

Biology 490, Sec. 2, Climate Change, Spring 2022

Course overview

Faculty	Peter A. Zani, Ph.D.
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Meetings	Tuesday and Thursday 5:00-5:50 pm TNR 352
Office Hours	Zoom meetings by appointment as needed

Course description

This course examines ecological patterns and outcomes of events such as the last ice age, explores effects of ongoing changes in terms of habitat alteration, migration, adaptation, and extinction, and attempts to predict consequences of future anthropogenic climate change for life on Earth. This is not a lecture or lab course, so meetings are not quite the same. Rather, this is a self-driven course in which students are required to read and review scientific literature. Thus, nearly all of your learning in this course will come from your interaction with the scientific literature and via the process of communicating the information you discover from that literature.

Course goals

Upon completion of this course you should be able to:

Demonstrate an understanding of climate change, the basis for its importance as a topic in biology, and relate the ubiquity of topics in climate change biology to applied fields such as conservation and management.

Differentiate among types of questions that biologists study in relation to climate change, compare the methods that biologists use to study these questions, and specify the fundamental lessons that have been learned.

Demonstrate the ability to write and orally present biological information that is articulate and grammatically correct with properly documented and organized ideas, data, and references.

Critique your own and others' written and oral communication skills by providing and applying useful feedback.

Course readings

In this course we will discuss the relevant scientific literature. Much of the scientific literature is highly technical, jargon rich, and extremely dense in terms of information content. My advice is that you sit down in a quiet spot and carefully read the paper, then come to class and ask questions about things you don't understand. Also, looking up words you do not understand can be critical for comprehension. However, be skeptical of what you read.

Course evaluation

Your grade in this course will be based on the following components (totaling 400 pts.):

Weekly	Discussion	Discussion	Paper	1 st	2 nd	Peer	Oral	Final
Worksheets	Lead	Worksheets	Outline	Draft	Draft	Reviews (3)	Presentation	Paper
25 pts.	20 pts.	50 pts.	5 pts.	25 pts.	50 pts.	75 pts.	50 pts.	100 pts.

Weekly Worksheets

At the start of the semester, twice each week I will post to Canvas a pdf of a scientific paper for consideration along with a set of questions to address from that reading. These are meant to give you an overview of the kinds of topics available within the overarching theme of climate change. They are also meant to serve as examples of the kinds of papers you should be looking for as discussion topics and as discussion reading guides. Each discussion worksheet/reading guide is worth 5 pts, for a total of 25 pts., or 6% of your grade.

Discussion Lead

Each student will choose a paper for consideration this semester. To complete this assignment, you and I need to agree upon a particular paper for reading in advance of the week listed on the schedule. You can expect an e-mail from me detailing the limits to the paper choice and your individual due dates. Prior to week of your assignment you will need to send me a pdf of the paper for reading and a set of questions you want the class to answer. Requirements for the set of questions you provide are that it includes at least one quantitative element (questions interpreting a table or figure) and be about 10-12 questions long focusing on some aspect of climate change. Your paper choice and questions will be worth 20 pts., or 5% of your grade.

Discussion Worksheets

The questions you draft for your reading should pertain directly or indirectly to the topic at hand. That is, you should have some central idea you're trying to explore in the paper you chose. Usually this is closely allied to the ideas you are reviewing for your term project. Each student will have the opportunity to pick a paper and provide a discussion worksheet for their paper. However, you do not need to complete each of these. Rather, you are required to complete **10** of these over the course of the semester. Each graded set of answers is worth 5 pts. each or 50 pts. Total (13% of your grade).

Term Projects

You will choose a *biological* topic related to climate change, research that topic, and write a review of the ideas present in the literature. You should approach this semester-long assignment as if you were writing a review paper of a relevant issue for publication in a journal with your peers performing the evaluation and me as editor. Projects include an outline of areas to be researched, a draft paper (evaluated by me), a second draft to be peer-edited (for which both drafts and reviews are graded), and a final draft. There is not a strict page limit to these papers, but rather an evaluation of whether you adequately reviewed the material. However, the paper should be **8-12 double-spaced** pages (a separate title page, figures [if any], and literature cited are all *extra* and don't count toward the paper's length). Another major requirement is that these papers should consist primarily of peer-reviewed literature as source material (*no web sources allowed*, though books can be used). You are required to have **at least** 12 peer-reviewed papers in your literature cited (books and other sources are not counted toward the source requirements). The entire term project (outlines, drafts, and final paper) is worth 180 pts. (45% of your grade) with the final paper alone worth 25% of your entire grade. Thus, even if you start slowly in terms of draft papers, the final version of your research paper is really what will determine your final grade in this course meaning that even if you start slowly on your research project you can still make that up (**don't give up!!!**).

Peer Reviews

You will be assigned three papers from your peers to critique and provide useful feedback. This is meant to expose you to the world of peer review in which others evaluate your work. These assignments are meant to offer a mechanism to continue improving your writing at the same time exposing you to a broader spectrum of ideas. Your grade is based on how useful your critique is for your classmate. Each review you provide is worth 25 pts., or 75 pts. total (19% of your grade).

Project Presentations

You will create a video presentation of an overview of your research findings, which must include at least one quantitative element (e.g., a data figure from the literature) that you explain and interpret during your presentation. Presentations should be 15 minutes in which you summarize your research. Your grade is based on three main components: i) how well you summarize the ideas; ii) how well you present with the aid of PowerPoint, and iii) the quality of your explanations of the required quantitative element. This assignment is 50 pts., or 13% of your grade.

Final Grades

Final grades are based on the percentage of points earned.

≥93% = A, ≥90% = A-, ≥87% = B+, ≥83% = B, ≥80% = B-, ≥77% = C+, ≥73% = C, ≥70% = C-, ≥67% = D+, ≥60% = D, <60% = F

Comprehensive Exam

Satisfactory completion of this course requires the completion of the Biology Department Comprehensive Exam. Test scores are used to assess general student learning. Scores will not be made available to you nor me (your instructor) and will have no bearing on grades. However, your BIOL 490 grade will be withheld until the exam is taken. The comprehensive exam is scheduled for either **Tuesday, May 3**, or **Wednesday, May 4**, from 6-7 pm in CBB 165. Please plan on attending one of these meetings.

Disabilities

If you have a documented disability that may have some impact on your work in this class for which you may require accommodations, please see me during the first two weeks of the semester so that such accommodations may be arranged.

Academic Integrity

Any misrepresentation of your work, including plagiarism or cheating, will result in a zero (0) for that assignment. You should become familiar with the Student Academic Standards and Disciplinary Procedures governing academic conduct.

Notification of Participation in College Sanctioned Events

Individuals who must miss a class to participate in a college-sanctioned event must notify me in advance. It is your responsibility to communicate with me in advance regarding absences and determine a schedule for make-up work.

Teaching and Learning in the Era of Coronavirus

These are unusual times in that we are trying to continue teaching-and-learning while a very serious viral epidemic rages globally. Yet, we seek to persevere and overcome this (and any other) challenge. In this case, the challenge is going to be meeting regularly to discuss the topic at hand and actually participating in the process. The work itself you can do on your own, but the meetings will aid you greatly. Thus, while I expect you to attend online meetings, I understand that life (including illness) sometimes gets in the way. The key is open and honest communication. If you cannot attend our meetings I can assign individual work, but this is less ideal in that the group discussions are key to advance your understanding in this class. If you contract Covid-19, the disease caused by the novel coronavirus, I will make every attempt to pause the due dates on any assignments and allow for make-up work as needed. If something happens and you cannot meet, please try to let me know in advance so I can adjust as needed. So, am I flexible? Absolutely. Do I still have expectations for your education in this course? Absolutely. The key is, I am willing to work with you to ensure that you can master the learning outcomes of this course in a reasonable manner. Carry on and be safe.

Deadlines and late assignment policy; hard and soft deadlines

I have become much less concerned about due dates in the era of coronavirus, and I am much more concerned THAT you complete the work than WHEN you complete the work. However, certain deadlines are necessary to ensure timely progress on your projects. Thus, your student-led discussion **topic choice** deadline is quite necessary, meaning there a hard deadline for you to pick your paper for your peers to read. However, the **completion** by you of your peers' paper choices is not a hard deadline (I'd rather you complete them late than not at all). The project **first draft** deadline is soft (as just before spring break); so long as you get me draft by about the end of spring break, I can get you feedback in a timely manner. However, the project **second draft** deadline is hard, meaning you need to turn in a draft by the due date to ensure that papers go out to peers for review in a timely manner. Finally, **presentation** and **final draft** deadlines are soft in that so long as you complete these assignments by the time grades are due at the end of the semester I can be satisfied. Think of this way: when the deadline affects your **peers** it's a hard deadline, but when it just affects **you and me** it's a soft deadline.

Course Schedule (tentative)

Wk	Dy	Date	Class Topic	Lab Topic/ Suggested Readings
1	T	Jan. 25	Course Introduction and Syllabus	
1	R	Jan. 27	History of Climate Change	
2	T	Feb. 1	Range Shifts	
2	R	Feb. 3	Trophic Effects	
3	T	Feb. 8	Seasonality	
3	R	Feb. 10	Human Impacts	
4	T	Feb. 15	Paper Outlines (soft deadline)	Topic Choice & Outlines due by 2/14
4	R	Feb. 17	Student-led reading:	
5	T	Feb. 22	Student-led reading:	
5	R	Feb. 24	Student-led reading:	
6	T	Mar. 1	Student-led reading:	
6	R	Mar. 3	Student-led reading:	
7	T	Mar. 8	Student-led reading:	
7	R	Mar. 10	Student-led reading:	
8	T	Mar. 15	Student-led reading:	
8	R	Mar. 17	Draft Papers (soft deadline)	Draft Papers due by 3/18
9	T	Mar. 22	SPRING BREAK	
9	R	Mar. 24	No Classes	
10	T	Apr. 5		
10	R	Apr. 7	Student-led reading:	
11	T	Apr. 12	Student-led reading:	
11	R	Apr. 14	Student-led reading:	
12	T	Apr. 19	Student-led reading:	
12	R	Apr. 21	Student-led reading:	Revised Draft Papers due by 4/22
13	T	Apr. 26	Student-led reading:	
13	R	Apr. 28	Student-led reading:	Peer Reviews of Drafts due by 5/2
14	T	May 3	Comprehensive Exams (hard deadline)	
14	R	May 5		
15	T	May 10	Presentations (soft deadline)	Final Presentations due by 5/9
15	R	May 12	Final Papers (soft deadline)	Final Papers due by 5/20