

Geography 3901H (19456) Syllabus

Global Climate & Environmental Change, Autumn 2024

Course Information

- **Course times:** Wednesdays and Fridays from 9:35 a.m.-10:55 a.m.
- **Credit hours:** 3
- **Mode of delivery:** In person
- **Room:** 070 Derby Hall (basement; southeast corner)

Instructor

- **Name:** Dr. Ellen Mosley-Thompson, call me Dr. EMT
- **Email:** thompson.4@osu.edu
- **Office location:** 1140 Derby Hall and 082B Scott Hall (West Campus)
- **Office hours:** 11:15 to 12:30 W and F; or by appointment in person or by Zoom
- **Preferred means of communication:**
 - Outside of class, my preferred method of communication for questions is **email**. Questions are also always welcome during class.
 - My class-wide communications will be sent through the Announcements tool in CarmenCanvas and by email if more details are required. Please check your [notification preferences](https://go.osu.edu/canvas-notifications) (go.osu.edu/canvas-notifications) to be sure you receive these messages. I check email regularly during weekdays and several times on weekends. I will respond quickly, at least within 24 hours, but generally more quickly than that. Please feel free to send class-related questions any time.

Teaching Assistant (TA)

We do not have a TA for this class

Course Prerequisites

This course has no prerequisites except that you must be officially admitted to the University Honors Program.



THE OHIO STATE UNIVERSITY

College of Arts and Sciences
Department of Geography

Course Description

This course is taught in a lecture / seminar format and is designed to provide a more thorough understanding of the scientific basis of both natural and anthropogenic (human produced) climate and environmental changes. You will explore the key issues surrounding 20th and 21st century climate changes (popularly called global warming) and the role of human activities in shaping the physical, chemical, and biological characteristics of the environment that sustains life on Earth. Through readings, lectures, short videos, class discussions, student presentations, class debates, guest lectures, and a field trip you will gain insight to how these anticipated changes are likely to affect your future and explore actions by which you may contribute to solutions. You will gain experience using peer-reviewed literature to research a topic and then summarize and present your findings both orally and in writing. A key objective is to provide you with the knowledge base and skills to critically evaluate information you encounter concerning climate change and related environmental issues.

Required text:

Dessler, Andrew. *Introduction to Modern Climate Change, Third Edition*, Cambridge University Press, 2016, ISBN 978-1-108-79387-2 (paperback). The book may also be purchased (often used) from Amazon. Either edition of the book (second or third) will work just fine.

You will have a variety of selected readings. These will be assigned and made available via Carmen at the appropriate time. You will be alerted in class and by email when updates are added to Carmen.

Throughout the semester additional reading and reference materials may be assigned and typically will be posted on Carmen. Selected journal articles and book chapters will be placed in the **Assigned Class Readings Module on Carmen**. Additional books (if needed) will be placed on reserve in the **Geology Library in Orton Hall** under Geog 3901H unless specified otherwise. You will be alerted when these additional materials are made available.

GEC Requirements:

This course is approved as a Legacy GE Natural – Physical Science course for BA students only. This course is also approved as a Legacy GE Social Science - Human, Natural, and Economic Resources course for both BA and BS students. Below is a detailed discussion of how this class meets the required educational goals. See the GE summary discussion at the end of this syllabus. This is also posted in the **Basic Class Information module on Carmen**.



Legacy GE Goals and Expected Outcomes:

1) Legacy GE Natural Science—Physical Science (for BA students only)

Goals:

Students understand the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

Expected Learning Outcomes:

1. Students understand the basic facts, principles, theories, and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the inter-dependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

The material covered in this course, Global Climate and Environmental Change: Individuals Matter, includes a strong emphasis on the use of resources and the associated degradation of the environment. Students explore the impacts of human activities on hydrologic systems, soils, and hence on food production, ocean acidification, marine resources, invasive species, and ecosystem disruptions, on local to global scales. Global climate change encompasses the global commons (air, water, soil), the impact of human activities on our life support systems, the resilience of many systems, and the capacity of humans and human systems to either mitigate future changes, remediate damaged systems and/or adapt to changes that are well underway. The concept of an individual and a shared responsibility to sustain an Earth System capable of supporting the human species runs throughout the class. Knowledge is gained through lectures, class discussions, student group presentations, debates, exercises, a term paper, and quizzes.

2) Legacy GE Social Science—Human, Natural, and Economic Resources (for BA and BS students)

Goals

Students understand the systematic study of human behavior and cognition; the structure of human societies, cultures, and institutions; and the processes by which individuals, groups, and societies interact, communicate, and use human, natural, and economic resources.

Expected Learning Outcomes

1. Students understand the theories and methods of social scientific inquiry as they apply to the study of the use and distribution of human, natural, and economic resources and decisions and policies concerning such resources.
2. Students understand the political, economic, and social trade-offs reflected in individual decisions and societal policymaking and enforcement and their similarities and differences across contexts.
3. Students comprehend and assess the physical, social, economic, and political sustainability of individual and societal decisions with respect to resource use.

The material covered in this course, Global Climate and Environmental Change: Individuals Matter, includes a strong emphasis on the use of resources and the associated degradation of the environment. The concept of an individual and a shared responsibility to sustain an Earth System capable of supporting the human species runs throughout the class. Students are exposed domestic (cap and trade) and international (Framework Convention on Climate Change; Kyoto Protocol) instruments and strategies with the potential to limit and reduce emissions, slow population growth, enhance educational opportunities, and reduce hunger and enhance nutrition. We discuss why the developed world has been so slow to act and why different actors and stakeholders often embrace such divergent views. Knowledge is gained through lectures, class discussions, student group presentations, debates, exercises, a term paper, and quizzes.

How this Course Works

Mode of delivery: This course is taught in the classroom. If you are unable to regularly attend class at the scheduled time you must enroll in another class.

Pace of online activities: This course consists of a variety of activities including lectures, debates, student presentations, exercises, group discussions, and group projects. During the first two weeks of the semester the complete schedule of activities (lectures, guest speakers, group discussions, virtual field trip, debates, presentations, papers, and/or films) will be developed and made available. This **daily class schedule** is available under the **Basic Class Information Module on Carmen**. The daily schedule will be updated as the class progresses, and you will be alerted regarding any additions or changes. All key activities and estimated due dates are reflected in the table at the end of this syllabus. In addition, the first slide shown at the beginning of each class will always provide the details of our activities for the upcoming two weeks along with all the key deadlines for the upcoming month. PowerPoint files from all lectures will be posted on Carmen after class (not before). Except for the first week of the class, readings will be assigned the week prior to the presentation and/or discussion of the assigned material. Please remember that this is a lecture / seminar style course and requires that you remain flexible so that we can capitalize on climate- and/or environment-related events and special speakers. Should the class schedule change you will be alerted immediately, and the **daily class schedule** will be modified accordingly.



Credit hours and work expectations: This is a 3 credit-hour course. According to [Ohio State bylaws on instruction](https://go.osu.edu/credithours) (go.osu.edu/credithours), students should expect around 3 hours per week of time spent on direct instruction (instructor content and other class activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of C (average).

Attendance and participation requirements: Your attendance is required and your participation is evaluated based on your interactions in the class discussions. Thoughtful questions will also be used to gauge your participation.

I am here for you! My goal is to guide you as you gain a deeper understanding of the global climate and environmental changes that impact all life on Earth (in the past, now, and in the future). If you have any issues or access problems that affect your ability to succeed in this class, please contact me (Dr. EMT) immediately so I can help you find solutions.

Required Equipment

- **Computer:** current Mac (MacOS) or PC (Windows 10) with high-speed internet connection
- **Mobile device** (smartphone or tablet) to use for BuckeyePass authentication
- For Zoom (if needed):
- **Webcam:** built-in or external webcam, fully installed and tested
- **Microphone:** built-in laptop or tablet mic or external microphone

Required Software

Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Visit the [installing Office 365](https://go.osu.edu/office365help) (go.osu.edu/office365help) help article for full instructions.

CarmenCanvas Access

You will need to use [BuckeyePass](https://buckeyepass.osu.edu) (buckeyepass.osu.edu) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you do each of the following:

- Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](https://go.osu.edu/add-device) (go.osu.edu/add-device) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click



the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.

- [Install the Duo Mobile application](https://go.osu.edu/install-duo) (go.osu.edu/install-duo) on all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at [614-688-4357 \(HELP\)](tel:614-688-4357) and IT support staff will work out a solution with you.

Technology Skills Needed for This Course

- Basic computer and web-browsing skills
- [Navigating CarmenCanvas](https://go.osu.edu/canvasstudent) (go.osu.edu/canvasstudent)

Technology Support

For help with your password, university email, CarmenCanvas, or any other technology issues, questions or requests, contact the IT Service Desk, which offers 24-hour support, seven days a week.

- **Self Service and Chat:** go.osu.edu/it
- **Phone:** [614-688-4357 \(HELP\)](tel:614-688-4357)
- **Email:** servicedesk@osu.edu

Digital Flagship

Digital Flagship is a student success initiative aimed at helping you build digital skills for both college and career. This includes offering an engaging collection of digital tools and supportive learning experiences, university-wide opportunities to learn to code, and a Design Lab to explore digital design and app development. Digital Flagship resources available to help Ohio State students include on-demand tutorials, The Digital Flagship Handbook (your guide for all things tech-related), workshops and events, one-on-one tech consultations with a peer or Digital Flagship staff member, and more. To learn more about how Digital Flagship can help you use technology in your courses and grow your digital skills, visit go.osu.edu/dfresources.

How Your Grade is Calculated

	Points
Group presentation	20%
Expository competition (Debate)	20%
Individual Research Paper	20%
Exercise #1	10%
Exercise #2	5%
Final Quiz	10%
Participation	10%
Attendance*	5%

*Note: You are allowed one unexcused absence. An excused absence requires written documentation (doctor's excuse) or prior permission from Dr. EMT to be absent. Your requests will be considered on a case by case basis.

See the **Daily Class Schedule** posted on Carmen and presented on the first slide of each class lecture for due dates.

Descriptions of Major Course Assignments

Debates

Description: This is a group activity in which 2 teams debate a specific topic that is assigned several weeks in advance.

Academic integrity and collaboration: This is a team activity and no written materials are produced.

Exercises

Description: There are two exercises: Exercise #1 will be done outside of class and I require that your answers are legible and if diagrams or mathematical calculations required are required you can do these by hand, take a photo, and upload this to



Carmen along with your other work. Typically, you have two weeks to complete this exercise. The second exercise will be completed in class.

Academic integrity and collaboration: This must be your work only. You are not to work with another student or share answers.

Final Quiz

Description: The final quiz is comprehensive and requires broad knowledge of the material covered in the class. It will be taken in class during the 15th week the semester.

Academic integrity and collaboration: You are not to work with another student or share answers.

Group Presentations

Description: This is a group activity in which 2 or 3 students prepare a presentation to be given to the class on a topic that is assigned several weeks in advance. The PowerPoint slides, if there are any, will be posted on Carmen.

Academic integrity and collaboration: This is a group activity.

Individual Research Paper

Description: This is your research paper on a topic that you and Dr. EMT develop. It is important that the topic be relevant to the goals of the class, of interest to you, and approved by Dr. EMT. You will give a brief presentation of your paper to the class toward the end of the semester. I recommend that you have developed your topic by the 8th week and no later than by the 10th week of the class.

Academic integrity and collaboration: You will receive detailed instructions regarding the paper after class has begun. You should follow either MLA/APA/Chicago style or American Geophysical Union style (your choice) for citations in the text and for citing your research sources. You may ask a trusted person (not in the class) to proofread your paper before you turn it in but no one else should revise or rewrite your work.

Note: The use of GenAI is prohibited in this course.



Given that the learning goals of this class are to help you develop tools to research climate and environment related issues, to critically evaluate them, and to summarize your results both orally and in writing], the use of generative artificial intelligence (GenAI) tools such as [Copilot or ChatGPT] is not permitted in this course. Any use of GenAI tools for work in this class may therefore be considered a violation of Ohio State's [Academic Integrity](#) policy and [Code of Student Conduct](#) because the work is not your own. The use of unauthorized GenAI tools will result in referral to the [Committee on Academic Misconduct](#). If I suspect that you have used GenAI on an assignment for

this course, I will ask you to communicate with me to explain your process for completing the assignment in question.

If you feel you need to use GenAI for translation, please contact me first. If you have any other questions regarding this course policy, please contact me.

Participation and Attendance

Description: You are expected to attend class and to participate in discussions and other group activities. You should contribute in a substantive way to class discussions and activities.

Academic integrity and collaboration: Not applicable

Late Assignments

A late assignment will lose 10% credit (based on full score possible) for each 24-hour period it is late and after 3 days (72 hours) no credit will be given unless a prior arrangement has been made with Dr. EMT. All assignments will be turned in via the Carmen Drop Box unless otherwise instructed.

Instructor Feedback and Response Time

I am providing the following list to give you an idea of my intended availability throughout the course. Remember that you can call [614-688-4357 \(HELP\)](tel:614-688-4357) at any time if you have a technical problem.

- **Preferred contact method:** If you have a question outside of class, please contact me (Dr. EMT) through my Ohio State email address (thompson.4@osu.edu). I will reply to emails within **24 hours, ideally seven days a week**. Questions relevant to the class material under discussion are always welcome.
- **Class announcements:** All important class-wide messages will be sent by email through Carmen. Please check [your notification preferences](https://go.osu.edu/canvas-notifications) (go.osu.edu/canvas-notifications) to ensure you receive these messages.
- **Discussion board:** In the past the class has not used the discussion board frequently. Once class starts we can discuss whether to use the discussion board routinely. If we do decide to use it then I will check and reply to messages in the discussion board several times a week, ideally on Tuesday before Wednesday's class and Thursday before Friday's class and one additional time (not scheduled).
- **Grading and feedback:** You can generally expect feedback within **seven days**. Here are approximate guidelines: debates (**5 days or less**), presentations and exercises (**seven days or less**), and your final research paper (**seven to ten days**).

Grading Scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70–72.9: C-
67–69.9: D+
60–66.9: D
Below 60: E

Other Course Policies

Discussion and Communication Guidelines

The following are my expectations regarding for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to participate in class discussions as if you are writing a research paper, you are expected to provide written material using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility:** It is essential that we maintain a supportive learning community where everyone feels safe and where people can disagree amicably.
- **Citing your sources:** When we have academic discussions (especially in the debates), it is helpful if you indicate your sources to back up what you say. The instructions regarding your research paper include citation and additional style guidelines and helpful hints. These will be posted under the **Final Paper Instructions Module on Carmen**.
- **Backing up your work:** Consider composing your academic posts using a word processor, where you can save your work, and then copying it into the Carmen discussion.

Academic Integrity Policy

See [Descriptions of Major Course Assignments](#) for specific guidelines about collaboration and academic integrity in the context of this online class.



Ohio State's Academic Integrity Policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's [Code of Student Conduct](http://studentconduct.osu.edu) (studentconduct.osu.edu), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If it is suspected that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct (COAM). If COAM determines that you have violated the university's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include the following:

- [Committee on Academic Misconduct](http://go.osu.edu/coam) (go.osu.edu/coam)
- [Ten Suggestions for Preserving Academic Integrity](http://go.osu.edu/ten-suggestions) (go.osu.edu/ten-suggestions)

Copyright for Instructional Materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources.

If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options on [Ohio State's Title IX website](https://equity.osu.edu/title-ix) (<https://equity.osu.edu/title-ix>) or by contacting the Ohio State Title IX Coordinator, Melissa Mayhan, at titleix@osu.edu or 614-247-5838. Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information, visit the [OIE website](#) (equity.osu.edu) or email equity@osu.edu.

Commitment to a Diverse and Inclusive Learning Environment

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

Your Mental Health

As a student you may experience a range of issues that can create barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find that you are feeling isolated, anxious, or overwhelmed, [on-demand mental health resources](https://go.osu.edu/ccsondemand) (go.osu.edu/ccsondemand) are available. You can reach an on-call counselor when CCS is closed at [614- 292-5766](tel:6142925766). **24-hour emergency help** is available through the [National Suicide Prevention Lifeline website](https://suicidepreventionlifeline.org) (suicidepreventionlifeline.org) or by calling [1-800-273-8255\(TALK\)](tel:18002738255). [The Ohio State Wellness app](https://go.osu.edu/wellnessapp) (go.osu.edu/wellnessapp) is also a great resource.



Accessibility Accommodations for Students with Disabilities and Special Needs

Requesting Accommodations

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with [Student Life Disability Services \(SLDS\)](#). After registration, meet with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

If you are ill and need to miss class, including if you are staying home and away from others while experiencing symptoms of a viral infection or fever, please let me know immediately. In cases where illness interacts with an underlying medical condition, please consult with Student Life Disability Services to request reasonable accommodations. You can connect with them at slds@osu.edu; 614-292-3307; or slds.osu.edu.

Disability Services Contact Information

- Phone: [614-292-3307](tel:614-292-3307)
- Website: slds.osu.edu
- Email: slds@osu.edu
- In person: [Baker Hall 098, 113 W. 12th Avenue](#)

Statement on religious accommodations

Ohio State has had a longstanding practice of making reasonable academic accommodations for students' religious beliefs and practices in accordance with applicable law. In 2023, Ohio State updated its practice to align with new state legislation. Under this new provision, students must be in early communication with their instructors regarding any known accommodation requests for religious beliefs and practices, providing notice of specific dates for which they request alternative accommodations within 14 days after the first instructional day of the course. Instructors in turn shall not question the sincerity of a student's religious or spiritual belief system in reviewing such requests and shall keep requests for accommodations confidential.

With sufficient notice, instructors will provide students with reasonable alternative accommodations with regard to examinations and other academic requirements with respect to students' sincerely held religious beliefs and practices by allowing up to three absences each semester for the student to attend or participate in religious activities. Examples of religious accommodations can include, but are not limited to, rescheduling



an exam, altering the time of a student's presentation, allowing make-up assignments to substitute for missed class work, or flexibility in due dates or research responsibilities. If concerns arise about a requested accommodation, instructors are to consult their tenure initiating unit head for assistance.

A student's request for time off shall be provided if the student's sincerely held religious belief or practice severely affects the student's ability to take an exam or meet an academic requirement and the student has notified their instructor, in writing during the first 14 days after the course begins, of the date of each absence. Although students are required to provide notice within the first 14 days after a course begins, instructors are strongly encouraged to work with the student to provide a reasonable accommodation if a request is made outside the notice period. A student may not be penalized for an absence approved under this policy.

If students have questions or disputes related to academic accommodations, they should contact their course instructor, and then their department or college office. For questions or to report discrimination or harassment based on religion, individuals should contact the [Office of Institutional Equity](#). (Policy: [Religious Holidays, Holy Days and Observances](#))

Announcement from the Ohio State University's administration

“Health and safety requirements: All students, faculty, and staff are required to comply with and stay up to date on all university safety and health guidance (<https://safeandhealthy.osu.edu>).”

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling [614-292-5766](tel:614-292-5766). CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at [614-292-5766](tel:614-292-5766) and 24 hour emergency help is also available 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

“**Tentative**” Course Schedule (this will be continually updated in the “Daily Class Schedule” posted on Carmen)

Week	Points	Topics, Readings, Assignments, Due Dates
1	NA	Overview of global climate and environmental change (GCEC): Introductions; Review key aspects of the syllabus, watch a video, class discussion
2	NA	The climate change problem: Is Earth's climate changing? How do we know and what is the evidence? Lecture, discussion, short presentations by student volunteers
3	NA	Earth's climate history: Welcome to the Anthropocene; Basics of Earth's radiation and energy balance; Lecture, video, discussion; Exercise #1 is assigned
4	NA	Understanding Greenhouse Gases (GHGs), the natural and anthropogenic greenhouse gas effects; the carbon cycle; Lecture, discussion
5	NA	Using proxy indicators to reconstruct Earth's climate history: Group presentations, discussion Exercise 1 is due.
6	NA	Radiative forcing, climate system feedbacks; possible in-class activity (discussion)
7	NA	Climate forcing, feedbacks, climate sensitivity, impacts: Why is Earth's climate changing? Debate 1, lecture
8	NA	Modeling Earth's climate: Model based climate projections and Earth's energy balance; Lectures, group activity, and discussion; Autumn break
9	NA	Global modeling and Energy for Planet Earth: Guest Lecture, activities, discussion
10	NA	Energy for Planet Earth: Lecture, activity, discussion
11	NA	Energy for Planet Earth and Extreme Weather: Group Presentations:
12	NA	Addressing GCEC: Cap and Trade; managing carbon, short student volunteer presentations, discussions 2 guest speakers
13	NA	Climate Science and Politics: Discuss mitigation policies; To be determined; Debate # 2
14	NA	Final Quiz; Exercise 2: Why is solving the climate change problem so hard? World climate simulation exercise is done in class; Final research paper is due (firm deadline)
15 / 16	NA	NO class: Thanksgiving, Columbus Day, Indigenous Peoples Day Final paper is due / Field trip to Byrd Polar and Climate Research Center

NA means not applicable; points will be assigned when the graded activities are scored.