

Multi-Campus Online UC Course for Bending the Curve

Upper-Division Multi-disciplinary Undergraduate Course



Bending the Curve: Climate Change Solutions

University of California, San Diego

Spring 2020

Syllabus

Instructors:

Fonna Forman (Political Science)

V. Ram Ramanathan (Scripps Institution of Oceanography)

BENDING THE CURVE: CLIMATE CHANGE SOLUTIONS

The UC Climate Solutions Course at UC San Diego

Scripps Institution of Oceanography + Department of Political Science

SIO 109R A + B

POLSCI 117R A +B

Spring 2020

Instructors:

Fonna Forman (Pol Sci): fonna@ucsd.edu

V. Ram Ramanathan (SIO): vramanathan@ucsd.edu

Office hours by appointment

Teaching Assistants:

John Porten (Pol Sci): john.porten@gmail.com

Zoom Office Hours: Wednesday 7:30-8:30am AM; Thursday 1-2pm.

Madelin Andersen (SIO): msa005@ucsd.edu

Zoom Office HOurs: Tuesdays 3-5pm

SECTION	ZOOM TIME	TA	ZOOM LINK
Section 1: SIO 109R A00	Tuesdays 9a-10a	Madelin Andersen	https://ucsd.zoom.us/j/2261473240
Section 2: POLI 117R A00	Wednesdays 7p-8p	John Porten	https://ucsd.zoom.us/j/9956037280
Section 3: POLI 117R B00	Thursdays 2p-3p	John Porten	https://ucsd.zoom.us/j/9956037280
Section 4: SIO 109R B00	Fridays 10a-11a	Madelin Andersen	https://ucsd.zoom.us/j/2261473240

Class Protocols:

UC Canvas: This is a multi-campus online course, hosted at UC San Diego. All course materials are located on the UC Canvas Platform. All course announcements will be distributed through Canvas. Please check regularly.

Online Videos and Readings: As an online course, the instructional dimension of the course is conducted through online videos and associated reading assignments, prepared by Climate Change experts across the University of California system and beyond. Links for weekly assignments are all provided in Canvas. It is essential to keep up with weekly videos and readings.

Weekly Zoom Sessions: Students are expected to have reviewed all video lectures and associated readings for the week prior to the weekly Zoom session. Students should come to the Zoom session prepared to discuss topics and raise questions.

Weekly Discussion Questions: Each week, by Sunday midnight, students must complete two written Discussion Questions on Canvas. Each Discussion requires that you post a paragraph of your own, and that you respond to another student's post. So, in all, you are required to submit four entries each week (two of your own, and two responses to others). Of course you are encouraged to contribute more!

Weekly Review Quizzes: Each week by Sunday midnight, students must complete the Review Quizzes for the week that just ended. Note: some weeks have one Review Quiz, some weeks have two Review Quizzes.

Midterm Exam: Students are required to take an online midterm exam at the end of Week 5. You will be given options for 1 one-hour window. Questions will be multiple choice.

Final Project: Each student will submit a final written project, due during exam week, on Friday June 12. Prompt for final project is located in this syllabus, after the course schedule.

Requirements / Grading:

- Weekly Zoom session participation
- Weekly participation in written Discussion Questions (20%)
- Weekly Review Quiz performance (5%)
- Online midterm exam during Week 5 (25%)
- 6-8 page Final Project due during exam week (50%).

LECTURE SCHEDULE

PART I: SETTING THE STAGE: CLIMATE CHANGE DRIVERS + IMPACTS

<u>WEEK</u>	<u>CLUSTER</u>	<u>TOPIC / ASSIGNMENT</u>
WEEK 1	Science Solutions	Introductions, Protocols Climate Change Science VIDEO 1: Climate Change (Ramanathan, UCSD)
WEEK 2	All Solutions	Bending the Curve Solutions VIDEO 2: Ten Clusters & Ten Solutions (Ramanathan, UCSD)
WEEK 3	Social Solutions	Humans & Nature: How did we get here? VIDEO 3: Climate Justice & Equitable Approaches (Forman, UCSD) VIDEO 4: The Quest for Climate Justice (Pellow, UCSB) Climate Change and Public Health VIDEO 5: Climate Change: Health Impacts (Solomon, UCSF)

PART II: LIVING LABORATORIES

WEEK 4	Governance Solutions	California as a Living Laboratory VIDEO 6: Lessons from California (Press, UCSC) Living Laboratories VIDEO 7: Carbon Neutrality Initiative of UC (ST. Clair, UCOP) VIDEO 8: Energy Efficient Management at UCI (Brower, UCI)
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PART III: SOLUTIONS: MITIGATION AND ADAPTATION

WEEK 5	<p>Science Solutions</p> <p>Technology Solutions</p>	<p>Obstacles to Solutions VIDEO 9: Obstacles to Climate Solutions (Davis, UCI)</p> <p>Science and Technology Pathways VIDEO 10: Energy Technology Pathways (Samuelson, UCI)</p>
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ONLINE MIDTERM: FRIDAY MAY 1 (You will select a one-hour window)

WEEK 6	Governance + Market Solutions	<p>International Governance VIDEO 11: International Governance (Victor, UCSD)</p> <p>Economics and Climate Policy VIDEO 12: Economics / Designing Climate Policy (Auffhammer, UCB)</p> <p>VIDEO: Cost-effective and Efficient Climate Policies (Jacobsen)</p>
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WEEK 7	Social Solutions	<p>Social Change VIDEO 13: Changing Social Norms and Behavior (Forman, UCSD)</p> <p>VIDEO 14: Social Movements and Social Solutions (Han, JHU)</p> <p>Public Opinion & Communication VIDEO 15: Climate Science Communication (Somerville, UCSD)</p> <p>VIDEO 16: Climate Communication (Christensen, UCLA)</p>
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WEEK 8	Social Solutions	<p>Climate Change and Religion VIDEO 17: Religion, Ethics and Climate Change (Tucker, Yale)</p> <p>VIDEO 18: Climate Change, Christianity and the Real Challenges (Hayhoe, Texas Tech)</p> <p>ZOOM session will be devoted to a Final Project workshop. No Quizzes or Review Questions due this week.</p>
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WEEK 9	Technology Solutions	<p>Transportation VIDEO 19: Transportation Pathways (Sperling, UCSD)</p> <p>New Technologies VIDEO 20: Renewable Energy (Samuelson, UCI)</p> <p>VIDEO 21: Nuclear Energy (Peterson, UCB)</p>
WEEK 10	Technology Solutions	<p>Fast-tracking Mitigation VIDEO 22: Technologies for SLCP Mitigation (Ramanathan, UCSD and Zaelke, UCSB)</p> <p>Removing Carbon from the Atmosphere VIDEO 23: Enhancing Carbon Sinks (Silver, UCB)</p> <p>VIDEO 24: Negative Emissions Technology (Aines, LLNL)</p>

FINAL PROJECT DUE: ON CANVAS. FRIDAY JUNE 12, 6pm

Final Project Guidelines:

A mini research project, due during exam week on June 12, 6pm. 6-8 pages, 1.5 spaced, 12 point font. Bibliography and citations required (citation style open)

Students will design an integrated climate solution for California, drawing on the 6 clusters of the *Bending the Curve* report, with a focus on one of the following topics:

1. Starting a **youth movement** committed to climate action.
2. Addressing the **public health impacts** of climate change, with an emphasis on **air quality**.
3. Designing a **social media / communications** strategy / campaign for skeptical demographics.
4. **Protecting disadvantaged California populations** disproportionately vulnerable to heat waves, fires, and the health impacts of climate disruption.
5. California adaptation strategies – **sea-level rise and flooding**
6. California adaptation strategies – **fires**
7. California adaptation strategies - **precipitation whiplash**
8. California adaptation strategies – **heat waves**
9. Addressing **food waste** in California, while addressing food disparities
10. **Campus carbon neutrality** – Drawing inspiration from the UC Carbon Neutrality Initiative, design a solution for your UC campus.

Issues to Consider as you develop your project:

How does your approach map onto the six clusters and 10 solutions? Which curves does it bend?

What is the scale of your intervention (statewide, regional, municipal, neighborhood)

Does your issue already have a “Climate Action Plan” in place? Is it effective? Why or why not?

How will you convince people of the legitimacy of climate change science; the need for actions? How will you convey a sense of urgency?

How will you motivate people to take action?

Technologies deployed and barriers: Off-the shelf versus new technologies; How will you improve it?

Are the solutions you propose scalable? How? If not, why not?

How fast can it be done given the constraints of public and political support?

BENDING THE CURVE

EXECUTIVE SUMMARY

Ten scalable solutions for carbon
neutrality and climate stability

Ramanathan et al, 2015:
[Executive Summary of the Report, *Bending the Curve: 10 scalable solutions for carbon neutrality and climate stability.*](#)

Published by the University of California, October 27,

2015

https://uccarbonneutralitysummit2015.ucsd.edu/_files/Bending-the-Curve.pdf



Carbon Neutrality Initiative

Berkeley
UNIVERSITY OF CALIFORNIA

UC DAVIS
UNIVERSITY OF CALIFORNIA

UC Irvine
UNIVERSITY OF CALIFORNIA, IRVINE

UCLA

UNIVERSITY OF CALIFORNIA
UC MERCED

UNIVERSITY of CALIFORNIA
Office of the President

UCSF

University of California
San Francisco

UC San Diego



UNIVERSITY OF CALIFORNIA
SANTA CRUZ

UCSB

UNIVERSITY OF CALIFORNIA
SANTA BARBARA

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE