

Ecology & the Environment

BIO/ENVI 170 & Lab

Spr 2022

MACALESTER COLLEGE



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COURSE INFORMATION
Lecture: 1:10 - 2:10 MWF
OLRI 250

ANIKA BRATT, PhD (she/her)
abratt@macalester.edu

Lab: Thursdays, 8 - 11:10 AM *or* 1:20 - 4:30 PM
OLRI 284

MIKE ANDERSON, PhD (he/him)
andersonm@macalester.edu

Contributes to the Food, Agriculture & Society concentration

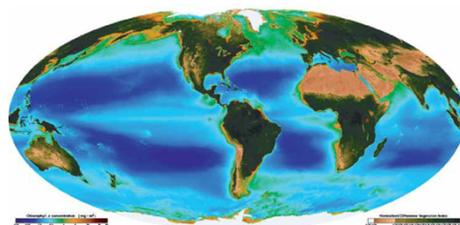
Individual meetings (on zoom): by appt or during office hours – email us!

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 response 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, policy makers, land managers, and other stakeholders evaluate complex ecological and environmental systems.

MATERIALS

- There is no textbook.
- 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	Points	%
MiniQuizzes (MQ)	Weekly on Mondays	10 pt each	10%
Funky Friday Activity	Thursday/Sunday by midnight	10 pt each	10%
Data Sheets	Weekly on Wednesdays	10 pt each	10%
Lab Activities	Variable - see moodle	Variable	15%
Distributed Exams	roughly biweekly, Monday by noon	30 pt each	30%
Case Study Web Infographic			
- Website	April 28	60 pt	10%
- Instagram Story			
Case Study Essay	TBD	60 pt	10%
Case Study Group Presentation	April 29 or May 2	20 pt	3%

Case Study Synthesis of other groups' projects	May 3	10 pt	2%
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**Note that if any assignments are cancelled, the category proportion of the total grade will remain steady*

BRIEF ASSESSMENT DESCRIPTIONS

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.

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.

Funky Friday Activities – On Fridays we will have a mix of group active learning activities that might include responding to primary literature and/or other longer-form reading, preparing for a group discussion and answering questions afterwards, engaging with a topic up for debate, or reflecting on a visitor's guest lecture in class. These will all be graded C/NC.

Distributed Exams – Instead of big tests, we are doing small tests biweekly. You will be allotted double our "non-pandemic" time estimate (e.g., if we estimate 2 questions at 10 min/q = 20 min, we would use 20 min x 2 = 40 min on the online timer) to complete the DE. DEs are for credit and graded for correctness. They will occur on Moodle.

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

- (1) Case Study groups will develop and create a visual infographic representing the case study that will be displayed via a website (more specific details in a separate document). The infographic website will be visually striking and communicate and inform facts about the system to a broad audience. A secondary aspect will be using this to make an informative Instagram story/4 slide infographic that will be shared on the class Instagram account (@ecology170_at_mac).
- (2) Case Study Presentation: Teams will 'present' via a recorded or live presentation (COVID context dependent), guiding the class through what they learned for ~10 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).
- (3) Individual Case Study Essay: Within groups, students will be randomly assigned a critical lens 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 3-5 references. The analysis will describe the system briefly, identify and describe stakeholders involved, and then assess the case study based on their two lenses. The Analysis will 750 words, and will include a reference list.

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!

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 and any of your group members 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+ hrs 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, 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.

Classroom community & connectedness project

A sense of community and connectedness can provide a powerful context for effective learning. Our class is participating in the Classroom Community & Connectedness Project in Spring 2022. The project is led by Professor Devavani Chatterjea and offered through the Jan Serie Center for Scholarship and Teaching at Macalester. As part of the project, you will each be invited to fill out 2 voluntary surveys through the course of the semester and to participate in one facilitated class activity (peers only; no instructor present) to collectively reflect on strengthening our

classroom community. **NOTE:** Surveys are anonymous and responses will NOT be shared with us (your instructors) or anyone else on an individual course level; DE-IDENTIFIED data gathered from students across ~20 participating courses will be analyzed in aggregate and shared with participating faculty, the Macalester community, and in other appropriate higher-education venues.

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 Christine, Anika, 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/violenceprevention/support/>).

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 Disability Services, 651-696-6275 or disabilityservices@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.

Recording policy. In order to accommodate students who will not be able to attend class meetings during this course, we plan to record any class zoom sessions in a manner consistent with Macalester's classroom recording policy. We will share these recordings in a password-protected (and not public) place (e.g., on Moodle). If you download any class recordings, you must store them in a password-protected location or on a password-protected

site. Please note that the recording policy clearly states that you may not share, replicate, or publish any class recording, in whole or in part, or use any of the recordings for any purpose besides knowing what happened during the class period, without my written approval. If we use any recorded content from any of our classes for purposes beyond our class, we will – in accordance with the policy – obtain your written permission to do so.

Other helpful information to support your experience in the class:

- **Concerns on content or experience in the class** → contact Christine, Anika, Mike 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 Christine, Anika, Mike 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.**

Overview of our weekly schedule!

<u>What is this day?</u>	Monday: Learning & Practice!	Wednesday: Exploring Data!	Thursday: Lab Day!	Funky Friday: Digging deeper!	On Your Own Time Before Biweekly Mondays: Learning & Assessment!
<u>What do students do on this day?</u>	In-class synthesis, review and Mini-Quiz (individual and group work)	In-class group work and DataSheet	Attend your AM or PM lab section	In-class group discussion or activity	Distributed exams to be completed solo on your schedule
Pre-class prep	Reading & supporting media on Moodle	Reading & supporting media on Moodle	Variable; see Moodle	Reading & supporting media on Moodle	Prepare and review for DEs
What do I need to submit?	MQ in two text colors	Data Worksheet	Variable; see Moodle	Variable; see Moodle	Distributed Exam