CEE 176K, Syllabus, Summer, 2026

Course Information

CEE 176K Generative AI and Climate Action (2 units)
Summer 2026
Tue, Thurs 4:30-5:20pm
Location: TBD

Instructor Contact Information

Dipashreya Sur (she/her pronouns)
Email address: dipashre@stanford.edu
Feel free to call me by my first name in writing and when we talk.
First name pronunciation: Dee-pah-SHRAY-ah

Student Hours: I am happy to meet with you to discuss the material being covered in class, any questions or concerns, and other related issues. Please email me to set up a time. I also encourage you to check out Making the Most of Office Hours to learn more about how to best use student hours to enrich your learning experience.

Course Overview

Generative AI shows tremendous potential to address climate change impacts. Yet, the data centers required to support AI can pose a threat to our environment. This raises the question: How do we utilize the effectiveness of generative AI without doing more harm than good?

This course will provide a high-level overview of the potentials and pitfalls of generative AI for meaningful climate action. Guest speakers from Silicon Valley working in sustainability and computing will be invited to share insights into interdisciplinary challenges, emerging opportunities, and career pathways. Topics will include AI-driven tools for decarbonization, responsible AI development, and energy-efficient data center expansion. The course may also include a field trip to explore how these topics are applied within large-scale energy systems.

Course Learning Goals

Through active engagement and completion of the course activities, you will be able to:
- Understand the capabilities of responsible AI usage to address the climate crisis

- Identify potential policy solutions to reduce growing energy demands within the data center sector
- Explain how Stanford operates sustainably through their living lab model

Course Materials

Technology: You will need to have access to a device that connects to the internet so that you can access email and Canvas. All course details and materials will be posted on our Canvas course site. Students can borrow equipment and access other learning technology from [the Lathrop Learning Hub](). For tech support, see [Student Tech Resources and Support]().

Readings: All course readings will be posted on Canvas.

Coursework and Grading Scheme

This course is worth 2 units of credit, which means that you may be asked to complete up to 6 hours of work per week, including class time. Between weekly participation in whole-class meetings, this leaves about 4 hours of work outside of class that you may be asked to do.

The table below summarizes the kinds of work you will be asked to do and their contribution to your course grade.

Category	% of course grade	Notes
Attendance and participation in class	30%	1 absence pass, no questions asked - Up to 2 can be made up with alternative work - Arrival > 15 minutes late counts as an absence
Weekly assignment	20%	Eligible for 1 late "pass"
Weekly responses	20%	Eligible for 1 late "pass"
Small group presentation	20%	Must be completed by the end of the last day of class

The weekly assignment involves submitting 3 questions for each guest lecture. The weekly responses ask you to provide 3 main takeaways from each guest lecture.

To encourage you all as a class to get to know each other and explore topics of your interest within generative AI and/or climate action, we will be having small group presentations (5-10 minutes long). To facilitate this process, I will assign you all into groups of 5 on Canvas. The presentations are meant as an informal and "low-stakes" way to explore a fun topic of your choosing and get experience in public speaking. In order to successfully complete the small group presentation, all members of the group need to equally present and contribute.

The grading scheme of the class is Satisfactory/No Credit to encourage participation and provide a class environment for you to focus on your learning and development. As long as you complete the assignments following the table above, you will receive a Satisfactory grade. If you have any questions about the grading, please do not hesitate to reach out to the course instructor.

Tentative Course Schedule

(Subject to change based on speaker availability)

Overall, the course schedule will include guest speakers on Tuesdays and class discussions and small group presentations on Thursdays. Additionally, it may include 1-2 optional field trips (timing TBD) which will further enrich your learning.

Week 1: Introduction to Generative AI
- Course overview and introduction to key course topics including large language models or LLMs and data center energy usage

Week 2: Sustainable Generative AI practices
- The capability of small LLMs and what responsible AI usage entails

Week 3: Generative AI for building applications
- Applying LLMs to reduce building energy emissions

Week 4: Global Challenges within the Data Center Sector
- Balancing regulations, economic, and policy aspects in various regions when scaling data centers globally

Week 5: Energy-efficient Data Center Expansion
- Engineering and system-level designs (i.e. HVAC systems) to reduce data center energy demands

Week 6: Financial Support to advance climate innovation
- Funding mechanisms needed to support climate-focused startups

Week 7: Stanford Campus as a Living Lab for Sustainability
- Efforts at Stanford to address growing climate emissions

Week 8: Connection between Generative AI and Climate Action
- Wrap up the course by discussing how we can use generative AI without doing more harm than good

Course Privacy Statement

As noted in the university's [recording and broadcasting courses policy](#), students may not audio or video record class meetings without permission from the instructor (and guest speakers, when applicable). If the instructor grants written permission or if the teaching team posts videos themselves, students may keep recordings only for personal use and may not post recordings on the Internet, or otherwise distribute them. These policies protect the privacy rights of instructors and students, and the intellectual property and other rights of the university. Students who need lectures recorded for the purposes of an academic accommodation should contact the [Office of Accessible Education](#).

Honor Code and Course Policies for Use of Generative AI

Please familiarize yourself with the [Stanford honor code](#). All work submitted should be your own. While AI usage is permitted, I encourage you to write using your own words. Any use of AI should be cited by providing screenshots of your prompts, the AI output, and description of how the work provided still reflects your own efforts. Failure to cite AI appropriately will result in plagiarism penalties.

Attendance and Participation

Thinking through difficult issues is most productive and most fun when done out loud in the company of others! This is why attendance and participation is a large part of your course grade (30%).
- You get 1 'pass' to be absent from class or section, no questions asked.
- For an additional 2 classes or sections beyond that, please reach out to the instructor (by the end of week 6) to determine an ideal way of making up for the missed classes. Lack of doing so could result in an unsatisfactory grade.
- Being 15 minutes or more late to a class or section counts as an absence.
- Even if an absence is excused, you may be asked to complete additional work to make up for the missed class.
- Students who anticipate persistent challenges to participating in class or

submitting work on time should let the course instructor know as soon as possible.