

NR 403: Introduction to Environmental Science

Spring 2022

4 credit hours

Tuesday 10-11:20am, 3-4:20pm; Thursday 10-11:20am – Morse Rm 217

Instructor Information | Professor Cheristy Jones (she/her/hers)

Email: cheristy.jones@unh.edu *Note: My working hours may not necessarily be your working hours. I will do my best to respond to all emails within one workday (24 hrs).*

Please pester me if it's been >48 hrs. If I email you outside of your working hours, please do not feel compelled to respond until you are working.

Twitter: @cheristyjones

Office: Morse Rm 347

Land Acknowledgment | The University of New Hampshire is located on the traditional lands of the Abenaki, Pennacook and Wabanaki Peoples past and present. We acknowledge and honor with gratitude the land itself and the people who have stewarded it throughout the generations.

Commitment to Diversity, Equity, and Inclusion | I am committed to creating a classroom environment where everyone regardless of race, sexual orientation, religion, gender, disability, ethnicity, culture, or socioeconomic status (to name a few) feels supported and respected. I work to create an inclusive environment and support DEI inside and outside the classroom not only because of the benefits and strengths of diversity, but because it is the just thing to do. During the first class, we will have the opportunity to share our name and pronouns. I will do my best to refer to you accordingly, and I expect you and your classmates to do the same. I will do my best to acknowledge by privilege and bias throughout the course. I also acknowledge that I am still learning and will make mistakes. **Please use the "ouch and educate" method (https://www.diversityinclusioncenter.com/archives/ouch_files/Archives/Ouch_Vol5No1.html) to let me and your peers know that you are hurt and the cause.** Suggestions on how to make this course more inclusive or respectful are always appreciated.

Office Hours | Tuesday 1-3pm: drop-in Morse Rm 347, Thursday 1-3pm: drop-in Morse Rm 344 (conference room with warm drinks!)

OR you can schedule an appointment at youcanbook.com/cheristyjones. If none of those times work for you, please email me and we can work out a separate time. I also have an open-door policy, so feel free to stop by my office anytime the door is open!

Teaching Philosophy and My Commitment to You | I aim to create a **human-centered classroom** that is supportive of you and your academic goals. Every student that comes into my classroom will not necessarily be a biogeochemist, or even a natural scientist. However, I hope to give them skills they can use to conquer any challenge and a general curiosity about the world around them. Ultimately, I want to teach students *how to think critically, not what to think*. I aim to create an engaging, challenging, and supportive learning environment. **My teaching is student focused and self-directed** as students are more motivated and engaged when the subject is relevant to them.

My commitments to you:

- I will give feedback in a timely manner (aiming for less than two-weeks after submission)
- All feedback in and out of the classroom will be constructive and compassionate
- I will come to class on-time and prepared to teach

What I Expect from You | I expect you to **come to class every day having done the assigned reading and willing to take an active role in class activities**. I also **expect you to create a welcoming and supportive environment for each other and for myself**. This means listening to others' perspective and being respectful of others' ideas and viewpoints. We are all continuously learning how to be better colleagues, so **please use the "ouch and educate" method** (https://www.diversityinclusioncenter.com/archives/ouch_files/Archives/Ouch_Vol5No1.html) **to let others know if you have been hurt**. I encourage to critically examine all of your assumptions.

What You Expect from Each Other and Me | We will come up with these values together on the first day of class. They will be inserted here afterwards.

Overview | **Welcome to COLSA and the field of environmental science! This class will take an interdisciplinary, scientific approach to investigating the earth's climate system, past climate change, present climate change, and society and climate**. You will learn about the interactions between the earth's systems, natural climate variability, and environmental justice. In addition, you will learn about the impacts (and how we study those impacts) on ecosystems and society. As a discovery course, this course will prepare you with basic academic skills (e.g., effectively organize, research and present knowledge) as well as equip you with high-order skills (e.g., how to communicate effectively and apply mathematical concepts). This course will also provide a scientific foundation for students to build off if they choose to continue in the major. You will

also be prepared to make decisions based on accurate information, no matter the field in which you end up.

Integrated Course Design | This class takes an integrated course design approach in order to enhance student-learning. I have incorporated a variety of activities and assignments into this course to **promote long-term learning and retention that I hope you will be able to take with you both throughout your time at UNH and through your career. This course will be active and hands on and will include field trips, lectures, labs, and flipped classroom scenarios.**

Learning Objectives |

1. **Mastery of the causes and impacts of climate change:** Students should be able to name the causes of climate change, the timeline they operate on, and the subsequent impact on ecosystems and society.
2. **Discuss the interconnectivity of earth's system:** Students should have the ability to name positive and feedbacks within the earth's system and those impacts on ecosystems. Students should be able to name dominant pools and fluxes of carbon and nutrients.
3. **How to take an active role in sustainability:** Students should be able to discuss how they can play a role in promoting environmental sustainability including actions they can take. They should be able to back-up these actions with evidence.
4. **Environmental Justice and the un-equal effects of climate change:** Students should be able to discuss how climate change effects groups differently and that some areas will experience more extreme climate change.
5. **Teamwork and collaboration skills:** Students should demonstrate that they can work respectfully and effectively in group settings and on group projects.
6. **Scientific communication skills:** Students should be able to effectively communicate findings and opinions based on accurate information. In addition, students should learn how to tailor their communication to their audience.
7. **Critical thinking skills:** Students should demonstrate that they can apply their knowledge to different situations and disciplines.

Course Format | **In-person 3x per week**

If you are ill or cannot attend in-person class for some reason, please let me know before class and **I can Zoom you in (optional)**. I will be utilizing Canvas throughout this course to post readings and for you to submit assignments. The general course format is as follows:

- **Tuesday mornings** will mostly be lecture from me and practice problems. Please plan to do text-book readings before this class.
- **Tuesday afternoons** will be a student led presentation on a topic and article discussion (sign-up on Canvas).
- **Thursday mornings** will be a time for skill building and group work.

Field Trips | During this course, **we will have 3 in-class field trips** so you can apply your knowledge to the world around you. The first field trip will take us to **College Woods** to explore factors that control earth's climate system. The second field trip will be to **UNH's Ice Core Lab** where we learn more about past climate and climate proxies. The third field trip will take us to **the coast** to investigate present climate change. You will have to complete an "Application Activity" for each field trip. Please plan to be outside for the full class period. If you have accessibility concerns, please let me know.

Required Text |

- Dressler, Andrew. 2016. *Introduction to Modern Climate Change*. 2nd Edition. Cambridge University Press. \$36.00. Can be purchased here: <https://www.cambridge.org/highereducation/books/introduction-to-modern-climate-change/ABB05821544259354EB0CAF0C6633C3E#overview>. *Note: If purchasing or renting this textbook is a financial burden, please let me know so we can find you a department copy to borrow. If you would prefer not to contact me directly, feel free to reach out to the department chair (Anton.Bekkerman@unh.edu).*
- Other articles and readings posted on Canvas

Grading | This course meets the federal requirement of a credit hour, which is a minimum of 3 hours of engaged time (e.g., class, homework, lab, etc.) per credit per week for the 15-week semesters. This course will not be graded on a curve, so **everyone has an opportunity to receive an A.**

10%	Problem sets
12%	Quizzes
10%	Labs/Field Trip Activities
10%	Subject Presentation/discussion leading
10%	Write-ups
8%	Reflections/peer review
10%	Model UN
15%	Group Project
15%	Final paper

100% Total Possible

The grading scale for this course is: A = 100-93%; A- = 92-90%; B+ = 89-87%; B = 86-83%; B- = 82-80%; C+ = 79-77%; C = 76-73%; C- = 72-70%; D+ = 69-67%; D = 66-63%; D- = 62-60%; F < 60%. *Note: I will round your final course grade up (e.g., if you receive a $\geq 89.5\%$, you will earn an A- for the class). I will NOT round up assignment grades.*

Example Calculation for final course grade (=your cumulative score x weight of the assignment):

Problem sets	$0.79 \times 0.10 = 0.079$
Quizzes	$0.92 \times 0.12 = 0.11$
Labs/Field Trip Activities	$0.95 \times 0.10 = 0.095$
Subject Presentation/Discussion Leading	$0.80 \times 0.12 = 0.096$
Write-ups	$0.97 \times 0.10 = 0.097$
Reflections/Peer Review	$0.95 \times 0.08 = 0.076$
Model UN	$0.83 \times 0.10 = 0.083$
Group Project	$0.88 \times 0.15 = 0.13$
Final Paper	$0.87 \times 0.15 = 0.13$
Final Course weighted score	<hr/> $= 0.896$ (round-up so A-)

*Note: Learning and growing as a student and a scientist are important parts of this class. As such, **you may resubmit any assignment that you turned at any point during this class.** I will average your two grades for your final grade on that assignment (e.g., if you receive an 80 on your first attempt and a 90 on your second attempt, your final grade on that assignment will be an 85).*

Assignment Descriptions I

- **Problem Sets (Corresponding learning objectives: 1, 2, 3, 5, 7):** There are 3 problem sets this semester, each 100 pts each. These will be delivered online via Canvas so you can receive instantaneous feedback. Some class time will be devoted to working on these in groups.
- **Quizzes (Corresponding learning objectives: 1, 2, 3, 7):** There are 3 quizzes for this class, each 100 pts each, approximately one for each big topic covered. These will take up approximately half of the class. These are designed to test foundational knowledge and critical thinking skills.
- **Lab/Field Trip Activities (Corresponding learning objectives: 2, 3, 4, 5, 7):** There are 2 lab assignments and 3 field trip worksheets where we will be applying

what we learned to real-world scenarios. Each one is worth 100 pts. We will work on these in-class and collaboratively.

- **Subject Presentation/Discussion Leading (Corresponding learning objectives 2, 4, 6):** Everyone must sign up on Canvas for a day to teach a topic of their choosing to the class (must be related to what we are learning for that module). You will make a 15-minute power-point presentation and then lead a discussion on an article or paper of your choosing. The presentation and discussion will each be out of 100 pts.
- **Write-ups (Corresponding learning objectives: 3, 4, 6, 7):** There will be 3 write-ups this semester, each worth 100 pts. You will select a peer-reviewed article to write-up a one-page synopsis and your reaction.
- **Reflections and Peer Review (Corresponding learning objectives 3, 5, 6):** At the end of each week (15 total) you will turn in a ~2 paragraph summary of what you learned that week, what you struggled with, and any questions you have. Each reflection is out of 10 pts. You will also participate in peer review for a variety of class assignments. Each peer review is worth 10pts.
- **Model UN (Corresponding learning objectives 3, 4, 5, 6, 7):** At the end of semester, we will host a model UN climate change conference of parties (COP). You will be grouped in teams of 2 or 3 and will choose the country you will represent. You will have to do some background research on your country and how climate change will impact its society. The goal is for the class to come up with an agreement like the Paris Accords. This is out of 100 pts and your team will be graded collectively.
- **Group Project (Corresponding learning objectives 3, 5, 6):** You will be assigned groups of 3 and your task is to pick a topic related to climate change that you will present to the general public. This assignment is intentionally left open ended so you can explore your own interests throughout the class. You will give a 15-minute presentation (NOT A POWERPOINT) to the class ("the general public"). This is out of 100pts.
- **Final Paper (Corresponding learning objectives 4, 6, 7):** You will pick a current debate about an ecosystem that is being affected by climate change. You will write an 8-10 pg literature review on the topic and include your own thoughts. This assignment is intentionally left open ended so you can explore your own interests throughout the class. The paper will be due over finals week and is out of 100 pts (20 pts will be a complete draft). Note: You can resubmit this assignment, but you will have ample time to incorporate feedback.

Late Assignments and Missed Work | Sometimes, life gets in the way of deadlines and environmental science might not be your first priority. **I do not take points off for late**

assignments. However, **turning an assignment in after the deadline will result in delayed feedback** which is an important aspect in this course. In addition, you may not be able to resubmit assignments if you wait until the last few weeks of class.

If you are missing a quiz for a justified reason (e.g., athletics or religious holiday), let me know ASAP so we can schedule a makeup after you return or figure out a proctor (e.g., your coach). If you are ill or have other extenuating circumstance, let me know ASAP so we can work out an option that will be best for you.

Academic Honesty | Science is a team sport and **I encourage you to collaborate and talk through problems whenever possible**. However, **your final (i.e., submitted) work must be your own**, unless otherwise stated. Per UNH policy, any student found engaging in academic dishonesty, including but not limited to plagiarism, data falsification, and sharing test questions/answers, will receive a zero for the assignment and will be reported to the dean for further action. Please review UNH's [Academic Honesty Policy](#) for more information.

Attendance | **This class requires active participation and collaboration on group projects**. However, I acknowledge that everyone has different learning needs and goals for this class. As such, attendance is expected. Though attendance is not mandatory, success in this class hinges on your presence each day in class. I will also take the time to remind you that being in a college class is a privilege that not everyone has an opportunity to attend. **I appreciate you notifying ahead of time if you will be missing class (please do not feel obligated to provide a reason)**. I will do everything I can to help your success if you get sick during the semester, but a doctor's note will be required for an "excused absence" if you are missing a quiz, the final group project, or the Model UN activity. We will work together to figure out a make-up for these in-class activities if your absence is excused. Other excused absences include justified reasons (e.g., religious holidays and athletics). **Please notify me the first week of class if you know when you'll be absent**.

COVID Considerations and Protocols | COVID has produced challenging times in and out of the classroom. **If get sick during this semester, I will do my best to Zoom you in to keep you update with course content. Please let me know prior to class beginning if you would like to be Zoomed in**. During this course, we may have to shift to online learning for short periods of times or for the rest of the semester. If this occurs, I intend for us to continue to meet synchronously (please reach out to me for special accommodations). Your voice or image may be captured on the recordings, and by enrolling in this course you are consenting to such recording for these purposes. I

reserve the right to change adjust course assignments if online learning produces challenges to the syllabus. **A reminder that your Wildcat Pass must be valid to attend class and your mask must be worn properly at all times.**

Accommodations | If you require accommodations or have a disability, please let me know the first week of class. You may choose to simply email me your accommodation letter. If you are a student with a documented disability or believe you may have a disability that requires accommodations, please refer to www.unh.edu/studentaccessibility or contact SAS at 603-862-2607, 711 (Relay NH) or sas.office@unh.edu. I aim to make this class accessible to all. **If you need an accommodation that is not officially documented or covered by ADA, please let me know** how I can best support your success.

Mental Health and Emotional Well-Being | Your well-being and academic success are very important to me. Academics can cause additional stressors even without an on-going pandemic. **UNH has mental health services if you need extra support this semester.** You can contact UNH [Psychological & Counseling Services \(PACS\)](#), 3rd floor, Smith Hall at 603-862-2090/711 TTY which provides counseling appointments and other mental health services. **If urgent, you may call PACS Monday through Friday, 8 am-5 pm, and schedule an Urgent Same-Day Appointment.**

Title IX and Mandatory Reporting | While I am here to support you in any way I can, myself, along with all UNH faculty and staff (including TAs), are legally obligated to report all incidents of sexual assault and harassment to the University's Title IX coordinator (Donna Marie Sorrentino, dms@unh.edu, 603-862-2930/1527 TTY). You can find confidential resources at [privileged confidential service providers/resources](#). I am happy to discuss with you the Title IX process and how to anonymously report incidents or you can [visit the student reporting options page](#) for more information.

Course Schedule | This is a living document, so this schedule is subject to change as the course progresses. I will give you ample notice to any changes to the syllabus.

Week	Tuesday Morning	Assignments	Tuesday Afternoon	Assignments	Thursday	Assignments
1. Earth's Climate System	Introduction, course design, learning objectives (syllabus day)	Textbook reading and articles	Lecture (Earth as a system)	Textbook reading	How to read and write like a scientist	Reflection on week 1, textbook reading
2.	Lecture (Greenhouse)	Problem set #1, read	Student led discussion	Read/fill out	Discuss collaborati	Reflection on week 2,

Earth's Climate System	gases) and practice problems	article for discussion	and presentation	individual portion of group contract	on and group work, group contract,	textbook reading,
3. Earth's Climate System	Lecture (Ocean & Atmospheric Circulation) and practice problems	Textbook reading, article	Student led discussion and presentation	Finish problem set #1	Lab-Radiative balance	Reflection on week 3, textbook reading
4. Earth's Climate System	Lecture (Feedbacks) and practice problems	Textbook reading, articles	Field Trip, application worksheet	Quiz prep	Quiz #1 (Earth's climate system)	Reflection on week 4, textbook reading
5. Past Climate	Lecture (Cycling) and practice problems	Textbook reading, articles	Student led discussion and presentation	Problem set #2, write up on article	Problem set #2, group work for project	Reflection on week 5, Write up on article cont
6. Past Climate	Lecture (Climate proxies) and practice problems	Textbook reading, articles	Field Trip (ice cores!), application work sheet	Finish problem set #2	Peer review for article write-up, group work for project	Reflection on week 6, textbook reading
7. Past Climate	Lecture (Speed of Climate change) and practice problems	Textbook reading, articles	Student led discussion and presentation	Quiz prep	Quiz #2 (Past climate)	Reflection on week 7, textbook reading
8. Present Climate	Lecture (Climate change now)	Textbook reading, articles	Student led discussion and presentation	Problem set #3, write up on article	Group project, problem set #3	Reflection on week 8, textbook reading
9. Present Climate	Lecture (Climate change and coastal communities)	Textbook reading, articles	Field trip (to the coast), application activity	Finish problem #3	Peer review of article write-up, Lab-Ice core	Reflection on week 9, textbook reading
10. Present Climate	Lecture (Climate change and forest ecosystems)	Textbook reading, articles	Student led discussion and presentation	write-up	Sci communication tools, Quiz # 3 (present climate)	Reflection on week 10, textbook reading

11. Society and Climate	Lecture (Climate change and society)	Textbook reading, articles	Student led discussion and presentation	Work on final paper	Peer review write-up, guest lecture	Reflection on week 11, articles
12. Society and Climate	Lecture (Environmental Justice)	Articles	Student led discussion and presentation	Work on final paper and group project	Guest lecture on environmental justice,	Work on final paper and group project
13. Society and Climate	Wrap up day	Group project work	Final paper outline peer review	Group project/model UN prep	Group project Peer review	Group project/model UN prep
14. Society and Climate	Model UN Prep/Group project	Model UN Prep	Model UN/Group project	Model UN/Group project work	Model UN Day	Reflection on Model UN
15. Projects and work time	Group work time	Work on individual paper	Group Presentations	Work on final project	Peer Review on final paper (lit review)	Work on final paper