

SEMESTER AT SEA COURSE SYLLABUS

Discipline: Politics

Fall 2008

PLCP 300Z: Science and Politics of Climate Change

Upper Division

Faculty name: Armin Rosencranz

Pre-requisites: None.

COURSE DESCRIPTION

Climate change is a worldwide environmental, social and economic challenge. This course provides students with the scientific background knowledge needed to understand the debates going on within nations and among them about how to respond. Human use of the atmosphere as an un-priced dumping space has led to the buildup of gases and particles that can alter the radiant energy exchange between the earth's surface and space. Carbon dioxide, methane and water vapor are the principal heat-trapping greenhouse gases. Carbon is the underpinning of most fuels used in transportation and power production. It also makes up about half the dry weight of most vegetation. Human modification of the carbon cycle has far-reaching implications for human welfare and the health of the biosphere. In order to stop further movement in this direction and reverse course, human societies will need to modify policies and practices in a wide range of areas, including the way we handle pollution and waste, land use, transportation, energy, industry, and economic development. Given the short term planning horizon of most political and economic institutions, climate change presents major policy challenges. This course is designed to clarify the primary issues embedded in those challenges and examine the ways in which societies around the world have begun to take on these challenges. Field trips will explore national technological and policy developments to mitigate and adapt to climate change.

COURSE OBJECTIVES

1. Analyze the carbon cycle and the role of energy and land use as carbon sources and sinks.
2. Understand the role of science and scientific uncertainty in fashioning climate change policy.
3. Identify and explore the main policy mechanisms to mitigate climate change.
4. Understand the different perspectives of developed and developing countries.
5. Evaluate the prospects for mitigating and adapting to climate change through international negotiations.

TOPICAL OUTLINE OF COURSE

(If the Schneider, Rosencranz & Mastrandrea book is not yet published, these chapters will all be uploaded and available to students on the ship intranet. We'll cover two or three chapters each day.)

Prologue (John Holdren)

Overview

1. Climate Change Science Overview (Michael D. Mastrandrea and Stephen H. Schneider)
2. Risk, Uncertainty, and Assessing Dangerous Climate Change (Stephen H. Schneider and Michael D. Mastrandrea)
3. Climate Change: The Road Forward (Robert T. Watson and André R. Aquino)
4. Progress in Detection and Attribution Research (Ben D. Santer and Tom M. L. Wigley)

Impacts

5. Observed Climate Impacts (Terry L. Root)
6. Impacts of a High CO₂ World on Marine Ecosystems (Carol Turley)
7. Global Warming and Hurricanes (Judith A. Curry and Peter J. Webster)
8. Human Health Impacts of Climate Change (Kristie L. Ebi)
9. Climate Change as a Threat to the Tropical Forests of Amazonia (Philip M. Fearnside)
10. Climate Change and Wildfires (Anthony L. Westerling)
11. Impacts of Climate Change on Global Crop Production and Food Security (David B. Lobell)
12. Impacts of Climate Change on Ecosystems (Rik Leemans)
13. Climate and Water (Peter H. Gleick)
14. Unique and Valued Places at Risk (W. Neil Adger, Jon Barnett, and Heidi Ellemor)

PAPER DUE AT END OF WEEK SEVEN ON SCIENCE AND IMPACTS

Policy Making:

15. United States National Climate Change Policy (Armin Rosencranz and Russell Conklin)
16. California's Battle for Clean Cars (Fran Pavley)
17. Climate Policy in California (Jason Mark and Amy Lynd Luers)
18. U.S. State Climate Action: Continuing the Federalist Tradition (Joshua Bushinsky)
19. European Union Climate Policy (Jean-Pascal van Ypersele)
20. Climate Change and the New China (Paul G. Harris)

21. Understanding the Climate Challenge in China (Joanna I. Lewis, Michael B. Cummings and Jeffrey Logan)
22. India: Special Role and Responses (Ashok Gadgil and Sharachchandra Lélé)
23. Climate Policy: Australia (Chris Hotham and Tim Flannery)
24. Developing Countries Perspectives (Jayant Sathaye)
25. CDM and Mitigation in Developing Countries: Short-term reductions and long-term ambiguity (David Wolfowitz)
26. Measuring the Clean Development Mechanism's Performance and Potential (Michael Wara)
27. International Treaties (M.J. Mace)
28. Stimulating Corporate Action on Climate Change: The Role of Government Policy (Eileen Claussen, Vicki Arroyo, and Truman Semans) (Addendum: US Climate Action Partnership History and Recommendations, Truman Semans)
29. Corporate Initiatives on Climate Change (Paul Dickinson, James P. Hawley, and Andrew T. Williams)

MIDTERM

Policy Analysis

30. Assessing the Economic Impacts of Climate Change: a Review (Stéphane Hallegatte and Philippe Ambrosi)
31. Economics of Mitigation and Adaptation (Michael Hanemann)
32. Carbon Taxes, Trading, and Offsets (Danny Cullenward)
33. On the cost of reducing CO₂ emissions (Christian Azar)
34. Climate policy – Cost-efficiency versus political feasibility (Christian Azar)
35. Integrated Assessment Modeling of Climate Change (Hans-Martin Füssel and Michael D. Mastrandrea)

Cross-cutting Issues

36. Population, Climate Change, and Emissions (Frederick A.B. Meyerson)
37. Inequities and Imbalances in the Climate Arena (Ambuj Sagar and Paul Baer)
38. Ethics, Rights, and Responsibilities in Climate Change (Paul Baer and Ambuj Sagar)
39. Global Climate Change in the U.S. Mass Media (Aaron M. McCright and Rachael L. Shwom)

40. Carbonundrums: Making Sense of Media Influence in Climate Science and Policy
(Maxwell T. Boykoff)
41. Climate and the Media (Dale Willman)
42. Climate Change Risk Perceptions and Behavior in the United States (Anthony
Leiserowitz)

FIELD REPORT DUE ON VISITED COUNTRIES' CLIMATE CHANGE MITIGATION AND ADAPTATION POLICIES

Mitigation and Offset Options

43. Energy Efficiency in California and the United States: Reducing Energy Costs and
Greenhouse Gas Emissions (Audrey B. Chang, Arthur H. Rosenfeld, and Patrick K.
McAuliffe)
44. Renewable Energy for Decarbonization (Daniel M. Kammen)
45. Designing Energy Supply Chains Based on Hydrogen (Whitney Colella)
46. Nuclear Energy: Current Status and Future Prospects (Burton Richter)
47. Coal Capture and Storage (David Hawkins)
48. Tropical Forests in Mitigating Climate Change (Philip M. Fearnside)
49. Engineering the Planet (David W. Keith)

FINAL EXAM

FIELD COMPONENT

Each student is required to complete THREE practica (either faculty directed or independent). At least TWO of these should be faculty-directed field trips led by me or lectures organized by me in Cape Town, Chennai, Vietnam or Hong Kong. They are central to the material covered in this class. The third can be an independent practicum designed by you and approved by me, and based on information gathered in at least four countries on our itinerary. Each student will prepare three reports of 1000 words each explaining what she/he learned in each practicum about the science and/or politics of climate change.

SUGGESTED PRACTICA:

SOUTH AFRICA: Climate and Change Environmental Scientist (FDP)
INDIA: Swaminathan Research Foundation (FDP); Consumer Action Group (FDP)
HONG KONG: Environmental Attitudes and Values in China (FDP)

METHODS OF EVALUATION

Attendance and discussion participation – 20%

paper at end of week seven -- 20%

midterm – 20%

field report – 20%

final exam – 20%

REQUIRED TEXT

No text required for purchase. Materials will be uploaded to the ship's intranet.