

COURSE AT-A-GLANCE

Lessons	Course Learning Objectives By the end of the course you will be able to:	Due
Class Start: January 7th, Week 1: Basic Science of Climate Change <i>Professor Somerville</i>		
Introduction	<ul style="list-style-type: none"> • Navigate the course. • Locate where your peers live. • Test your prior knowledge of the topics discussed. • Set up your preferred social media accounts. 	Complete Getting to Know You questionnaire View Course Tour Add name and location to the class world map Complete Test Your Knowledge (ungraded) Set up social media accounts View Syllabus Complete Checklist
Lesson 1: Climate Change Science: History, Foundations, Detection, Attribution	<ul style="list-style-type: none"> • Explain the early history of climate change from the physical science point of view. • Describe the foundation of physical climate change science. • Explain the differences between detection and attribution in climate science. 	By January 13, 2014 Required Readings: IPCC, 2007: Summary for Policymakers; The Forgiving Air, Chapter 4; Recent Climate Observations Compared to Projections Required Activity: What's your carbon footprint?
Lesson 2: How Much Will Climate Change? Climate Models and Sensitivity	<ul style="list-style-type: none"> • Explain the historical background, basics and purposes of climate change models. • Observe patterns in projected changes in temperature, sea level. • Identify different scenarios in various models. 	Weekly Quiz

January 14th, Week 2: The Nature of Scientific Knowledge <i>Professor Oreskes</i>		
Lesson 3: The Scientific Consensus on Climate Change: How Do We Know We're Not Wrong? Part 1	<ul style="list-style-type: none"> Describe the role of the IPCC. List and analyze the claims challenging climate science. Discuss what is meant by scientific consensus. Explain basic scientific methods and their fallibility. Describe processes that contribute to the reliability of scientific knowledge. Describe five main candidates for scientific methods and standards. 	<p>By January 20, 2014</p> <p>Required Readings: The Scientific Consensus on Climate Change: How Do We Know We're Not Wrong?</p> <p>Required Activity: What is meant by scientific consensus?</p> <p>Weekly Quiz</p>
Lesson 4: The Scientific Consensus on Climate Change: How Do We Know We're Not Wrong? Part 2	<ul style="list-style-type: none"> Describe five main candidates for scientific methods and standards. Apply the deductive model of science to climate change. Apply the inductive model of science to climate change. 	
January 21st, Week 3: Climate Change Mitigation <i>Professors Somerville and Victor</i>		
Lesson 5: Physics and chemistry of climate mitigation	<ul style="list-style-type: none"> Describe the scientific background that underlies climate policy. Summarize the scientific updates since IPCC4, as found in the Copenhagen Diagnosis. 	<p>By January 27, 2014</p> <p>Required Readings: If I Were President: A Climate Change Speech; The Copenhagen Diagnosis; Climate change, irreversibility, and urgency; United Nations Framework Convention on Climate Change</p> <p>Required Activity: The Climate Bathtub Simulation?</p> <p>Weekly Quiz</p>
Lesson 6: Why Climate is an International Problem	<ul style="list-style-type: none"> Describe why both mitigation and adaptation of climate is an international problem. List and understand the components of an international treaty. Analyze international strategies on climate change. 	

January 28th, Week 4: International dimensions of climate change <i>Professor Victor</i>		
Lesson 7: International Cooperation on the Ozone Layer: A Useful Model?	<ul style="list-style-type: none"> • Explain when international cooperation has been successful and when it has failed in other areas than cooperation on climate change. • Describe lessons that can be learned from the experience of successful international cooperation for cooperation on climate change. • Analyze the Montreal Protocol as a model for climate change and explain why we had success with the ozone layer. 	By February 3, 2014 Required Readings: Protecting the Ozone Layer; The Kyoto Protocol; The Montreal Protocol; Global Warming Gridlock: New Strategies for Protecting the Planet; The Copenhagen Accord; Durban Platform Required Activity: Climate Change Policy Decisions in your Country Weekly Quiz
Lesson 8: International Cooperation on Climate Change: Models for Reform (with a Focus on Mitigation)	<ul style="list-style-type: none"> • Describe why we have made such little progress on the climate problem. • List different visions/strategies there are to address mitigation of climate change. • Answer which strategies might work better. 	
February 4th, Week 5: The Impacts of Climate Change <i>Professors Somerville and Kennel</i>		
Lesson 9: Extreme Weather, Climate Change and Communication	<ul style="list-style-type: none"> • List ways to communicate anthropogenic climate change science to lay audiences. • Describe the connection between extreme weather and climate change. 	By February 10, 2014 Required Readings: Communicating the Science of Climate Change; Medical Metaphors for Climate Issues: An editorial essay; IPCC, 2007: Summary for Policymakers
Lesson 10: Impacts of Climate Change	<ul style="list-style-type: none"> • Describe the effects of regional weather patterns, water availability, floods, drought, and wildfires. • List the impacts of climate change on agriculture, ecology, human disease, regional technical systems. 	Required Activity: Six Americas Climate Change Survey Weekly Quiz
February 11th, Week 6: What may be in store for the world? <i>Professor Kennel</i>		
Midterm Exam		
Lesson 11: Coping with Climate Change in the Next Half-Century	<ul style="list-style-type: none"> • List the reasons why we should expect a 2 degree Celsius warming as early as 2050, and therefore why we must prepare now to adapt. 	By February 17, 2014 Required Readings: California's Energy Future; Coping with Climate Change in the Next Half-Century Required Activity: The Intergovernmental Panel on Climate Change (IPCC)

February 18th, Week 7: How the public views climate change <i>Professor Oreskes</i>		
Lesson 12: Merchants of Doubt, Part 1	<ul style="list-style-type: none"> List scientific criteria that support climate science conclusions. Analyze and discuss the evidence for climate change. Summarize the history of awareness and knowledge about anthropogenic climate change. List reasons why so many people reject the science of climate change. Analyze doubt-mongering political strategies of climate change deniers. 	<p>By February 24, 2014</p> <p>Required Readings: Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming</p> <p>Required Activity: Trusted Communicator</p> <p>Weekly Quiz</p>
Lesson 13: Merchants of Doubt, Part 2	<ul style="list-style-type: none"> Discuss the strategies used to confuse people about the scientific evidence of climate change. Examine why the scientific evidence has not had more traction. Describe and analyze the political and social obstacles to acceptance of climate change. 	
February 25th, Week 8: How regions are preparing to adapt <i>Professor Kennel</i>		
Lesson 14: Ice, Snow, and Water	<ul style="list-style-type: none"> Describe and analyze the complex issues of melting mountain snows and glaciers, their contributions to sea level rise, and their impacts on rivers and water availability. Answer the questions: Who will be affected by sea level rise, and by how much? 	<p>By March 3, 2014</p> <p>Required Readings: Planning for the impacts of sea level rise; Sea-level rise and its possible impacts given a 'beyond 4°C world' in the twenty-first century; A Summary Report from the California Climate Change Center; Linking climate change science with policy in California; A Summary Report on the Third Assessment from the California Climate Change Center; Summary and Synthesis of the ACIA</p> <p>Required Activity: A Sustainable Future</p> <p>Weekly Quiz</p>
Lesson 15: Arctic and California Climate Change Assessments	<ul style="list-style-type: none"> List and describe the impacts of climate change on the Arctic, both present and projected. List and describe the impacts of climate change on the State of California, USA. Describe California's climate change legislation and impact assessments. 	

March 4th, Week 9: What we can do, Part 1 <i>Professor Victor</i>		
Lesson 16: What if climate change turns ugly? The Pros and Cons of Geoengineering	<ul style="list-style-type: none"> Define what geoengineering is. Describe the different types of geoengineering, with examples for each. Identify the key governance issues surrounding climate engineering. 	By March 10, 2014 Required Readings: The Geoengineering Option; Report to the President on Accelerating the Pace of Change in Energy Technologies Through an Integrated Federal Energy Policy
Lesson 17: Technology Innovation (With a Focus on Energy)	<ul style="list-style-type: none"> List and describe the key issues in dealing with challenges to technological innovation. Identify the elements of each fundamental of technological innovation. Compare and contrast the role of different nations in technological innovation. 	Required Activity: Geoengineering Weekly Quiz
Last Week Starts March 11th, Week 10: What we can do, Part 2 <i>Professors Oreskes, Kennel, and Ramanathan</i>		
Lesson 18: It's Not Too Late to Mitigate	<ul style="list-style-type: none"> Describe the difference between adaptation, mitigation and geo-engineering. List and analyze the major components of the Lovins study "Reinventing Fire." 	By March 17, 2014 Required Readings: Climate Change: Think Globally, Assess Regionally, Act Locally
Lesson 19: Avoid the Unmanageable, Manage the Unavoidable	<ul style="list-style-type: none"> Describe the essential role of assessment in the adaptive management of complex systems. Analyze the critical role of local communities. Describe the complexity of knowledge assembly for regional and local decision-support. Describe the need for assessments to encourage timely decisions. Define and give examples of "Knowledge Action Networks." 	Required Activity: Mitigation
Guest Lesson by Professor Ramanathan	<ul style="list-style-type: none"> Sustainability of the Bottom 3 Billion in the Context of Climate Change and SLCPs Mitigation 	
Final Exam		