2024 BIO20S: Ecology in the Era of Climate Change

Lecture: Tuesdays/Thursdays 10:30-11:50AM, Location STLC 119
Discussion: Tuesdays 1:30-2:50PM, Location STLC 226
Instructor: Dr. Yingtong "Amanda" Wu, ytwu@stanford.edu
Office Hours: Fridays 10-11AM, via ZOOM: https://stanford.zoom.us/j/92783534406?pwd=3yhucLbjpO7IwZkd2VT0P1qxc0Rnby.1 (Password: 669999)
Teaching Assistant: Gowri Vadmal, gvadmal@stanford.edu
Office Hours: Thursdays 1:30-2:30PM, STLC 107

Email policy
We will do our best to reply to all e-mails within 1 business day. To ensure prompt reply, please make sure to specify BIO20S in the subject line.
E-mail your instructor with questions about:
- Materials/content on lecture or research
- Make-up assignment for a missed class

E-mail your course TA about:
- Access to grades, assignments, and course materials on CANVAS
- Grading inquiries
- OAE accommodations for the course

Do not email when:
- Your question requires instructors/TAs to write multiple paragraphs. Please instead attend the office hours and talk in person or via Zoom.

Course overview

This course offers a comprehensive examination of the ecological and biological consequences of climate change on diverse species and ecosystems. Students will explore the adaptive responses of animals, plants, and microbiomes to shifting environmental conditions. Additionally, the course will address the dynamic alterations in species ranges, changes in biotic interactions, and the implications of climate change on endangered species and environmental justice.

Throughout the course, students will engage in group discussions centered on assigned scientific papers, honing their skills in critical thinking, interpretation, and presentation of findings. The course aims to equip students with a robust understanding of climate change biology while fostering teamwork and communication skills essential for tackling complex environmental challenges.

The course consists of two 80-minute lectures and one 80-minute discussion section each week. Scientific paper(s) related to lecture topics will be assigned for students' reading a week before the discussion section. During the discussion section, the course TA will lead or coordinate discussions among students. Because this is a new course, we might need to make changes to the schedule or course content as the quarter goes on. Bring a flexible attitude and be prepared for an adventure!

Course schedule

Please note that the schedule may change throughout the quarter depending on students' feedback and learning effectiveness.

Week	Assignment*	Lecture 1 (Tue 10:30-11:50AM)	Lecture 2 (Thu 10:30-11:50AM)
1	➢ Submit questions before discussion section	● Introduction to Climate Change Ecology ● Searching and reading scientific literature	● Disease ecology and human health
2	➢ Submit questions before discussion section ➢ Literature search and summary	● Plant ecology and climate change ● Wildfires and forest ecology ● Scientific hypotheses, observational vs. experimental data	July 4th Independence Day (holiday, no classes).
3	➢ Submit questions before discussion section ➢ Defining an outline for review paper ➢ Research paper-Introduction	● Microbial ecology and climate change ● Biotic interactions	● How to write a review paper1: general overview
4	➢ Submit questions before discussion section ➢ Revising the outline ➢ Research paper-subsection 1	● Genetic adaptation to climate change	● How to write a review paper2: scientific language
5	➢ Submit questions before discussion section ➢ Research paper-subsection 2	● Rare species threatened by climate change ● Data analysis and species distribution modeling	● How to write a review paper3:
6	➢ Submit questions before discussion section ➢ Research paper-subsection 3	● Environmental justice	● Peer-review ● How to present effectively

7	➢ Submit questions before discussion section ➢ Research paper- Conclusions and Abstract ➢ Peer review	● Traditional ecological knowledge	● Open work time: final draft revisions, presentation preparation, peer-review feedback
8	➢ Submit presentation slides ➢ Final research paper	● Careers in climate change	● Student presentations

* All weekly assignments should be submitted by Monday midnight.

Assignments and grading

Grades will be determined by adding all points you earned from all activities (assignments, attendance, final project), which will be then divided by the total possible points earned (which is 367 pts). Course grades will be assigned on the basis of the following scale: A=90-100%, B=80- 89%, C=70-79%, D=60-69%, F=<60%. A passing grade is defined as 70% or greater. You can monitor your grade and points in Canvas. Unless noted otherwise, all assignments should be turned in electronically through Canvas. Students must complete all assignments to pass the course.

Attendance and participation (72 pts)

- Per class and per discussion section, 3 pts (attendance and participation; ***students who arrive late to class will not receive credit***)
- 24 classes x 3 points = 72 pts

Pre-lecture assignments (165 pts)

Submit questions before discussion section (35 pts)

- Students are required to submit at least 3 thoughtful questions for each assigned scientific paper
- Due by Monday midnight before the discussion section
- 7 submissions x 5 points = 35 pts

Literature search and summary (10 pts)

- In Week 2, students will choose a topic for the review paper, search for relevant literature and write brief summaries for each paper.

Paper writing and revisions (100 pts)

- In Week 3-7, you will write the review paper in sections, and you will be required to incorporate the feedback from your instructors to your writing.
- 5 submissions x 20 pts = 100 pts

Peer review (20 pts)

Final project (130 pts total)

- Final paper – 100 pts
- Final presentation – 30 pts

Expectations

Instructors will support student learning and self-sufficiency.
The primary role of the instructor is to facilitate student learning. This includes teaching students how to find information and address problems independently. Instructors will be accessible and foster a supportive and socratic learning environment where questions are encouraged. Instructors will evaluate student learning and solicit feedback throughout the course.

Students will participate in every class meeting.
Scientific research requires participation and collaboration. Attendance every week in your discussion section is mandatory. To pass this course you must be present for all discussion sections (unless you have received an excused absence). Attendance every week in lecture is also critical, as your weekly discussion section depends directly on activities during lecture.

Students will support each other's learning.
Learning thrives in a collaborative and non-competitive environment. The weekly discussions, in-class activities, and peer reviews are all built on constructive feedback and positive interactions among students. Please support your peers!

Students will practice self-directed problem-solving.
Creative and original scientific writing requires learning how to address questions independently. Each person is individually responsible for understanding the content of each assignment. Unless explicitly stated, all written assignments should be in your own words and not copied from a classmate or other sources, including AI-generated content (*e.g.*, ChatGPT).

Classroom environment

Our goal is to create an inspiring, mutually supportive, and intellectually stimulating environment in this course. We seek to create a learning community where everyone is respected and feels a sense of belonging. Students are always welcome to discuss any issues with instructors as well. To ensure that everyone can feel comfortable in this course, we have a policy of zero tolerance for harassment and discrimination.

Attendance policy

The instructor team is excited to get to know and work with each of you, and we will make every effort to make this course an enjoyable experience for everyone. One of the things we do to accomplish this goal is set clear expectations about consequences for

missing a class at the outset so that everyone can focus on learning without wondering what the course policies are. Please read the following policies carefully so that there are no surprises. We appreciate your understanding and cooperation.

Examples of extenuating circumstances that will be considered:

- Family emergency as verified by your residence fellow, friends, or other evidence
- Severe illness or injury (verified by a written and signed letter or e-mail—not a form letter—from a physician at Vaden or Stanford Hospital or your medical provider)
- Travel for university-sanctioned athletic events and other activities
- Necessary absence proven by the Office of Accessible Education (OAE)

If you experience other circumstances beyond those listed above, please contact the course TA and instructor, in advance of your absence, to discuss options.

Late assignment policy

All assignments must be submitted on time to receive full credit. Late assignments will receive a 25% reduction for each day that they are late. For example, if an assignment due is worth 20 points in total, submitting the assignment 0-24 hrs late means 4 pts deduction from your score, and submitting the assignment 24-48hrs late means 8 pts deduction from your score. If you are unable to submit an assignment on time due to extenuating circumstances, please notify the course TA as soon as possible.

Resources for success

Office hours
Both the instructor and TA hold weekly office hours and are also available by appointment for meetings. Students are strongly encouraged to attend at least once during the quarter. Even if you don't have questions, just stop by to say hello and tell us how the course is going for you.

Students with documented disabilities
We are committed to ensuring that all students can participate fully in this class. Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is being made. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (Phone: 650-723-1066). http://studentaffairs.stanford.edu/oae

Student Mental Health
Being a student can be stressful. Mental health issues, including significant stress, mood changes, excessive worry, or problems eating or sleeping can interfere with reaching your

optimal academic engagement. Sources of such symptoms might be related to coursework; if so, please contact an instructor. However, these symptoms can also be the consequence of personal struggle, loss, or crisis and can also affect your well-being in the classroom. Stanford University provides counseling resources to support students, faculty, and staff. Some of your options include approaching Residence Deans, Sexual Assault and Relationship Abuse Office (SARA), Bridge Peer Counseling Center, the Office of Religious Life, and Counseling and Psychological Services (CAPS) to speak with an on-call clinician at 650-723-3392 for both urgent and emergent matters.

https://sara.stanford.edu/
https://web.stanford.edu/group/bridge/
https://religiouslife.stanford.edu/
https://vaden.stanford.edu/caps

Honor Code
All students must read and abide by Stanford's Honor Code.
Specifically, we will carefully examine whether any writing is generated by AI (*e.g.*, chatGPT). Any writing generated by AI is not acceptable in this course.