**Colorado State University**

# ATS 543: GLOBAL CLIMATE CHANGE

## SPRING 2025        IN-PERSON

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**Communication Policy**:

Please contact us via Slack, Canvas, or at the emails above. We will respond within 24 hours.

## MANDATORY CLASS ATTENDANCE:

GIFFORD 149 MW NOON TO 12:50 PM

PLEASE ATTEND EVERY CLASS IF YOU CAN!  iClicker code: https://join.iclicker.com/AVDK

## COURSE DESCRIPTION & OBJECTIVES

We'll answer the three most important questions about climate change.  **I call these the Three S's of Climate Change:**

- **SIMPLE: How does it work?**
- **SERIOUS: How bad will it get?**
- **SOLVABLE: What are we going to do about it?**

*I promise this course will not crush your soul!* Most of the material you've seen is probably focused on the middle S (Serious). It *is* deadly serious! But there's no point obsessing about how bad things could get, so we cleverly sandwich the middle S between the other two critical pieces, giving them all roughly equal time and attention. We will spend about 5 weeks on each S. By the end of the course, I hope you will agree that preventing global catastrophe is definitely feasible and requires fundamental changes that will make the world a better place. It's inspiring!

Upon the completion of this course, students will be able to:
1. Describe how changes in radiation balance affect Earth's climate
2. Define and enumerate physical bases for climate forcing, feedback, and sensitivity
3. Calculate the relationships among emissions, CO2, and warming
4. Describe the principles, strengths, & weaknesses of global climate models
5. Explain the use of emission scenarios and climate projections
6. Identify impacts of climate change on ecosystems and society
7. Articulate the structure of and critique economic analyses of climate change
8. Discuss social justice aspects of climate impacts and solutions
9. Compare technical & policy approaches to climate mitigation & adaptation
10. Explain the ways they plan to build a better world

## TEXTBOOK / COURSE READINGS

There is no required textbook. Course readings will be available via Canvas using library reserve.

## COURSE MODULES

The course is divided into three units of weekly modules. Each module includes readings, videos, a written assignment, and a quick quiz. The idea is to reduce stress by including many low-stakes assessments and avoid having the final grade depend on just a big final project.

**Module 1: Simple Serious Solvable**

**SIMPLE: CLIMATE CHANGE MECHANISMS**

- Module 2: Energy and Radiation
- Module 3: How Climate Works
- Module 4: Forcing, Feedback, and Sensitivity
- Module 5: Climate Change of the Past

**SERIOUS: WHY CLIMATE CHANGE SUCKS**

- Module 6: Observed Climate Change and Impacts
- Module 7: Climate Modeling
- Module 8: Future Climate Change and Impacts
- Module 9: Fate of Fossil CO2

**SOLVABLE: WHAT WE'RE GOING TO DO ABOUT IT**

- Module 10: Carbon Economics
- Module 11: Climate Justice
- Module 12: Climate Change Policy
- Module 13: Deep Decarbonization
- Module 14: Cleaning Up the Mess

**Module 15: Building a Better World**

## COURSE MATERIALS & EQUIPMENT

We will use custom web-based interactive models developed for the class, so you need access to a desktop computer, laptop, or tablet.

## PARTICIPATION/BEHAVIORAL EXPECTATIONS

IMPORTANT: You really have to keep up with the course and do the assignments to succeed! Written assignments and weekly quizzes count for 75% of the semester grade. You should expect

to spend at least two hours per week viewing the online materials and an additional two to four hours per week doing readings and homework assignments.

## FINAL STORYTELLING PROJECT:

At the end of the semester, you will write a "science fiction story" that explains the climate situation in 2075. I'm very open-minded about the structure and content of this story! It should explain what life is like, how we got there, what happened along the way, and what sorts of future expectations your characters have for their future. We will discuss the final project in detail as the semester develops.

## COURSE POLICIES (ATTENDANCE, GROUP TEXT, LATE ASSIGNMENTS)

### ***ATTENDANCE IN CLASS IS MANDATORY!***

Remember how much we hated zoom classes during COVID? We want to form a community of learners this semester.

We will have in-class polling with iClicker. You will get participation points for answering the in-class polls, but you won't be penalized for wrong answers. These participation points will count 10% toward your final semester grade.

**Download the iClicker app** on your phone (iOS or Android), and join the class by clicking the following link: https://join.iclicker.com/AVDK

GROUP TEXT: We will use the ***CHAT feature in Canvas*** for homework help and real-time assistance as a GROUP TEXT. PLEASE look there to see if your HW question has already been asked and answered, and please feel free to answer one another on there.

Late assignments can be acceptable ONLY if you negotiate with us ***in advance***.

Everything in the course is **open-book, open-notes, and online in Canvas**.

## GRADING POLICY

CSU does not use grades of C-, D+, or D-.

| Grade | Range |
|-------|-------|
| A+ | 100% to 96.67% |
| A | <96.67% to 93.33% |
| A- | <93.33% to 90.0% |
| B+ | <90.0% to 86.67% |

| | |
|---|---|
| B | <86.67% to 83.33% |
| B- | <83.33% to 80.0% |
| C+ | <80.0% to 76.67% |
| C | <76.67% to 70.0% |
| D | <70.0% to 60.0% |
| F | <60.0% to 0.0% |

Weekly assignments will be returned within a week.

| ASSIGNMENT | GRADE PERCENTAGE |
|---|---|
| Classroom Participation (polling) | 10 |
| Quizzes and Knowledge Checks | 25 |
| Final Storytelling Project | 25 |
| Weekly graded assignments | 40 |
| **Total:** | **100 %** |

*Keep a copy of all work created for the course, including work submitted through Canvas

## CANVAS INFORMATION & TECHNICAL SUPPORT

Canvas is where course content, grades, and communication will reside for this course.

- Login for Canvas
- Canvas Support
- For passwords or any other computer-related technical support, contact the Central IT Technical Support Help Desk.
  - (970) 491-7276
  - help@colostate.edu

The Technical Requirements page identifies the browsers, operating systems, and plugins that work best with Canvas. If you are new to Canvas quickly review the Canvas Student Orientation materials.

## ACADEMIC INTEGRITY & CSU HONOR PLEDGE

This course will adhere to the CSU Academic Integrity/Misconduct policy as found in the General Catalog and the Student Conduct Code.

Academic integrity lies at the core of our common goal: to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which

academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, I will ask that you affirm the CSU Honor Pledge as part of completing your work in this course.

Further information about Academic Integrity is available at CSU's [Academic Integrity - Student Resources.](#)

## UNIVERSAL DESIGN FOR LEARNING/ACCOMMODATION OF NEEDS

I am committed to the principle of universal learning. This means that our classroom, our virtual spaces, our practices, and our interactions be as inclusive as possible. Mutual respect, civility, and the ability to listen and observe others carefully are crucial to universal learning.

If you are a student who will need accommodations in this class, please contact me to discuss your individual needs. Any accommodation must be discussed in a timely manner. A verifying memo from [The Student Disability Center](#) may be required before any accommodation is provided.

The Student Disability Center (SDC) has the authority to verify and confirm the eligibility of students with disabilities for the majority of accommodations. While some accommodations may be provided by other departments, a student is not automatically eligible for those accommodations unless their disability can be verified and the need for the accommodation confirmed, either through SDC or through acceptable means defined by the particular department. Faculty and staff may consult with the SDC staff whenever there is doubt as to the appropriateness of an accommodative request by a student with a disability.

The goal of SDC is to normalize disability as part of the culture of diversity at Colorado State University. The characteristic of having a disability simply provides the basis of the support that is available to students. The goal is to ensure students with disabilities have the opportunity to be as successful as they have the capability to be.

Support and services are offered to student with functional limitations due to visual, hearing, learning, or mobility disabilities as well as to students who have specific physical or mental health conditions due to epilepsy, diabetes, asthma, AIDS, psychiatric diagnoses, etc. Students who are temporarily disabled are also eligible for support and assistance.

Any student who is enrolled at CSU, and who self-identifies with SDC as having a disability, is eligible for support from SDC. Specific accommodations are determined individually for each student and must be supported by appropriate documentation and/or evaluation of needs consistent with a particular type of disability. SDC reserves the right to ask for any appropriate

documentation of disability in order to determine a student's eligibility for accommodations as well as in support for specific accommodative requests. The accommodative process begins once a student meets with an accommodations specialist in the SDC.

## THIRD-PARTY TOOLS/PRIVACY

Please note that this course may require you to use third-party tools (tools outside of the Canvas learning management system), such as Skype and others. Some of these tools may collect and share information about their users. Because your privacy is important, you are encouraged to consult the privacy policies for any third-party tools in this course so that you are aware of how your personal information is collected, used and shared.

## COPYRIGHTED COURSE MATERIALS

Please do not share material from this course in online, print, or other media. Course material is the property of the instructor who developed the course. Materials authored by third parties and used in the course are also subject to copyright protections. Posting course materials on external sites (commercial or not) violates both copyright law and the CSU Student Conduct Code. Students who share course content without the instructor's express permission, including with online sites that post materials to sell to other students, could face appropriate disciplinary or legal action.

## UNDOCUMENTED STUDENT SUPPORT

Any CSU student who faces challenges or hardships due to their legal status in the United States and believes that it may impact their academic performance in this course is encouraged to visit [Student Support Services for Undocumented, DACA & ASSET](#) for resources and support. Additionally, only if you feel comfortable, please notify your professor so they may pass along any additional resources they may possess.

## TITLE IX/INTERPERSONAL VIOLENCE

For the full statement regarding role and responsibilities about reporting harassment, sexual harassment, sexual misconduct, domestic violence, dating violence, stalking, and the retaliation policy please go to: [Title IX – Sexual Assault, Sexual Violence, Sexual Harassment](#).

If you feel that your rights have been compromised at CSU, several resources are available to assist:

- Student Resolution Center, 200 Lory Student Center, 491-7165

- Office of Equal Opportunity, 101 Student Services, 491-5836

A note about interpersonal violence: If you or someone you know has experienced sexual assault, relationship violence and/or stalking, know that you are not alone. As instructors, we are required by law to notify university officials about disclosures related to interpersonal violence. Confidential victim advocates are available 24 hours a day, 365 days a year to provide support related to the emotional, physical, physiological and legal aftermath of interpersonal violence. Contact the Victim Assistance Team at: 970-492-4242.

## RELIGIOUS OBSERVANCES

CSU does not discriminate on the basis of religion. Reasonable accommodation should be made to allow individuals to observe their established religious holidays. Students seeking an exemption from attending class or completing assigned course work for a religious holiday will need to fill out the Religious Accommodation Request Form and turn it in to the Division of Student Affairs, located on the second level of the Administration building.

Once turned in, the Division of Student Affairs will review the request and contact the student accordingly. If approved, the student will receive a memo from the Dean of Students to give to their professor or course instructor.

Students are asked to turn in the request forms as soon as the conflict is noticed. Similarly, unanticipated conflicts requiring a religious observance, such as a death in the family, can also be reviewed.

## CSU PRINCIPLES OF COMMUNITY

**Inclusion:** We create and nurture inclusive environments and welcome, value and affirm all members of our community, including their various identities, skills, ideas, talents and contributions.

**Integrity:** We are accountable for our actions and will act ethically and honestly in all our interactions.

**Respect:** We honor the inherent dignity of all people within an environment where we are committed to freedom of expression, critical discourse, and the advancement of knowledge.

**Service:** We are responsible, individually and collectively, to give of our time, talents, and resources to promote the well-being of each other and the development of our local, regional, and global communities.

**Social Justice:** We have the right to be treated and the responsibility to treat others with fairness and equity, the duty to challenge prejudice, and to uphold the laws, policies and procedures that promote justice in all respects.

## DIVERSITY AND INCLUSION

The [Mission, Vision, and Focus](#) webpage of the Vice President for Diversity includes a comprehensive statement of CSU's commitment to diversity and inclusion.