

PA 461 – Global Climate Change: Integrating Science, Policy, and Decision Making Fall 2008

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Class sessions: 12:30-1:45pm, TTH, 115 Harvill
Office hours: 2:00-3:00pm, TTH

Course Description

Global climate change is widely considered the greatest threat confronting societies and governments today. Over the last decade a consensus has developed among natural and physical scientists over the likely causes global climate change. Businesses, governments, and citizens have begun to respond by developing a variety of strategies, policies, and institutional arrangements designed to reduce human contributions to climate change and promote adaptation to the environmental impacts that are beginning to emerge. These “policy” responses are truly diverse in form and scale, from voluntary carbon markets and business certification programs, to command and control type regulations, to international treaties.

Given the breadth of issues and the complexities raised by global climate change, this course will cover a variety of topics, including 1) the scientific evidence and uncertainties of climate change, 2) the roles of science in policy and decision making, 3) the major policy options available to address climate change and their ethical implications; 4) the responses of international organizations, countries, and businesses to climate change; and 5) the reluctance of the US to actively participate in climate change initiatives and the efforts on the part of US citizens, localities, states, and businesses to nevertheless respond.

By the end of the course students should have a comprehensive, interdisciplinary understanding of the major issues surrounding global climate change and a working knowledge of concepts and theories relevant to policy and decision making.

Course Requirements

Attendance and Participation (10% of course grade): You are expected to attend every class session prepared to participate (you know the topic that will be covered and you have at least looked over the assigned readings). Attendance will be taken each class period. You are allowed two excused absences.

Exams (51% of course grade): You must take three short answer exams. Each exam is worth 17% of the course grade. By short answer, I mean 1-4 sentence answers depending on the question. I use the exams as a means of testing your understanding of course readings and guest speakers. I do not give makeup exams; however, if you know well in advance that you have another commitment on the date of an exam I will allow you to take the exam early.

Position Statements (24% of course grade): You will write two position statements. Each position statement is worth 12% of the course grade. Position statements argue a particular point of view in relation to a specific topic. For instance, we will examine the different conceptions of fairness that developed and developing countries hold. You will be assigned a country and asked to write a one page statement on your country's approach to what is fair when it comes to actions around climate change. The position statements will be used for in class discussions on the topic. I will provide you with a list of topics, instructions, and due dates early in the semester

Final Project (15% of course grade): You must complete a final project that will be due at the end of the semester. You may choose one of two options.

Option A:

Critical book review: You will write a 3-4 page analysis of a book of your choosing on global climate change. By critical, I mean that you provide a brief summary of the book, the book's strengths and weaknesses, and how it compares to other books and articles on climate change. I will provide you with a list of books to choose from, instructions on how to write a critical book review, and an example.

Option B:

Reducing your own (or your family's) greenhouse gas emissions: You will write a 3-4 page research based analysis of the effectiveness and cost of different options, from various technologies to lifestyle changes, for reducing your current greenhouse gas emissions by 30% over the next five years. The first research step is to determine your greenhouse gas emissions. The Environmental Protection Agency (EPA) has a nice "personal emissions calculator" at http://www.epa.gov/climatechange/emissions/ind_calculator.html. Next you must research different options for reducing your emissions, including their costs and benefits, and use this information to develop a couple of "baskets" of options that you believe are most feasible. I will provide you with specific instructions on content and format.

Turnitin.com. Position statements and the final project must be submitted to turnitin.com. I will not accept assignments unless they are first submitted to turnitin.com. I will provide you with specific instructions on how to submit papers to turnitin.com.

In summary, attendance constitutes 10% of the course grade; exams constitute 45% of the course grade; the position statements constitute 30%; and the critical book review/research paper constitutes 15%. I use a standard grading scale: A=90-100; B=80-89; C=70-79; D=60-69; and an E=grade<60.

Basic Class Rules

I will hold you accountable for abiding by the University's Student Code of Conduct (<http://dos.web.arizona.edu/uapolicies/scc5308f.html>). Bottom line – I do not tolerate cheating or academic misconduct.

To do well in the class, you must attend. I will take daily attendance and use it to determine the 10% of your final course grade.

You are welcome to bring a computer to class to take notes. You are not welcome to bring a computer to class to surf the web, watch movies, make travel arrangements, check your email, etc. If you use your computer for other than class purposes I will ask you to put it away or to leave the class. If you bring a computer to class you must sit in the front row.

Important Dates

Last day to drop without a W	September 19
Last day to drop with a W	October 17
Exam One	September 25
Exam Two	October 28
Exam Three	December 4
Position Statement 1	October 21
Position Statement 2	November 13
Book review/research paper	December 9

Required Readings

The following required texts are available in the bookstore:

Elizabeth Kolbert. 2006. Field Notes from a Catastrophe: Man, Nature, and Climate Change. New York: Bloomsbury Publishing.

Andrew Dessler and Edward Parson. 2006. The Science and Politics of Global Climate Change: A Guide to the Debate. Cambridge: Cambridge University Press.

Additional readings are available through the library's electronic reserve system. The password for the readings is climatechange. You may access electronic reserves using the following url: <http://eres.library.arizona.edu>

Course Schedule

Part I: The Science of Global Climate Change

August 26 – Introduction

Reading:

Naomi Oreskes. 2007. “The Scientific Consensus on Global Climate Change: How Do We Know We Are Not Wrong?” in Climate Change: What it Means for Us, Our Children, and Our Grandchildren. Edited by Joseph DiMento and Pamela Doughman. Cambridge, MA: MIT Press, pp. 65-99. (ELECTRONIC RESERVE)

August 28 – NO CLASS

September 2 -- Weather, climate, and climate history

Guest Speaker: Dr. Steve Leavitt, Professor of Dendrochronology
Home page: <http://www.ltrr.arizona.edu/~sleavitt/>

Readings:

Dessler and Parsons, Chapter 1 “Global Climate Change: A New Type of Environmental Problem”

Richard Kerr. 2007. “Global Warming is Changing the World” *Science* 316:188-190. (ELECTRONIC RESERVE)

September 4 – Glaciers/ice caps and the role of oceans

Guest Speaker: Dr. Julie Cole, Professor of Geosciences
Homepage: <http://www.geo.arizona.edu/ClimateChange/>

Readings:

Kolbert, chapter 1 “Shishmaref, Alaska”, Chapter 2 “A Warmer Sky” and Chapter 3 “Under the Glacier”

September 9 – Climate Change and Ecosystem Impacts

Guest Speaker: Dr. David Breshears, Professor of Watershed Resources in the School of Natural Resources
Homepage:
[http://www.ag.arizona.edu/cgi-in/srnr/facinfo.pl?LAST=Breshears&FIRST=David%20D.](http://www.ag.arizona.edu/cgi-in/srnr/facinfo.pl?LAST=Breshears&FIRST=David%20D)

Readings:

Synthesis Report of the IPCC Fourth Assessment Report – Summary for Policy Makers, Section 1 Observed Changes in Climate and their Effects, pp. 1-3. (ELECTRONIC RESERVE)

Optional (which means you are not required to read it for class):

The First State of the Carbon Cycle Report, Executive Summary (ELECTRONIC RESERVES)

September 11 – Climate Change Effects on the Abundance and Distribution of Plants and Animals

Guest Speaker: Dr. Brian McGill, Professor

Readings:

Kolbert, Chapter 4 “The Butterfly and the Toad”

September 16 – Predictions/Impacts for the American Southwest

Readings:

D.P. Lettenmeier. 2008. “Water Resources”. In U.S. Climate Change Program. Synthesis and Assessment Product 4.3: The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity. (ELECTRONIC RESERVE)

September 18 -- Drivers of global climate change

Readings:

Kevin Baumert, Timothy Herzog, Jonathan Pershing. 2005. Navigating the Numbers, World Resources Institute. Chapter 1, pp.4-6 (broad overview); chapters 2 & 3, pp.11-18 (emissions, trends, projections); chapter 6, pp. 31-33 (cumulative emissions); chapter 10, pp. 53-58 (sectoral approach); chapter 12, p. 67 (aviation); chapter 17, p. 91-93 (land use change and forestry)

<http://www.wri.org/publication/navigating-the-numbers#> (also available on ELECTRONIC RESERVE)

Dessler and Parson, chapter 3 “Climate Change: Present Scientific Knowledge and Uncertainties”

September 23 -- Modeling Climate Change and Future Scenarios

Readings:

IPCC Special Report. 2000. Emissions Scenarios Summary for Policy Makers, only read pp. 3-11. (ELECTRONIC RESERVE)

Synthesis Report of the IPCC Fourth Assessment Report – Summary for Policy Makers, Section 2 Causes of Change, pp. 4-6; and Section 3 Projected Climate Change and Its Impacts, pp. 6-13. (ELECTRONIC RESERVE)

September 25 – First Exam

Part II: Politics and Ethics

September 30 – Science in Politics

Readings:

Dessler & Parson, chapter 2 “Science, Politics, and Science in Politics”

Kolbert, chapter 8 “The Day After Kyoto”

Mooney, Chris. 2005. “Bush League Science” in The Republican War on Science. New York: Basic Books. (ELECTRONIC RESERVE)

October 2 – Politics and Scientific Uncertainty

Union of Concerned Scientists. 2007. Smoke, Mirrors & Hot Air, pp. 9-24.
http://www.ucsusa.org/assets/documents/global_warming/exxon_report.pdf

Dressler and Parson, chapter 5 “The Present Impasse and Steps Forward”

October 7 – Science and the Press

Becker, Marcus (Winter 2005). “Accepting Global Warming As Fact” Neiman Reports, pp. 97-98.
<http://www.nieman.harvard.edu/reports/05-4NRwinter/Becker-NRw05.pdf>

Russell, Cristine (2008) “Climate Change: Now What?” Columbia Journalism Review, pp.45-49.

October 9 – Climate as a Public Good

Meet in Economic Sciences Lab, McClelland Hall

Readings:

October 14 – Climate and equity

Readings:

John Ashton and Xueman Wang. 2003. “Equity and Climate: In Principle and Practice” in *Beyond Kyoto: Advancing the International Effort Against Climate Change*. Edited by Joseph Aldy, et al. Pew Center on Global Climate Change, pp. 61-84. Read only pp. 61-75.

<http://www.pewclimate.org/docUploads/Equity%20and%20Climate%20Epdf> (OR ELECTRONIC RESERVE)

John Broome (June 2008) “The Ethics of Climate Change” *Scientific American* 298(6): 96-102.

<http://ezproxy.library.arizona.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=31996809&site=ehost-live>
(ELECTRONIC RESERVE)

Recommended Reading (meaning you do not have to read this for class, but you may find it interesting):

Robert Timmons and Bradley Parks. 2006. “Introduction: Wet Feet Marching” in *A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy*. MIT Press, pp. 1 – 24. (ELECTRONIC RESERVE)

October 16 – What is fair?

Readings:

Paul Baer, et al. 2000. “Equity and Greenhouse Gas Responsibility” *Science* 289:2287. (ELECTRONIC RESERVE)

Arthur Westing, et al. 2001. “Atmospheric Ethics” *Science* 291:827-828. (ELECTRONIC RESERVE)

Herman Ott. 1998. “Kyoto Protocol: Unfinished Business” *Environment* (July/August) 40(6):17-45. (ELECTRONIC RESERVE)

October 21, 23 – Mitigating Climate Change: the use of markets

Readings:

Dessler & Parson, chapter 4 “The Climate-Change Policy Debate: Impacts and Potential Responses”

Cameron Hepburn. 2007. "Carbon Trading: A Review of the Kyoto Mechanisms" Annual Review of Environment and Resources 32:375-393 (ELECTRONIC RESERVE)

Recommended Reading (meaning you do not have to read this for class, but you may find it interesting):

David Doniger (November 3, 2006). "An Ambitious Centrist Approach to Global Climate Change Legislation" Science 314:764-765. (ELECTRONIC RESERVE)

Bingamon/Specter "Low Carbon Economy Act"
http://energy.senate.gov/public/_files/LowCarbonEconomyActTwoPager0.pdf

October 28 – EXAM TWO

October 30, November 4 – Mitigating Climate Change: the use of technology

Readings:

Robert Sokolow and Stephen Pacala. (Sept. 2006) "A Plan to Keep Carbon in Check" Scientific American 295(3):50-57.
<http://ezproxy.library.arizona.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=21847999&site=ehost-live>

Roger Pielke, et al. 2008. "Dangerous Assumptions" Nature 452 (3): 531-532 (ELECTRONIC RESERVE)

U.S. Climate Action Partnership. 2007. "A Call For Action" <http://www.us-cap.org/>

November 6 – Adapting to Climate Change

Readings:

United Nations-SigmaXI Scientific Expert Group on Climate Change. February 2007. "Chapter Three: Adaptation to Climate Change" in Confronting Climate Change: Avoiding the Unmanageable, Managing the Unavoidable. Report Prepared for the United Nations Commission on Sustainable Development, pp. 81-115. (ELECTRONIC RESERVE)

Synthesis Report of the IPCC Fourth Assessment Report – Summary for Policy Makers, Section 4 Adaptation and Mitigation Options, pp. 14-19. (ELECTRONIC RESERVE)

Kolbert, chapter 5 "The Curse of Akkad", chapter 6 "Floating Houses", chapter 7 "Business as Usual"

Part III – International, Regional and Local Responses

November 13 – Beyond Kyoto

Readings:

Robert Stavins (December 2004) “Forging A More Effective Global Climate Treaty” Environment 46(10):23-30. (ELECTRONIC RESERVE)

Peter Kristof. 2006. “Post Kyoto? Post Bush? Towards An Effective ‘Climate Coalition of the Willing’” International Affairs 8(5): 831-860. (ELECTRONIC RESERVE)

Gwyn Prins and Steve Raynor. 2007. “Time to Ditch Kyoto” Nature 973-975. (ELECTRONIC RESERVE)

Optional Readings:

Aynsley Kellow. 2006. “A New Process for Negotiating Multilateral Environmental Agreements? The Asia-Pacific Climate Partnership beyond Kyoto” Australian Journal of International Affairs 60(2):287-303. (ELECTRONIC RESERVE)

Asia Pacific Partnership on Clean Development and Climate
<http://www.asiapacificpartnership.org/>, read home page and about

The European Climate Change Programme 2006. (ELECTRONIC RESERVE)

November 18 – Federal Agencies and Climate Change

Guest Speaker: Professor Helen Ingram, Professor, UC – Irvine

Readings:
TBA

November 20 – US States versus the EPA

Guest Speaker: Professor Kirsten Engel, Rogers College of Law, and Co-Director of the Program in Law, Economics, and the Environment

Readings:

Pamela Doughman. 2007. “California’s Climate Change Policy: Raising the Bar” Environment 49(7):34-43 (ELECTRONIC RESERVE)

November 25 -- US states

Readings:

Barry Rabe. 2007. "Beyond Kyoto: Climate Change Policy in Multi-level Governance Systems" Governance 20(3):423-444 (ELECTRONIC RESERVE)

Barry Rabe. 2006. "Race to the Top: The Expanding Role of U.S. State Renewable Portfolio Standards". Prepared for the Pew Center on Global Climate Change. (ELECTRONIC RESERVE)

Regional Greenhouse Gas Initiative: An Initiative of the Northeast & Mid-Atlantic U.S. States www.rggi.org

Western Climate Initiative www.westernclimateinitiative.org

November 27 – NO CLASS – THANKSGIVING

December 2 – Carbon Offsets

Guest Speaker: Dr. Joe Abraham, Institute for the Study of Planet Earth

Readings:

Native Energy <http://www.nativeenergy.com/pages/home/1.php>

Joshua Gans. October 2007. "Do Voluntary Carbon Offsets Work?" Economists' Voice, pp. 1-4. (ELECTRONIC RESERVE)

Chicago Climate Exchange <http://www.chicagoclimatex.com/>

Rhonda Sherman. (September 2006). "Trading Carbon Credits for Methane Recovery" Biocycle, pp. 55-58 (ELECTRONIC RESERVE)

December 4 –Exam Three

December 9 -- Voluntary Efforts by Corporations and Citizens

Adam Aston, et al. 2005. "The Race Against Climate Change" Business Week (ELECTRONIC RESERVE)

Kolbert chapter 9 "Burlington, Vermont", chapter 10 "Man in the Anthropocene"