**Syllabus for:** [Perspectives-Human Behavior GE](https://senate.ucsc.edu/committees/cep-committee-on-educational-policy/ge-requirements/perspectives-human-behavior.html)/ECE 80-H

Course Title: Bending the Curve: Solutions to Climate Change

Course Number: [Perspectives-Human Behavior GE](https://senate.ucsc.edu/committees/cep-committee-on-educational-policy/ge-requirements/perspectives-human-behavior.html)/ECE 80-H

**Description:** *Enter course description. If this is an existing course, add the description from the Catalog:* <https://catalog.ucsc.edu/Current/General-Catalog/Courses>

*Bending the Curve: Solutions to Climate Change*. Climate Change is an interdisciplinary problem involving natural and social systems. The course will impart interdisciplinary knowledge, explore avenues for solutions, and empower students to emerge as critical thinkers and actors. Class sessions will be devoted to student discussion of the course materials, including readings and prerecorded videos, and for group projects and presentation of ideas for solutions, with the guidance of the instructor.

**Learning outcomes:** *For help on identifying learning outcomes, please see:* <https://iraps.ucsc.edu/assessment/course-learning-outcomes.html>

Students will examine the interconnectedness of natural and social systems as they evaluate, interpret, and debate evidence and explanations of climate change. Class discussions and written assignments will require students to synthesize cross disciplinary subject matter and demonstrate critical thinking about human behavior and belief systems in relation to the implications of claims about anthropogenic climate change. A main focus of the course is on synthesizing knowledge and creative problem solving to identifying solutions, while encouraging students to become “champions” in their own learning experience and as responsible citizen actors in their communities and in the world at large.

**Prerequisites: None**

**Weekly Schedule:**

MWF 4:00 – 5:05 PM[*https://ucsc.zoom.us/j/96353158998?pwd=bFNvbU9kMVZObk84dnllQ2V1VU4vdz09*](https://ucsc.zoom.us/j/96353158998?pwd=bFNvbU9kMVZObk84dnllQ2V1VU4vdz09)

*Meeting ID: 963 5315 8998*

*Passcode: 803502*

*Office Hours: TBD*

**Textbook/Materials:**

A digital textbook for the course is available without cost to students at:

<https://escholarship.org/uc/bending_the_curve_digital_textbook>

The digital textbook contains 19 substantive chapters that introduce key concepts, solutions, and current topics pertaining to climate change.

The textbook comes with a companion instruction guide to assist students in managing their learning experience and to gauge their comprehension of key concepts and facts. The study guide contains a list of key questions, associated with each chapter of the textbook, that will be used as the basis for weekly quizzes or short written assignments.

In addition, prerecorded instructional videos will be used as foundational lecture material. The instructional videos were created by faculty from across the UC system, and reflect each faculty member’s scholarly expertise.

1. Bending the Curve videos (see the weekly course syllabus below)

2. Introduction to Climate change: <https://teachingclimate.sites.ucsc.edu/>

This additional set of instructional videos, created by UCSC faculty, provides a social scientific theoretical foundation to the study of climate change to help explain the relevance of climate change on society and further examines the physical dimensions and ecological consequences of climate change on society. This set of instructional videos will be used to supplement the weekly Bending the Curve video assignments on selected topics.

**Student Hours:** *Student hours for class: Systemwide Senate Regulation 760 specifies that one academic credit corresponds to three hours of work per week for students*. *Example: Students in this class will be expected to work about 15 hours per week on the course material, including 3h15 in class with the instructor, 1 hour in section, 2 hours in office hours (with either the instructor or the TA) to ask questions as necessary, and finally, 9 hours per week of independent work on homework and work to understand the material.*

**COURSE SCHEDULE**

**WEEK CLUSTER TOPIC / ASSIGNMENT**

|  |  |  |
| --- | --- | --- |
| **WEEK 1** | Science Solutions | **Introductions / Protocols**  **Climate Change Science**  VIDEO 1: Climate Change (Ramanathan, UCSD)  Required Textbook Reading:  Chapter 1: Climate Change  UCSC Video: Physics of Climate Change (31:59) <https://youtu.be/KFy0XSLHjIg>  UCSC Video: Ecological Consequences of Climate Change (28:39) <https://youtu.be/X1taZTx7VLY>  **RECOMMENDED (In Additional Materials)**  **Sea Level Rise**  Sea Level Rise From Melting Ice (Rignot, UCI)  Recommended Textbook Reading:  Chapter 17 – Sea Level Rise from Melting Ice |

|  |  |  |
| --- | --- | --- |
| **WEEK 2** | All | **UC Bending the Curve: An Introduction**  VIDEO 2: Ten Clusters & Ten Solutions (Ramanathan, UCSD)  **Obstacles**  VIDEO 3: Obstacles to Climate Solutions (Davis, UCI)  Required Textbook Reading:  Chapter 4 – Overview of the Ten Solutions for Bending the Curve  UCSC Video: A Sociology of Climate Change  <https://youtu.be/tCA6taOMOGE> |

|  |  |  |
| --- | --- | --- |
| **WEEK 3** | Social Solutions | **Communication**  VIDEO 4A: Climate Science Communication (Somerville, UCSD)  VIDEO 4B: Climate Communication (Christensen, UCLA)  Required Textbook Reading:  Chapter 8 – Communicating Climate Change Science |

|  |  |  |
| --- | --- | --- |
| **WEEK 4** | Governance Solutions | **California as a Living Laboratory**  VIDEO 5: Lessons from California (Press UCSC)  VIDEO 6: Carbon Neutrality Initiative of UC (St. Clair, UCOP)  Required Textbook Reading:  Chapter 9 – Lessons from California |

|  |  |  |
| --- | --- | --- |
| **WEEK 5** | Social Solutions | **Climate Justice**  VIDEO 7A: Climate Justice & Equitable Approaches (Forman, UCSD)  VIDEO 7B: The Quest for Climate Justice (Pellow, UCSB)  Required Textbook Reading: Chapter 2 – Humans, Nature, and the Quest for Climate Justice  **RECOMMENDED (In Additional Materials)**  **Health Impacts**  Climate Change Health Impacts (Solomon, UCSF)  Recommended Textbook Reading:  Chapter 3 – Climate Change and Human Health |

|  |  |  |
| --- | --- | --- |
| **WEEK 6** | Social Solutions | **Social Norms + Behavior**  VIDEO 8: Changing Social Norms and Behavior (Forman, UCSD)  **Social Movements**  VIDEO 9: Social Movements and Social Solutions (Han, JHU)  Required Textbook Reading:  Chapter 5 – Your Leadership: Social Movements & Social Solutions to Climate Change  Chapter 6 – Social Transformation: Changing Attitudes, Norms, and Behaviors  Recommended Textbook Reading  Chapter 19 – Local Solutions  **RECOMMENDED (In Additional Materials)**  **Religion**  Climate Change, Christianity and the Real Challenges (Hayhoe, Texas Tech)  Recommended Textbook Reading:  Chapter 7 – Religion, ethics, and Climate Change |

|  |  |  |
| --- | --- | --- |
| **WEEK 7** | Market Solutions  Governance Solutions | **Economics and Climate Policy**  VIDEO 10: Economics / Designing Climate Policy (Auffhammer, UCB)  **International Governance**  VIDEO 11: International Governance (Victor, UCSD)  **RECOMMENDED (In additional materials)**  **Economics and Climate Policy, cont’d**  Cost-effective and Efficient Climate Policy (Jacobsen, UCSD)  Required Textbook Reading:  Chapter 10 – The Paris Agreement and Its Implications  Chapter 11 – Economics: Emissions, Impacts and Policy  Recommended Textbook Reading:  Chapter 12 – Cost Effective Climate Policies |

|  |  |  |
| --- | --- | --- |
| **WEEK 8** | Technology Solutions | **Energy Technologies**  VIDEO 12: Energy Technology Pathways (Samuelsen, UCI)  Required Textbook Reading:  Chapter 13 – Two Evolving Energy  Technology Pathways  Chapter 14 – Environmentally Sustainable Transportation  Recommended Textbook Reading: Chapter 15 – Technologies for Super Pollutants Mitigation  **Transportation**  VIDEO 13: Transportation Pathways (Sperling, UCSD)  **Super-Pollutants**  VIDEO 14: Technologies for SLCP Mitigation (Ramanathan, UCSD and Zaelke, UCSB) |

|  |  |  |
| --- | --- | --- |
| **WEEK 9** | Technology Solutions | **Renewables**  VIDEO 15: Renewable Energy (Samuelson UCI)  **Nuclear**  VIDEO 16: Nuclear Energy (Peterson, UCB)  Required Textbook Reading:  Chapter 13 – Two Evolving Energy  Technology Pathways  **RECOMMENDED (In additional materials)**  **Negative Emissions:**  Negative Emissions Technology (Aines, LLNL) |

|  |  |  |
| --- | --- | --- |
| **WEEK 10** | Ecosystem Management  Solutions | **Carbon Sinks**  VIDEO 18: Enhancing Carbon Sinks (Silver, UCB)  **Local / Bioregional Solutions**  VIDEO 19: Local and Bioregional Solutions to Climate Change (Pezzoli, UCSD)  Required Textbook Reading:  Chapter 16 – Enhancing Carbon Sinks in Natural and Working Lands |

**Assessments:**

* Participation in Weekly Discussion Threads (20%)
* Weekly Review Quiz performance/Short Written Assignments (20%)
* Interview Paper (10%)
* Final Project Outline/Narrative (10%)
* Group Project (20%)
* Individual Project Paper (20%)

*Nature of assignments/assessments (projects, homework, written assignments, quizzes, exams, etc.) and how these connect to the course learning objectives. Nature of final exam or project.*

* Participation*.* Students are expected to view the video lectures and complete assigned readings in advance, and be prepared with questions and discussion topics.
* Weekly quizzes or short paper assignments. The study guide, which contains a list of key questions, associated with each chapter of the textbook and weekly video assignments, will be used as the basis for weekly quizzes or short written assignments.
* Group Project: A one-page synopsis proposal, an oral progress report, an executive summary, and a final in-class presentation.
* Individual Project Report. A 7-10-page paper which will be graded on an individual basis.

**Final Grading:** See above

**Support**

* **Support for students with disabilities**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 me privately during my office hours or by appointment, preferably within the first two weeks of the quarter. At this time, I would also like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at [drc@ucsc.edu](mailto:drc@ucsc.edu).

* **Support for students with other difficulties**While we sincerely hope that you will be able to pursue your studies peacefully and worry-free, we are aware that in some cases difficulties happen that are beyond your control. You should always feel free and comfortable to bring up any problem with the instructor, but if this is not sufficient, or if you prefer professional help, here are several campus resources that you may want to consider contacting:
  + [UC Care](https://care.ucsc.edu/who-we-are/about-care.html)which is a confidential space to discuss issues of dating violence, sexual assault and stalking.
  + [Slug Support](https://deanofstudents.ucsc.edu/slug-support/program)where you can ask for help on many practical issues, including dealing with a financial crisis, problems with your living situation, computers, books, etc.
  + [CAPS](https://caps.ucsc.edu/), which provides counseling and psychological services to students
* **Title IX reporting disclosure:** Title IX prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. If you have experienced sexual harassment or sexual violence, you can receive confidential support and advocacy at the Campus Advocacy Resources and Education (CARE) Office by calling (831) 502-2273. In addition, Counseling and Psychological Services (CAPS) can provide confidential, counseling support, (831) 459-2628. You can also report gender discrimination directly to the University’s Title IX Office, (831) 459-2462. Reports to law enforcement can be made to UCPD, (831) 459-2231 ext. 1. For emergencies call 911. Faculty and Teaching Assistants are required under the UC Policy on Sexual Violence and Sexual Harassment to inform the Title IX Office should they become aware that you or any other student has experienced sexual violence or sexual harassment. If you prefer to speak to someone confidentially, please contact UC Care (see above).

**Work ethics**

**Academic Integrity**Academic integrity is the cornerstone of a university education. Academic dishonesty diminishes the university as an institution and all members of the university community. It tarnishes the value of a UCSC degree. All members of the UCSC community have an explicit responsibility to foster an environment of trust, honesty, fairness, respect, and responsibility. All members of the university community are expected to present as their original work only that which is truly their own. Plagiarism of any kind is unacceptable. All members of the community are expected to report observed instances of cheating, plagiarism, and other forms of academic dishonesty in order to ensure that the integrity of scholarship is valued and preserved at UCSC. Any student found in violation of the UCSC Academic Integrity policy may face both academic sanctions imposed by the instructor of record and disciplinary sanctions imposed by the graduate division. Violations of the Academic Integrity policy can result in dismissal from the university and a permanent notation on a student's transcript. For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the [Academic Integrity page](https://www.ue.ucsc.edu/academic_misconduct) at the [Division of Undergraduate Education](https://ue.ucsc.edu/) or [Graduate Division](https://www.ucsc.edu/academics/academic-integrity/).

**Class Protocols:**

**UC Canvas**: **This is an online course. Please note: all course materials are located on the University of California Canvas Platform. NOT on UCSC Canvas.**

**Course Announcements:** All course announcements will be posted through UC Canvas. Please check regularly. You should also receive emails when new announcements are posted.

**Online Videos and Readings:** As an online course, the instructional dimension of the course is conducted through online pre-recorded videos and associated reading assignments, authored by climate change experts across the University of California system, and beyond. Links for weekly assignments are all provided in UC Canvas. It is essential to keep up with weekly videos and readings, before attending the weekly Zoom Discussion sessions.

**Weekly Zoom Discussion Sessions:** Designed for synchronous participation, but can be viewed asynchronously. Students are expected to review all video lectures and associated readings assigned for each Zoom Discussion session, and come prepared to discuss topics and raise questions.

**Discussion Threads:** Each week, students must complete two entries in the Discussion Threads on Canvas. Weekly questions are due by Sunday at midnight. The two entries must each be a well-constructed paragraph of your own, or can be responses to other students’ entries. Of course, you are encouraged to contribute as much and as often as you wish! Students are encouraged to seek additional information on relevant topics from trustworthy news sources, such as the New York *Times* or other periodicals. Participation will comprise 20% of your final grade.

**Weekly Review Quizzes/Short Paper Assignments:** To ensure sure you are mastering the online materials, you must complete each week’s Review Quizzes or Written Assignments by Sunday at midnight. Some weeks have more Review Quizzes than others. Please pay close attention.

**Group Project:** The group project shall contain several components: a one-page synopsis proposal, an oral progress report, an executive summary, and a final online presentation to the class.

**Individual Project Paper:** A 7-10-page individual paper which will be graded on an individual basis.

Time will be set aside at the beginning of the course for students to identify subjects of interest for the group project and to allow students to form small teams of 3-5 individuals per team. The subjects of group project must be approved by the instructor.