

Geography 3901H Syllabus

Global Climate & Environmental Change, Autumn 2020

Course Information

- **Course times:** Wednesdays and Fridays from 9:35 a.m.-10:55 a.m.
- **Credit hours:** 3
- **Mode of delivery:** Distance Learning

Instructor

- **Name:** Dr. Ellen Mosley-Thompson, call me Dr. EMT
- **Email:** thompson.4@osu.edu
- **Office location:** 082B Scott Hall
- **Office hours:** By appointment
- **Preferred means of communication:**
 - My preferred method of communication for questions is **email**.
 - 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 but Dr. Stacy Porter, a post-doctoral Researcher, at the Byrd Polar and Climate Research Center has volunteered to assist us. Dr. Porter has a PhD in atmospheric science and is an excellent resource. You may schedule appointments with Dr. Porter in the same way as with Dr. EMT.

- **Name:** Dr. Stacy E Porter
- **Email:** porter.573@osu.edu
- **Office location:** 048 Scott Hall
- **Office hours:** By appointment



THE OHIO STATE UNIVERSITY

College of Arts and Sciences
Department of Geography

Course Prerequisites

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

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 century climate change (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, and possibly a virtual 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.

Learning Outcomes

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

- Understand the “scientific basis” of natural and anthropogenic (human produced) climate change
- Understand the “key issues” of 20th & 21st century climate change (‘global warming’)

Understand how human activities affect (1) the global climate system, (2) our environment, and (3) how they are intimately connected

- Understand how these “anticipated” changes will affect your future
- Recognize how you might contribute to development / implementation of solutions

General Education Expected Learning Outcomes

As part of the Natural Science (Physical Science) category of the General Education curriculum, this course is designed to prepare students to be able to do the following:

- Understand the basic principles, theories, and methods of modern climate science
- Understand the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world
- Have a basic knowledge of the physical, chemical, and biological aspects of the complex Earth System and human interactions within that System



- Recognize that a variety of technological developments and policy instruments are essential to mitigate the accumulation of greenhouse gases in the atmosphere or to adapt to the climate changes humanity fails to mitigate
- Recognize that paleoclimate records are essential to understand Earth's past climate regimes and that climate models are our best tool to predict Earth's climate future

As part of the Social Sciences (Human, Natural, and Economic Resources) category of the General Education curriculum, this course is designed to prepare students to be able to do the following:

- Understand how unmanaged use of Earth's resources can result in degradation of the environment
- Understand in greater detail the nature and significance of human activities' impacts on hydrologic systems, soils and hence food production, ocean acidification and hence marine resources, invasive species and hence ecosystem disruptions, on local to global scales
- Recognize the strong linkage between human resource use, particularly fossil fuel-derived resources, and anthropogenic climate change
- Recognize and understand the political, economic, and social tradeoffs inherent in personal and governmental decisions and societal policymaking and enforcement regarding resource use
- Recognize and understand that domestic (e.g., cap and trade) and international (e.g., Framework Convention on Climate Change; Kyoto Protocol) instruments with the potential to limit and reduce emissions are required; however, other policies and programs are also essential to slow population growth, enhance educational opportunities for all, reduce hunger, and enhance nutrition
- Understand that individuals have a shared responsibility to sustain an Earth System capable of supporting the human species, as well as all life on Earth

How this online course works

Mode of delivery: This course is 100% online and is taught in synchronous mode. Thus, you are expected to attend the lectures and participate in the class activities during the scheduled class time. 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 updates. All key activities and due dates are already



known and 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 and all the key deadlines for the upcoming month. PowerPoint files from all lectures will be posted on Carmen after class (not before) and the lectures will be recorded and posted for later viewing. 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. These will be virtual and likely limited due to the social distancing requirement. However, 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 Carmen 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: Because this online course is taught in synchronous mode your attendance is required and your participation is evaluated based on your interactions in the discussions (both in breakout rooms and with the entire class). Thoughtful questions and discussion posts on Carmen Canvas will also be used to gauge your participation.

At the start of our sessions, I will share specific expectations for how to use the chat, how to interact, and how to raise questions or concerns as we go. If you are unsure about expectations or are unsure about raising a question, please follow up with me afterward to make sure your questions are answered. Plan to be present during the entire class session as much as you are able. For some activities, I may ask you to share your faces on camera so that we can see each other and connect. Please feel encouraged to use a non-distracting [virtual background](#). Many students and instructors prefer not to share their remote spaces for a variety of reasons. Mute your microphone when others are talking to minimize background noise in the meeting.

If you have any concerns about participating in class over Zoom in this way, please let me know. My goal is to create a safe environment where we can benefit from seeing each other and connecting, but I want to prioritize your safety and well-being.

We are here for you! Our 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 Dr. EMT and Dr. Porter immediately so we can help you find solutions.

Course Materials, Fees and Technologies

Required Materials and/or Technologies

- Dessler, Andrew. *Introduction to Modern Climate Change*, **Second Edition**, Cambridge University Press, 2016, ISBN 978-1-107-48067-4 (paperback). The library has an eBook version of the first edition. To use it you must log into the library system or use an OSU computer. The second edition may also be purchased (often used) from the bookstore or from Amazon. There is a third edition that has just been released but we will not be using that this year.

Recommended/Optional Materials and/or Technologies

Throughout the semester additional reading and reference materials may be required. These will be posted on Carmen. PDF versions of selected journal articles and book chapters will be placed in the Assigned Class Readings Module on Carmen.

Required Equipment

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

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)
- [CarmenZoom virtual meetings](https://go.osu.edu/zoom-meetings) (go.osu.edu/zoom-meetings)
- [Recording a slide presentation with audio narration and recording, editing and uploading video](https://go.osu.edu/video-assignment-guide) (go.osu.edu/video-assignment-guide)

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.

Grading and Faculty Response

How Your Grade is Calculated

Assignment Category	Points
Group presentation	15%
Expository competition (Debate)	15%
Individual Research Paper	15%
Exercise #1	8%
Exercise #2	8%
Exercise #3	6%
Quizzes	12%
Final Quiz	6%
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 [Course Schedule](#) 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 three exercises, one of which will be completed during the class time. We require that your answers be legible and if there are diagrams or mathematical calculations required you can do these by hand, take a photo and upload that to Carmen along with your other work. Typically, you have two weeks to complete each exercise.

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

Quizzes

Description: Most weeks will include a brief, 2-4 question quiz to assess your progress and understanding of concepts. These quizzes will be given during the live class sessions.

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 the class on a topic that is assigned several weeks in advance. The presentation will be recorded and posted to Carmen along with the PowerPoint slides if there are any.

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. I recommend that you have developed your topic by the 8th week and no later than 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.

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, to discussions in breakout rooms, and those on the discussion board.

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.

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, please contact Dr. EMT and Dr. Porter through our Ohio State email addresses. We will reply to emails within **24 hours, ideally seven days a week**.
- **Class announcements:** We will send all important class-wide messages through the Announcements tool in CarmenCanvas. Please check [your notification preferences](http://go.osu.edu/canvas-notifications) (go.osu.edu/canvas-notifications) to ensure you receive these messages. For more detailed messages you will receive an email.
- **Discussion board:** We will check and reply to messages in the discussion boards 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:** For large weekly assignments and quizzes, you can generally expect feedback within **seven days**. Here are approximate guidelines for other assignments: debates and presentations (**seven to ten days**), exercises (**ten days**), final research paper (**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 were 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. Remember that sarcasm doesn't always come across online.
- **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 in a word processor, where you can save your work, and then copying 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 we suspect that a student has committed academic misconduct in this course, we are obligated by university rules to report my suspicions to the Committee on Academic Misconduct. 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:

- [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)
- [Eight Cardinal Rules of Academic Integrity](http://go.osu.edu/cardinal-rules) (go.osu.edu/cardinal-rules)

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](http://titleix.osu.edu) (titleix.osu.edu) or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu. 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](http://equity.osu.edu) (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 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. 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:614-292-5766). **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:1-800-273-8255). [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

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 \(SLDS\)](https://slds.osu.edu). After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

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](#)

Accessibility of Course Technology

This online course requires use of CarmenCanvas (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- [CarmenCanvas accessibility](https://go.osu.edu/canvas-accessibility) (go.osu.edu/canvas-accessibility)
- Streaming audio and video; Collaborative course tools
- [CarmenZoom accessibility](https://go.osu.edu/zoom-accessibility) (go.osu.edu/zoom-accessibility)



Course Schedule

Refer to the CarmenCanvas course for up-to-date due dates.

Week	Points	Topics, Readings, Assignments, Due Dates
1	NA	Overview of global climate and environmental change (GCEC): Introductions; Review key aspects of the syllabus, video, 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
4	NA	Understanding Greenhouse Gases (GHGs): Natural and anthropogenic greenhouse gas effect; Lecture, Exercise 1 assigned; discussion
5	NA	Using proxy indicators to reconstruct Earth's climate history: Group presentations, ice core dating activity, discussion
6	NA	Modeling Earth's climate: Lectures, group activity, and discussion; Exercise 1 is due
7	NA	Climate forcing, feedbacks, climate sensitivity, impacts: Debate 1, lecture, individual activity
8	NA	What is the future of Earth's climate? Lecture, discussion, video, Exercise 2 is assigned
9	NA	Energy for Planet Earth: Lecture, activities, discussion
10	NA	Energy for Planet Earth: Lecture, activity, discussion; short student volunteer presentations
11	NA	Energy for Planet Earth and Extreme Weather: Group Presentations:
12	NA	Veterans Day / Addressing GCEC: Cap and Trade; managing carbon, short student volunteer presentations, activity, discussions
13	NA	Climate Science and Politics: Guest Speaker: Professor Matt Hamilton from the School of Environment and Natural Resources; Debate # 2
14	NA	Putting it all together; Short Lecture, Quiz 3 (done in class) / Thanksgiving
15	NA	Exercise 3: Why is solving the climate change problem so hard? World climate simulation exercise; Final research paper is due (firm deadline)

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

THIS IS A VERY IMPORTANT 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>), which includes wearing a face mask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will be warned first, and disciplinary actions will be taken for repeated offenses.”

