

GEOG 3210/5210; ENVST 3210: Global Climate Change

General Education SF

Spring 2023

Tuesday/Thursday 2:00-3:20 PM, Gardner Commons Room 1900

Professor: Larry Coats, larry.coats@geog.utah.edu
Office Hours: Tuesday 9:30-10:30 AM & Thursday 12:30- 1:30 PM in GC 4727 and by appointment
TAs: Talula Pontuti (u1196414@utah.edu), TBD, and by appointment
Josh Krahulec (joshua.krahulec@geog.utah.edu), TBD, and by appointment
(ask at the front desk in GC 4625)
Prerequisite: Basic knowledge about Earth Systems and a keen interest in learning more.
Required Text: *Earth's Climate: Past and Future*, William Ruddiman **3rd Edition** (you must have the 3rd edition!) Available as Inclusive Access unless you opt out by January 20th

Course Web Page: <https://utah.instructure.com>

Familiarize yourself with *Canvas*. The [Canvas Getting Started Guide for Students](#) can be helpful.

Grading:	Weekly quizzes	20%
	Reading and Viewing Guides, other assignments	20%
	Current Topics Discussion post and comments	10%
	4 course objective assessments (12.5% each)	50%

5000-level students will be held to a higher standard on assessments, including a greater level of understanding.

We will be utilizing written course objective assessments (addressing completion of course objectives) in lieu of traditional exams. Objective 1 & 2 assessments will take place during the semester and serve as mid-terms, Objectives 3 & 4 come at the end of the semester and serve as the final exam. Guidelines for writing these will be provided and discussed before they are assigned!

Class is organized by weekly modules and chapters/content. Everything you need for a given week is in that module. Assignments given in a weekly module are due the following Monday, before midnight.

Current Topics on Global Change: Everyone must find a current topic related to climate change and post a short video (2-3 minutes) explaining it on the Discussion Board. The source must be cited (e.g., NPR, *All Things Considered*, 1/11/22) so we know where you got your information. You also need to provide a thoughtful reply to three postings that you will be assigned after the main assignment due date. You will be graded on the quality of your post and your responses to others.

Extra Credit: I give extra credit for attending and reporting on out-of-class lectures on climate change that I announce in class and/or on *Canvas*. I will keep my eye out for them, but if you see something you think might fit, let me know (ahead of time so we can make it available to everyone), and I will review it.

Course Description: Climate change has been occurring throughout Earth's history. Inherent processes such as the planet's tectonic activity, the Earth's relationship to the Sun and other extraterrestrial bodies, as well as atmospheric and hydrological processes have dictated an ever-changing climate pattern over a variety of time scales. Speciation, adaptation, migration, and extinction of living organisms have frequently resulted from climate changes, but the relatively recent evolution and expansion of humans around the globe have cast climate change in a new light. Humans are altering the atmosphere in an unprecedented manner and stand to suffer greatly from even relatively minor alterations in climate. Yet, the complexity of the issue, the inertia of industry and energy use, and the reluctance of policymakers to risk economic backlash have created a politically charged

atmosphere surrounding the study of global climate change. In this class, students will be introduced to the methods and review the evidence used to study climate changes of the past and will examine the data being used to forecast climate change into the future.

Learning Objectives:

1. Be able to explain the role of CO₂ in regulating the Earth's climate.
2. Be able to talk about other factors that affect climate, and provide examples from the past.
3. Be able to describe the current concern about climate change using the past as a foundation.
4. Feel comfortable explaining "the three facts" about climate change to others and having a climate change conversation.

Class Policies

Quizzes - **There are NO make-up quizzes**; however, you will be given the points equivalent to two quizzes, which means you can miss two with no penalty. If you don't miss any quizzes you still get the points and they will serve as extra credit. Freebie quizzes are meant to cover all manner of life issues. Use them wisely. The quiz will be posted by Friday after we finish that topic and due Monday night before midnight.

Attendance— This class is designed to be an in-person, active learning environment with lots of discussion and interaction. We encourage you to attend every class.

Late work - All assignments will be due as scheduled, but to allow for issues that may arise, quizzes and assignments will be accepted up to a week late with no penalty. No work will be accepted after a week, no exceptions.

Technical issues – Contact the 24/7 *Canvas* Support by clicking the Help button located on the left-side global navigation in Canvas. Please note: If you are attempting to complete the assignment after 4 pm on the due date, technical problems will not be accepted as a valid reason for late work. We will accept work up until 11:59 pm on the assignment due date as a courtesy (instead of 5 pm, close of business), however anything that occurs after 4 pm on the due date is the responsibility of the student.

Grading— The university grading scale is below. I reserve the right to round up your grade if you show exceptional engagement in the class and/or you show improvement in your work over the course of the semester.

A (4.0 points)= 94% (450-423 points) A- (3.7 points)= 90% (422-405 points)	Excellent performance, superior achievement
B+ (3.3 points) 85% (404-382 points) B (3.0 points) 82% (381-369 points) B- (2.7 points) 80% (368-360 points)	Good performance, substantial achievement
C+ (2.3 points) 75% (359-337 points) C (2.0 points) 72% (336-324 points) C- (1.7 points) 70% (323-315 points)	Standard performance and achievement
D+ (1.3 points) 65% (314-292 points) D (1.0 points) 62% (291-279 points) D- (0.7 points) 60% (278-270 points)	Substandard performance, marginal achievement
E (0.0 points) below 60% (<270 points)	Unsatisfactory performance and achievement

**** Students taking 5210 will be held to a higher standard on all assessments. ****

Essential Learning Outcomes: ELO's are skills that should be gained in general education coursework that prepare students to be "effective 21st-century global citizens" (U of U General Education Guidelines). Through the discussions over the course of the semester and with assignments described above, we will specifically work on several of these outcomes, and they will be incorporated and assessed as follows:

- *Critical Thinking and Reasoning* – Critical thinking and reasoning skills will be developed and employed on a daily basis through the presentation, discussion, and consideration of scientific data on climate change. These skills will be assessed during the in-class and online quizzes and on objective assessments.
- *Written Communication* – Student written communication skills will be assessed, and constructive feedback will be provided during the course objective analyses and their current topics postings.

***Incomplete grades are limited to completion of 80% of the course with a passing grade.**

***You are responsible for all information presented in the lecture and on Canvas.**

Tentative Lecture, Reading & Assignment Schedule (WATCH Canvas FOR UPDATES!):

WEEK OF:	Topic	Readings	Assignments (due Monday the following week)
Jan 10	Introduction & Syllabus Overview of Climate Science	Chapter 1	<i>Syllabus quiz</i> <i>Climate Change Knowledge quiz</i>
Jan 17	Earth's Climate System Today Climate Archives, Data, and Models	Chapter 2 Chapter 3	<i>Chapter 1 quiz</i> <i>Greenhouse Effect quiz</i> <i>Chapter 3 quiz</i>
Jan 24	CO ₂ and Long term Climate	Chapter 4	<i>Chapter 4 quiz</i> <i>Current Topics Video and Response</i>
Jan 31	Plate Tectonics and CO ₂	Chapter 5	<i>Chapter 5 quiz</i>
Feb 7	Greenhouse Earth	Chapter 6	<i>Chapter 6 quiz</i>
Feb 14	From Greenhouse to Icehouse	Chapter 7 Watch "Cracking the Ice Age"	<i>Chapter 7 quiz</i> <i>Cracking the Ice Viewing Guide Quiz</i>
Feb 21	Astronomical Control of Insolation	Chapter 8	<i>Chapter 8 quiz</i> <i>Objective 1 assessment due TBD</i>
Feb 28	Insolation Control of Ice Sheets Orbital Scale Changes in CO ₂ and CH ₄	Chapter 10 Chapter 11	<i>Chapter 10 quiz</i> <i>Chapter 11 quiz</i>
MARCH 3rd IS THE DEADLINE TO WITHDRAW			
Mar 7	Spring Break! No class or office hours	none	none
Mar 14	Orbital Scale Changes in CO ₂ and CH ₄ The Last Glacial Maximum	Chapter 11 Chapter 13	<i>Objective 2 assessment (ch 7-11) due</i> <i>TBD</i>
Mar 21	The Last Glacial Maximum Climate Since the Last Glacial Maximum	Chapter 13 Chapter 14	<i>Chapter 13 quiz</i> <i>Chapter 14 quiz</i>
Mar 28	Humans and Preindustrial Climate Climate Changes in the last 1000 yrs	Chapter 16 Watch "Dimming the Sun" Chapter 17	<i>Chapters 16-17 quizzes</i> <i>Dimming the Sun Viewing Guide Quiz</i>
Apr 4	Climate Change since 1850 Warming in the last 125 yrs	Chapter 18 Chapter 19 Watch "Chasing Ice"	<i>Chapter 18-19 quizzes</i> <i>Chasing Ice Viewing Guide Quiz</i>

Apr 11	Current & Future Climate Change	Chapter 20	Objective 3 & 4 due TBD Chapter 20 quiz
Apr 18	Future Climate continued What can we do?	Assigned readings	Final quiz
Apr 25	Course summary		
Objective 3 & 4 assessments will be accepted until the end of our final exam period which is Wednesday, May 3, 2023, 1:00 pm			

Additional readings may also be assigned as appropriate for the discussion topic

"Some of the writings, lectures, films, or presentations in this course may include material that conflicts with the core beliefs of some students. Please review the syllabus carefully to see if the course is one that you are committed to taking. If you have a concern, please discuss it with me at your earliest convenience."

- Per Accommodations Policy, Office of Academic Affairs

Geography Department Academic Misconduct Policy

Academic misconduct will not be tolerated. Penalties may include failure of an assignment, the entire course, and/or the filing of formal charges with appropriate university authorities. Academic misconduct includes, but is not limited to, cheating, misrepresenting one's work, and plagiarism:

- Cheating involves the unauthorized possession or use of information in an academic exercise, including unauthorized communication with another person during an exercise such as an examination.
- Misrepresenting one's work includes, but is not limited to, representing material prepared by another as one's own work or submitting the same work in more than one course without prior permission of all instructors.
- Plagiarism means the intentional unacknowledged use or incorporation of any other person's work in one's own work offered for academic consideration or public presentation.

AI text generation (e.g. ChatGPT) may not be used for assignments in this course. Taking credit for text generated by AI tools is plagiarism.

University of Utah Center for Disability Services

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

Addressing Sexual Misconduct

Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, SSB 328, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

Campus Safety

The University of Utah values the safety of all campus community members. To report suspicious activity, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.

Student Names & Personal Pronouns

Class rosters are provided to the instructor with the student's legal name as well as "Preferred first name" (if previously entered by you in the Student Profile section of your CIS account, which managed can be managed at any time). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class or on assignments. Please advise me of any name or pronoun changes so I can help create a learning environment in which you, your name, and your pronoun are respected. If you need any assistance or support, please reach out to the LGBT Resource Center. https://lgbt.utah.edu/campus/faculty_resources.php

Diversity/Inclusivity

It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you. (Source: University of Iowa College of Education)

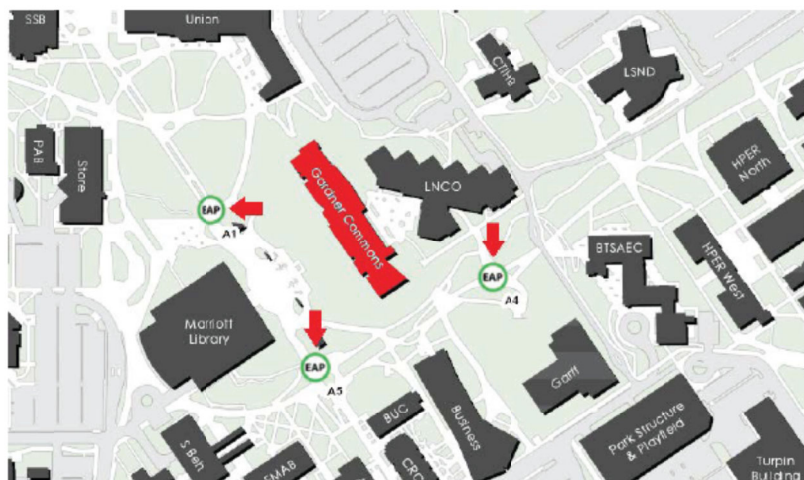
Undocumented Student Support Statement

Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit dream.utah.edu.

Wellness Statement

Personal concerns such as stress, anxiety, relationship difficulties, depression, cross---cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776. Rates of burnout, anxiety, depression, isolation, and loneliness have noticeably increased during the pandemic. If you need help, reach out for [campus mental health resources](#), including counseling, trainings and other support.

CSBS EMERGENCY ACTION PLAN



BUILDING EVACUATION

EAP (Emergency Assembly Point) – When you receive a notification to evacuate the building either by campus text alert system or by building fire alarm, please follow your instructor in an orderly fashion to the EAP marked on the map below. Once everyone is at the EAP, you will receive further instructions from Emergency Management personnel. You can also look up the EAP for any building you may be in on campus at <http://emergencymanagement.utah.edu/eap>.



CAMPUS RESOURCES

U Heads Up App: There's an app for that. Download the app on your smartphone at alert.utah.edu/headsup to access the following resources:

- **Emergency Response Guide:** Provides instructions on how to handle any type of emergency, such as earthquake, utility failure, fire, active shooter, etc. Flip charts with this information are also available around campus.
- **See Something, Say Something:** Report unsafe or hazardous conditions on campus. If you see a life threatening or emergency situation, please call 911!

Safety Escorts: For students who are on campus at night or past business hours and would like an escort to your car, please call 801-585-2677. You can call 24/7 and a security officer will be sent to walk with you or give you a ride to your desired on-campus location.