disability service office to discuss a range of options to removing barriers in the course, including accommodations (contact the Center for Disability Resources, 651-696-6275 or disabilityresources@macalester.edu). Once you have a letter of accommodations, please see us so that we can implement an action plan. Furthermore, we know that at times personal issues, stress, health problems or life circumstances may impact your ability to perform academically. Please contact the Office of Student Affairs at 651-696-6220 (studentaffairs@macalester.edu) for support and ask them to get in touch with your instructors.

Other helpful information to support your experience in the class:

- **Concerns on content or experience in the class.** Contact your professors or a TA before/after class; attend office hours (group or solo by appt); email to set up a time to meet over Zoom.
- **Need additional writing support.** Check out MAX Center for writing tutors or Works in Progress peer review program.
- **Are you unable to attend any activities due to an unexpected event (sickness, family issue, schedule).** Contact your professors or a TA by email as soon as possible to set up a time to talk about options.
- **Absence due to religious observance.** Please let us know you will be observing ahead of time, so that you can obtain course materials ahead of the absence.
- **Do you need to sleep?** Of course you do. Take care of yourself. If you are feeling overwhelmed about the scheduling or pace of this course, please let us know.

AI/ChatGPT thoughts & Policy: Yikes! "*O brave new world, with such [AI] in it!*" In a word, ChatGPT makes me ***uneasy***. It looks like an incredibly helpful tool, but also one that might not attribute or cite the work it draws from, and one that could diminish the role of your individual approaches to questions and writing. Here's the thing about science and most academic disciplines - you aren't often defined by your 'rightness' but by your creativity and originality. So maybe let's practice being original as much as we can, while we still can? What else do we offer, if not our new ideas about the world? Resist becoming replaceable and producing ideas that can be generated in seconds by algorithms.

That said, if you choose to use AI, all uses of AI must be cited and explained why and how it was used. This must include: the prompt put into AI, the original output, how you changed the output, how you fact-checked all information, and your reasoning as to why you used this. This will be attached as an AI Statement for all assignments where it is used.

Macalester has updated its Academic Integrity policy to include AI offenses: Using AI under unauthorized, unacknowledged use can now count as cheating and plagiarism, which are grounds for interventions with the Academic Programs Director, Ann Minnick and myself.

Flexibility & Accommodations: I am happy to work together with students and the Center for Disability Resources office to make sure all accommodations are met. **If you have accommodations for this class, please set up a meeting with me the first two weeks of the semester to discuss how they can be met.**

If you do not have accommodations, but have in the past had needs for flexibility in attendance and deadlines, I suggest meeting with the Center for Disability Resources. Similarly, please make a meeting with me early in the semester to talk about meeting the goals of the class.

Missing Classes:

To promote communication, and minimize unexcused absences, there will be deductions in what is the maximum grade achievable for students. If you have 0 unexcused absences, your maximum grade is an A; if you have 3 unexcused absences, your maximum grade is a B+, if you have greater than 6 unexcused absences, your maximum grade is a B-. This maximum grade is assuming all other assignments and expectations have been met.

Overview of weekly schedule

Day of week	*Monday*: Learning & Practice!	*Wednesday*: Exploring Data!	*Thursday*: Lab Day!	*Friday*: Digging deeper!	*On Your Own Time*: Learning & Assessment!
What will we do?	In-class Mini-Quiz (individual and group work)	In-class group Datasheet	Attend your AM or PM lab section	In-class group discussion or activity	Distributed exams to be completed solo on your schedule (bi-weekly)
Pre-class prep	Video lecture & supporting media on Moodle		Variable; see Moodle	Reading or supporting media on Moodle	Prepare and review for Distributed Exams (Des)
What do I need to submit?	MQ in two text colors (due by Tuesday night)	Datasheet (due by Thursday night)	Variable; see Moodle	Variable; see Moodle	Distributed Exam (open Fridays after class, close Monday night)