

Course Syllabus

ENVS 23 - The Physical and Chemical Environment

UC Santa Cruz – Department of Environmental Studies

Online/Remote – Summer Session I

Lecture: MW 9:00AM-12:30PM [https://ucsc.zoom.us/j/9775776872?pwd=dmR4M1VOMG10QUxON3dYNm1mdzFkUT09_\(https://ucsc.zoom.us/j/9775776872?pwd=dmR4M1VOMG10QUxON3dYNm1mdzFkUT09\)_](https://ucsc.zoom.us/j/9775776872?pwd=dmR4M1VOMG10QUxON3dYNm1mdzFkUT09_(https://ucsc.zoom.us/j/9775776872?pwd=dmR4M1VOMG10QUxON3dYNm1mdzFkUT09)_)

Recorded Lecture Links

June 22:

[https://ucsc.zoom.us/rec/share/sTPUVXNZatgn848dTmZiTSi1p80T_gU9cNp1ve0dgdpwWthGdy1E](https://ucsc.zoom.us/rec/share/sTPUVXNZatgn848dTmZiTSi1p80T_gU9cNp1ve0dgdpwWthGdy1E5TK34v4G)

https://ucsc.zoom.us/rec/share/sTPUVXNZatgn848dTmZiTSi1p80T_gU9cNp1ve0dgdpwWthGdy1E5TK34v4G

June 23:

https://ucsc.zoom.us/rec/share/m931DHbNuJ592FyhEEheJGa1ZYA4QPoQNGSwEu_RABsimgbH_rsNkpnVf4v.BMK8wvD3BpDNGuqT

https://ucsc.zoom.us/rec/share/m931DHbNuJ592FyhEEheJGa1ZYA4QPoQNGSwEu_RABsimgbH_FnrbrsNkpnVf4v.BMK8wvD3BpDNGuqT

June 27: Lecture 6, start at 47:00 minutes (lecture from 2020) [https://media.ucsc.edu/V/Video?v=5143171&a=807810471_\(https://media.ucsc.edu/V/Video?v=5143171&a=807810471\)_](https://media.ucsc.edu/V/Video?v=5143171&a=807810471_(https://media.ucsc.edu/V/Video?v=5143171&a=807810471)_) Lecture 7 from today (forgot to press record on zoom meeting from the beginning!!)

https://ucsc.zoom.us/rec/share/UDxXKcFrgn_80mM82XD8pq8Dcd_ehcaO0MmLloLVFazjo0-H16nY46M1_Jz-ac8.g5y8FyhTbJKEA7E0

https://ucsc.zoom.us/rec/share/UDxXKcFrgn_80mM82XD8pq8Dcd_ehcaO0MmLloLVFazjo0-H16nY46M1_Jz-ac8.g5y8FyhTbJKEA7E0

June 29: https://ucsc.zoom.us/rec/share/FyBB2zVL2mP6-ROoddawtwe0LUJQyU183-ghF-U2yxUjYHysQMTEeACi8RKff0aes.L5jJMA_tUgRGDeh_

https://ucsc.zoom.us/rec/share/FyBB2zVL2mP6-ROoddawtwe0LUJQyU183-ghF-U2yxUjYHysQMTEeACi8RKff0aes.L5jJMA_tUgRGDeh_

July 6:

https://ucsc.zoom.us/rec/share/NH4LdaEY_42hTSylhLrYBthO02dQqbUDRpzDFmtbPsyJseqc97W0aEanGncf

https://ucsc.zoom.us/rec/share/NH4LdaEY_42hTSylhLrYBthO02dQqbUDRpzDFmtbPsyJseqc97W0aEanGncf

July 11 https://ucsc.zoom.us/rec/share/5IEvbc3vEVi0_Tj54uiG5gq7hB-XZZ8ufgWMg8yNTcE6CsSFeCwclXo-Z-4Gors3.DSSitT0AlnC_0Yxf
(https://ucsc.zoom.us/rec/share/5IEvbc3vEVi0_Tj54uiG5gq7hB-XZZ8ufgWMg8yNTcE6CsSFeCwclXo-Z-4Gors3.DSSitT0AlnC_0Yxf)

July 13: https://ucsc.zoom.us/rec/share/X2ZpeEOISX9_S2_R-ifuNQy52RWcfnemEI7oCM0_bAYe63toZXEEdQdQVUgtfsgm.5Q-waYunPibNMVve
(https://ucsc.zoom.us/rec/share/X2ZpeEOISX9_S2_R-ifuNQy52RWcfnemEI7oCM0_bAYe63toZXEEdQdQVUgtfsgm.5Q-waYunPibNMVve)

July 18: <https://ucsc.zoom.us/rec/share/WWvZzgjDr9JPN4EDcnxoQTcDLPg-O5oTT7HHhCf1BZL4vtfJbjkEPeSLQUulYQh2.INEafgE5r0ZD0y7->
(<https://ucsc.zoom.us/rec/share/WWvZzgjDr9JPN4EDcnxoQTcDLPg-O5oTT7HHhCf1BZL4vtfJbjkEPeSLQUulYQh2.INEafgE5r0ZD0y7->)

July 20: [Review questions notes](#) ↓ (https://canvas.ucsc.edu/courses/55033/files/5871902/download?download_frd=1) Zoom Lecture:
<https://ucsc.zoom.us/rec/share/vn9Zb85LK3Fxa55KBN4NoEsuYiPw9niLsSSdLtsiVCYdx8Ib4ZjaEh-AIQFSKJ2V.qZzNUnLaw6tcgi8F>
(<https://ucsc.zoom.us/rec/share/vn9Zb85LK3Fxa55KBN4NoEsuYiPw9niLsSSdLtsiVCYdx8Ib4ZjaEh-AIQFSKJ2V.qZzNUnLaw6tcgi8F>)

Instructor: Dr. Peter Weiss

- by appointment
- pweiss@ucsc.edu (<mailto:pweiss@ucsc.edu>)

Course Overview

Climate change will flood coastal cities, prolong droughts, and intensify hurricanes. At the same time, policymakers, civil society, and engineers are working to advance policies and technologies that can protect our climate system. To better engage with these challenges and opportunities, this course will introduce you to the fundamentals of the physical and chemical environment. Specific topics include weather, paleoclimate, biogeochemistry, climate models, projected impacts, and societal response.

Course Goals and Outcomes

By the end of this course, you should be able to (among many other things),

- Describe the main drivers of the global climate system
- Interpret data presented on a graph and understand its relevance to the global climate system
- Collect data, graph it, and interpret it

- Collect data, graph it, and interpret it
- Describe how climate models work
- Understand the risks of global climate change

Prerequisites

This class does not have any math, physics or engineering prerequisites. All the necessary concepts will be introduced during the course.

Course Requirements

1. Course assignments include readings, reading quizzes, homework problem sets, data analysis assignments, one midterm exam, and one final exam.
2. The readings are listed in the schedule below. We will use the free online textbook "Introduction to Climate Science" ([link \(https://open.oregonstate.education/climatechange/\)](https://open.oregonstate.education/climatechange/)). This textbook is very readable and you are expected to read it.

Description of Each Course Element

Lectures - The instructor will present [PowerPoint slides](#) and web pages while annotating notes and speaking, using the sharing screen function on Zoom. Students may ask questions on Chat and also by "raising your hand" and then asking a question by voice. Time will be allowed for discussion in Breakout Rooms. Lectures will be recorded and saved on Canvas.

Reading Quizzes - These are multiple-choice questions based on the textbook readings. The lowest score will be dropped. 2 submissions are allowed. There is a 10-minute time limit for each submission and each quiz has 3-4 questions. A 10% per day penalty will be applied to late assignments, max 50% deduction.

Homework - These are also multiple-choice problems on Canvas. This problem set is not timed. The problems are based on the readings and the lecture material. Some of the problems require calculations and graphing. The lowest score will be dropped. 2 submission allowed. A 10% per day penalty will be applied to late assignments, max 50% deduction.

Data Analysis Assignments - These exercises will involve data compiling, graphing, and analysis. You will be required to upload graphs to Canvas from these activities.

Exams - These will be multiple-choice and numerical answer format given on Canvas. They are open-book, open-notes, open-internet. However, the exams are timed so you will not have much time to search the internet or your notes for the correct answer or how to do the problem. **The most important**

rule about the exams is that YOU MUST DO YOUR OWN WORK. Anyone asking for or providing help from/to another student is cheating.

Grading

- Reading quizzes: 30%
- Homework problem sets: 20%
- Data Analysis Assignments: 15%
- Midterm exam: 15%
- Final exam: 20%

Scale:

- A+: 96.50-100
- A: 92.50-96.49
- A-: 89.50-92.49
- B+: 85.50-89.49
- B: 81.50-85.49
- B-: 76.50-81.49
- C+: 71.50-76.49
- C: 59.50-71.49
- D: 54.50-59.49

Academic Accommodations

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to the Accommodate System before the midterm. I encourage all students who may benefit from learning more about DRC services to contact the DRC at 831-459-2089, or at drc@ucsc.edu.

Academic Integrity

The cornerstone of intellectual life at UC Santa Cruz is a commitment to integrity in all forms of teaching, learning, and research. Misconduct violates the standards of our community and is punishable by warning, suspension, dismissal or revocation of degree. Please review the [Official University Policy on Academic Integrity](https://ue.ucsc.edu/academic-misconduct.html) (<https://ue.ucsc.edu/academic-misconduct.html>) for a full understanding of what this entails.













Schedule of Lectures










Mon	Tues	Wed	Thurs

June 20 (Holiday, no class)	June 21	June 22 Ch. 1 Weather and Climate, (Lecture 1) Ch. 2 Observations, (Lectures 2 and 3)	June 23 Make up lecture for Monday Ch. 2 Observations, (Lecture 4) Ch. 3 Paleoclimate, (Lecture 5)
June 27 Ch. 3 Paleoclimate (Lecture 6) Ch. 4 Theory, (Lectures 7 and 8)	June 28	June 29 Ch. 5 Carbon, (Lecture 9) Review Lectures 1-9	June 30
July 4 (Holiday, no class)	July 5 Midterm	July 6 Ch. 6 Processes (Lectures 10 and 11)	July 7
July 11 Ch. 7 Models, (Lectures 12 and 13)	July 12	July 13 Ch. 8 Impacts (Lectures 14 and 15)	July 14
July 18 Ch. 9 Economics (Lecture 16) Ch. 10 Ethics (Lecture 17)	July 19	July 20 Ch. 11 Solutions (Lecture 18) Review for the final (Lecture 19)	July 21 Final Exam

Course Summary:

Date	Details	Due	
Sun Jun 26, 2022	 HW02: Observations (https://canvas.ucsc.edu/courses/55033/assignments/362069)	due by 11:59pm	
	 Reading Quiz 01 - Weather and Climate (https://canvas.ucsc.edu/courses/55033/assignments/362067)	due by 11:59pm	
	 Reading Quiz 02 - Observations Part 1 (https://canvas.ucsc.edu/courses/55033/assignments/362060)	due by 11:59pm	
	 Reading Quiz 03 - Observations Part 2 (https://canvas.ucsc.edu/courses/55033/assignments/362070)	due by 11:59pm	
	 Reading Quiz 04 - Paleoclimate Part 1 (https://canvas.ucsc.edu/courses/55033/assignments/362064)	due by 11:59pm	
	 HW01: Climate Data and Processes (https://canvas.ucsc.edu/courses/55033/assignments/362072)	due by 11:59pm	
	Sun Jul 3, 2022	 HW03: Paleoclimate (https://canvas.ucsc.edu/courses/55033/assignments/362081)	due by 11:59pm
		 HW04: Theory (https://canvas.ucsc.edu/courses/55033/assignments/362076)	due by 11:59pm
		 Midterm (https://canvas.ucsc.edu/courses/55033/assignments/362058) (1 student)	due by 11:59pm
		 Reading Quiz 06 – Theory Part 1 (https://canvas.ucsc.edu/courses/55033/assignments/362068)	due by 11:59pm
 Reading Quiz 07 - Theory Part 2 (https://canvas.ucsc.edu/courses/55033/assignments/362065)		due by 11:59pm	

Date	Details	Due
	 Reading Quiz 08 - Carbon https://canvas.ucsc.edu/courses/55033/assignments/362062	due by 11:59pm
	 Data Analysis Assignment #1 https://canvas.ucsc.edu/courses/55033/assignments/362085	due by 11:59pm
	 Reading Quiz 05 - Paleoclimate Part 2 https://canvas.ucsc.edu/courses/55033/assignments/362063	due by 11:59pm
Tue Jul 5, 2022	 Midterm https://canvas.ucsc.edu/courses/55033/assignments/362058	due by 11:59pm
Thu Jul 7, 2022	 Midterm retake https://canvas.ucsc.edu/courses/55033/assignments/362077	due by 11:59pm
	 HW05: Processes https://canvas.ucsc.edu/courses/55033/assignments/362071	due by 11:59pm
	 Reading Quiz 09 – Processes Part 1 https://canvas.ucsc.edu/courses/55033/assignments/362078	due by 11:59pm
	 Reading Quiz 10 – Processes Part 2 https://canvas.ucsc.edu/courses/55033/assignments/362057	due by 11:59pm
Sun Jul 10, 2022	 Reading Quiz 11 – Models Part 1 https://canvas.ucsc.edu/courses/55033/assignments/362074	due by 11:59pm
	 Reading Quiz 12 – Models Part 2 https://canvas.ucsc.edu/courses/55033/assignments/362066	due by 11:59pm
	 Data Analysis Assignment #2 https://canvas.ucsc.edu/courses/55033/assignments/362086	due by 11:59pm
Sun Jul 17, 2022	 HW06: Models https://canvas.ucsc.edu/courses/55033/assignments/362075	due by 11:59pm

Date	Details	Due
	 Reading Quiz 13 – Impacts Part 1 https://canvas.ucsc.edu/courses/55033/assignments/362084	due by 11:59pm
	 Reading Quiz 14 – Impacts Part 2 https://canvas.ucsc.edu/courses/55033/assignments/362080	due by 11:59pm
	 Reading Quiz 15 - Economics https://canvas.ucsc.edu/courses/55033/assignments/362079	due by 11:59pm
	 Reading Quiz 16 - Ethics https://canvas.ucsc.edu/courses/55033/assignments/362073	due by 11:59pm
	 Data Analysis Assignment #3 https://canvas.ucsc.edu/courses/55033/assignments/362087	due by 11:59pm
	 Final Exam Multiple Choice Questions https://canvas.ucsc.edu/courses/55033/assignments/362059	due by 11:59pm
	 Final Exam Numerical Questions https://canvas.ucsc.edu/courses/55033/assignments/362082	due by 11:59pm
Thu Jul 21, 2022	 HW07: Impacts https://canvas.ucsc.edu/courses/55033/assignments/362083	due by 11:59pm
	 Reading Quiz 17 – Solutions https://canvas.ucsc.edu/courses/55033/assignments/362061	due by 11:59pm