Fundamentals of Climate Change
CLM 5200.01, Spring 2024
Class Hours: Wednesday 3:35-5:10pm
Location: Oakes Hall Room 210

Instructor

Alexander (Alex) Gottlieb (he/him)
Contact: agottlieb@vermontlaw.edu
Office Hours: Thursdays 12:30-2pm on Teams, or by appointment.

Course Learning Objectives

By the end of this course, you should be able to:

1. Describe the Earth's climate system and the physical mechanisms of anthropogenic climate change
2. Understand how we measure climate change and identify its causes
3. Explain potential climate change impacts from local to global scales and the differential risks posed by those impacts to different communities
4. Evaluate strategies for climate change mitigation and adaptation

Textbook

Introduction to Modern Climate Change, Andrew Dessler, 3rd ed.
All other readings will be available as PDFs on Canvas

Grading and Assessments

1. **Participation: 10%**
   Classes are designed to be interactive and will encourage participation through questions, discussions, and in-class exercises. As such, you are expected to show up for class on time and prepared to actively engage with both the material and your classmates in a respectful, professional, and attentive manner. Please do not use electronic devices in class for any purpose other than taking notes. If you know that you will not be able to attend a class, let me know as far in advance as is feasible.
2. **Quizzes: 30%**
   Two online, open-book quizzes will be given after weeks 4 and 7 of the term. Quizzes will be a mix of multiple choice and short answer and are intended to evaluate your understanding of the principles of climate change. They will draw on both the readings and the lectures. They should take no more than an hour to complete.
3. **Research Project Proposal: 10%**
   The final evaluation for this course will be a research project asking you to explore an extreme climate event from the perspective of a) its physical roots, including the role of

climate change; b) its impacts on people and/or ecosystems, including its differential impacts on different groups; and c) how society can adapt to and/or mitigate the impacts of similar events in the future. To make sure you're thinking about it ahead of time, and to give me an opportunity to provide feedback and suggest helpful resources, you will be expected to submit a brief statement outlining your proposed topic and research plan. More details to follow, which will be discussed in class and posted on Canvas.

4. **Research Project Presentation: 20%**
   In the final two weeks of the term, students will give presentations to the class on their research projects. Presentations will be 10 minutes plus 2 minutes of questions and will be graded on clarity, organization, effective usage of time, and ability to respond to questions. These presentations will also be a valuable opportunity to get feedback from me and your classmates to shape your write-ups.
5. **Research Project Paper: 30%**
   At the end of the term, students will submit a paper no more than 10 double-spaced pages in length summarizing the findings of their research project. Papers will be graded on their content and focus, clarity, organization, and appropriate usage of citations.

Schedule of Lectures, Readings, and Assignments:

Note that this is a brand new course and that the schedule and readings are subject to change as we figure out the pacing together. Always check Canvas for the most up-to-date syllabus.

I will be traveling on the italicized dates and need to hold class remotely over Teams. All other sessions will be in person.

Date (Week #)	Topic	Readings	Assignments/Notes
January 17 (1)	Course Overview	Dessler Ch. 1	
January 24 (2)	Earth's Energy Balance and Greenhouse Gasses	Dessler Ch. 3 and 4	
January 31 (3)	CO_2 and Global Temperature	Dessler Ch. 2 and 5	
February 7 (4)	The General Circulation of the Atmosphere	TBD	Quiz #1 released, due before next class
February 14 (5)	The Hydrologic Cycle	Trenberth (2011); IPCC WG1 Ch. 8	
February 21 (6)	Climate Extremes	IPCC WG1 Ch. 11	
February 28 (7)	Detection and	Dessler Ch. 7	Quiz #2 released, due

	Attribution of Climate Change		before next class
Spring Break March 4-8			
March 13 (8)	Human and Ecosystem Impacts of Climate Change	Dessler Ch. 9; IPCC WG2 TS.B; Klinenberg (1999)	
March 20 (9)	Economic Impacts of Climate Change	Dessler Ch. 9; IPCC WG2 TS.B; Callahan and Mankin (2022)	Project proposal due before class
March 27 (10)	Climate Change Mitigation	Dessler Ch. 12; IPCC WG3 SPM	
April 3 (11)	Climate Adaptation	IPCC WG2 TS.D	
April 10 (12)	Climate Policy	Dessler Ch. 11 and 14	
April 17 (13)	Final Project Presentations		
April 24 (14)	Final Project Presentations		
TBD			Final paper due