

Syllabus for

Global Climate Change

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May 24 – June 10, 2011
Cyprus International Institute
CUT, Limassol, Cyprus

<http://Cyprus-Institute.us/syllabus>

Course Description

This introductory course will give students an integrated overview of the science of climate change and an analysis of the implications of this change for patterns of daily life in their own circumstance and around the world.

Humankind is facing an unprecedented environmental crisis of global proportions. Scientists from across the world have issued stark warnings about the potential disruption and destabilization that changes in Earth's climate will most likely cause in the near future for the life systems upon which modern civilization depends. The social and political implications of climate change have begun to become apparent as local communities in widely different parts of the world struggle to adapt to new patterns of excessive rainfall, prolonged droughts and severe weather events. Internationally, nation states have endeavored to forge diplomatic agreements to help humankind cope with both the causes and consequences of global climate change.

This course has three principal objectives. First, it will introduce students to the science of climate change, drawing attention to the latest research and evolving pattern of scientific data that has emerged on climate in recent years. Second, emphasis will be given to analyzing the social changes and adaptations that human communities have already made and those they will most likely to have to make as the Earth's climate continues to change in the coming years. Finally, specific attention will be given to the diplomatic efforts that have been launched since the creation of the Framework Convention on Climate Change (FCCC) during the first world-wide Earth Summit on the environment in Rio de Janeiro in June of 1992.

Abbreviated List of Class Topics to be Covered: –

- L1 – May 24, 2011, 5:30 – 7:30 pm
Introduction and Overview: Climate Change in the Past and Future World
- L2 – May 25, 2011, 5:30 – 7:30 pm
The Science of Climate History & The History of Climate Science
- L3 – May 26, 2011, 5:30 – 7:30 pm
The Social Perception (and Misperception) of Scientific Knowledge
- L4 – May 27, 2011, 5:30 – 7:30 pm
The Organization and Evolution of the IPCC Scientific Review Process
Written Quiz – based on Sessions 1-4 – The Basics of global climate change and the institutional response to it. Short essay answers – 1 hour.
- L5 – May 30, 2011, 5:30 – 7:30 pm
"Northern" and "Southern" Perspectives on Global Climate Changes
- L6 – May 31, 2011, 5:30 – 7:30 pm
Monitoring the Ongoing Climate Evidence and Debates
- L7 – June 1, 2011, 5:30 – 7:30 pm
The Global Backlash to Climate Change Science
- L8 – June 2, 2011, 5:30 – 7:30 pm
The Cryosphere and Polar Transformations: Global Implications for Sea Level and Abrupt Climate Change
- L9 – June 3, 2011, 5:30 -7:30 pm
The Environmental Impact of Climate Change - Global and Local Water Issues
– 2nd Written Quiz – based on Sessions 5-9
+
“First draft” –selection/discussion of individual research topics (with VoiceThread or PowerPoint, etc and Google Earth locations)
- L10 – June 6, 2011, 5:30 -7:30 pm
Climate Change and the Evolution of Global Agriculture
- L11 – June 7, 2011, 5:30 – 7:30 pm
Climate Change and Environmental Justice Concerns
- L12 – June 8, 2011, 5:30 – 7:30 pm
Climate Change: Emerging Concerns for Public Health
- L13 – June 9, 2011, 5:30 – 7:30 pm
Localized Climate Changes: The Middle East & the Mediterranean
- L14 – June 10, 2011, 5:30 – 7:30 pm
Adaptation Strategies & Alternatives to a Carbon-Fueled Future
Final Quiz – 1 hour exam
+ Final presentations and posting of research project in VoiceThread and Google Earth.
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Course Assessments and Grading

Student performance in the course will be measured as a function of the **three (3) hour quizzes** administered as part of the course, **each counting approximately 20%** of the final grade. Approximate quiz dates indicated in **Red** above. In addition, students will each undertake **a short research paper (5 to 10 pages)** and a class presentation of their research work. The **presentation will count for approximately 10%** and the **research paper itself for 30%** of the final grade.

Description of Class Sessions with Assigned Reading

L1 May 24, 2011, 5:30-7:30pm

Introduction and Overview: Climate Change in the Past and Future World

The climate of planet earth has been changing ever since its emergence as a planet in our solar system over four billion years ago. Many of these climates have been strikingly different from our own and totally unsurvivable by humans or any other mammal species. The forces driving the changes in Earth's climate have been both endogenous and exogenous over geological time. In recent history, since the onset of the industrial revolution (with its intensified use of fossil fuels), human behavior has become a major forcing factor in transforming the relatively stable climate of the Holocene into the climate of the Anthropocene. In this first class the basic geological concepts involved in Earth's changing climate are introduced and discussed.

L2 – May 25, 2011, 5:30 – 7:30 pm

The Science of Climate History & The History of Climate Science

Learning about the ever changing and variable climate of Earth has involved a long history in the evolution of modern science itself. Observations, theories and experiments involving many different, independent and quite often seemingly unrelated elements have lead to an increasingly sophisticated science of climate change. Milestones in the history of climate science are presented and discussed.

Assigned reading:

William R. Moomaw

1989 ["In Search of the Greenhouse Fingerprint,"](#) Orion: Nature Quarterly, (Winter, 1989), pp. 4-11.

L3 – May 26, 2011, 5:30 – 7:30 pm

The Social Perception (and Misperception) of Scientific Knowledge

Scientific discoveries are only rarely accepted by the entire population within which the scientists have been working, and often they are vehemently opposed by those who feel threatened by the information and rejected by a public that is confused. This is complicated by the fact that in authoritarian societies climate science information is often explicitly restricted and controlled, whereas in market-integrated societies the imperatives of "selling" through the media often obscure the nature of chronic, enduring and systemic problems because they lack immediate market solutions.

Assigned reading:

Timothy C. Weiskel

2005 ["From Sidekick to Sideshow—Celebrity, Entertainment, and the Politics of Distraction Why Americans Are 'Sleepwalking Toward the End of the Earth,'"](#) American Behavioral Scientist, 49, 3, (November 2005), pp. 393-409.

L4 – May 27, 2011, 5:30 – 7:30 pm

The Organization and Evolution of the IPCC Scientific Review Process

To overcome the blockages in delivering the findings of scientists to the public and to policymakers, the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) convened the Inter-Governmental Panel on Climate Change in 1988. This mechanism will be discussed and its operating principles will be explained in class. Specific attention will be given to the unprecedented nature of this institution and to its considerable strengths as well as its inherent weaknesses.

Assigned reading:

Intergovernmental Panel on Climate Change

1991-2007 IPCC [Publications & Data](#). Please access these reports and be prepared to discuss the process of their production.

Timothy C. Weiskel, [*"Speaking Truth to Power: The IPCC 4th Assessment Summary Reports and the Climate News the Public Needs To Hear."*](#)

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Please consult and review the selected [Search Engines & Climate News Portals](#) in preparation for class discussion.

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[*Written Quiz – based on Sessions 1-4 – The Basics of global climate change and the institutional response to it. Short essay answers – 1 hour.*](#)

L5 - May 30, 2011, 5:30 – 7:30 pm

"Northern" and "Southern" Perspectives on Global Climate Change

Because of their different histories in using carbon fuels it has become evident that the global “North” (or developed countries) have a different perception and differing set of proposed solutions to cut the use of green-house gases (GHGs) than that proposed by the developing countries in the “Global South”. The most striking differences will be presented and discussed in this class, focusing on the international negotiations that have taken place in Bali, Copenhagen and Cancun.

Assigned reading:

Lucia Green-Weiskel [*"Climate Clash in Cancún,"*](#) The Nation, (16 December 2010).

and

Vandana Shiva, [*"Environmental Activist Questions the Goals of Globalization,"*](#) PBS Newshour, (1 January 2008).

L6 – May 31, 2011, 5:30 – 7:30 pm

Monitoring the Ongoing Climate Evidence and Debates

Because of the different assessments of the origins and impact of the growing climate crisis, the problem of how the public and policymakers can obtain reliable ongoing evidence is a very real one. This class will be devoted to identifying the continuing sources of reliable data and commentary that you will need to conduct your research projects and continue to keep abreast of the emerging climate and public health issues in the years to come. The relative virtues and limitations of these source materials will be discussed in class.

Assigned reading:

Please consult and review the selected [Search Engines & Climate News Portals](#) in preparation for class discussion.

L7 – June 1, 2011, 5:30 – 7:30 pm

The Global Backlash to Climate Change Science

The challenge of limiting global GHG emissions has proved to be a threatening prospect to many societies still “addicted” to the use of fossil fuels. As a result a movement of climate change “skeptics” on the one hand and “climate change deniers” has developed – at least on the “astro-turf” level, if not the “grassroots” level – in many parts of the world. This class will

discuss the difference between climate skeptics and climate change deniers and the global phenomenon of the “politics of denial” and the prospect of blocking meaningful international initiatives to limit GHGs

Assigned reading:

["Koch brothers now at heart of GOP power,"](#) *The Los Angeles Times*, (6 February 2011).
and

Jane Mayer, ["Covert Operations: The billionaire brothers who are waging a war against Obama \[P 3\],"](#) *The New Yorker*, (30 August 2010).

L8 – June 2, 2011, 5:30 – 7:30 pm

The Cryosphere and Polar Transformations: Global Implications for Sea Level and Abrupt Climate Change

Meanwhile, while humans keep arguing, the arctic (and the Antarctic) keep on melting. This class will draw upon the increasing evidence coming in from various international circum-polar surveys by scientists and citizens of the arctic. The class will review the concerns of scientists that changes in the arctic could lead to a modification of the thermohaline circulation system in the North Atlantic, triggering a phase of abrupt climate change in many heavily populated regions of the world.

Assigned reading:

Please read and be prepared to discuss the [Arctic Climate Impact Assessment \(ACIA\)](#)

L9 – June 3, 2011, 5:30 -7:30 pm

The Environmental Impact of Climate Change - Global and Local Water Issues

As the heat budget of Earth's ecosystem changes scientists have pointed out that the availability and distribution of water will change as well. Predictions of something as complex as climate cannot be very precise, nevertheless the expectation is that in the coming decades dry areas will become yet more dry and wet areas will experience increased precipitation, both in over all volume and severity of particular weather events. This could be disastrous for the ways in which human settlements are currently distributed around the globe. Concepts of “embedded water,” drought stressed populations and “water refugees” will be discussed.

Assigned Reading:

Vorosmarty, Charles J., et al. ["Global Water Resources: Vulnerability from Climate Change and Population Growth,"](#) *Science*, 289 (5477), (14 July 2000) 284-288.

and

Vorosmarty, C. J., et al. ["Global threats to human water security and river biodiversity,"](#) *Nature*, 467 (7315), (29 September 2010) 555-561.

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[2nd Written Quiz – based on Sessions 5-9 – 1 hour.](#)

L10 – June 6, 2011, 5:30 -7:30 pm

Climate Change and the Evolution of Global Agriculture

As water is distributed in new and unforeseen patterns within the global ecosystem, agricultural production will be altered on a world-wide scale. Prolonged droughts and tragic floods may compromise food production for hundreds of millions of people at the same time that some of the world's agricultural production will be increasingly devoted to growing bio-fuel crops. Resulting food shortages may lead to repeated patterns of food-“price spikes” and local instability, fueled by hoarding and food futures speculation in market-dominated economies. These foreseeable impacts of climate change will be discussed in class with examples of the patterns unfolding on a global scale.

Assigned reading & listening:

Lester Brown, ["Food: The Hidden Driver Of Global Politics,"](#) NPR - Fresh Air, (18 May 2011).
and
Lester Brown, ["The New Geopolitics of Food,"](#) Foreign Policy, (May/June, 2011).

L11 – June 7, 2011, 5:30 – 7:30 pm

Climate Change and Environmental Justice Concerns

Escalating food, income and wealth disparities in the face of the climate change impacts that have already been registered around the world is likely to increase a broad mood of frustration and outrage in countries of the “Global South” as well as among disadvantaged populations within the “Global North.” This class will review recent calls for “climate justice” and consider how this framework for considering the anticipated patterns of human suffering might lead to specific policies to accommodate declining food productivity *per capita*, U.N. development goals, plans for relocating climate refugees, etc. Particular attention will be given in this class to the role of NGOs from the global south and their emerging role in addressing climate issues.

Assigned reading:

["Back from Copenhagen: Moving Climate Justice Forward,"](#) National Radio Project, (16 March 2010).

L12 – June 8, 2011, 5:30 – 7:30 pm

Climate Change: Emerging Concerns for Public Health

As climate refugees in increasing numbers are displaced both regionally and globally and as food supplies are interrupted and fresh water supplies compromised, scientists and policymakers around the world are anticipating an increasing challenges to the maintenance of public health. In many regions of the world the public health infrastructure is already compromised. In the future as vector species shift their ranges and waterborne diseases quickly spread in the wake of extreme weather events, humanitarian health crises involving the outbreak of both new (e.g. bird flu) and resurgent (Cholera) diseases are likely to become more wide-spread. Public health officials will be turned to for emergency response and longer-term policy advice. This session will focus on some of the patterns that any student of public health will need to know and learn how to respond to in their respective fields of research and professional work.

Assigned reading:

Paul Epstein, ["Is Global Warming Harmful to Health?,"](#) Scientific American, (20 August 2000).

Paul Epstein, ["Links Between Illness and Global Warming?,"](#) NPR - WHYY - Fresh Air, (26 June 2006)

Center for Health and the Global Environment, [Healthy Solutions for the Low Carbon Economy: Guidelines for Investors, Insurers and Policy Makers](#) (The Center for Health and the Global Environment, Harvard Medical School, July 2008). [Support documentation.]

Interagency Working Group on Climate Change and Health (IWGCCCH), [A Human Health Perspective On Climate Change](#), (Washington, D.C., Environmental Health Perspectives and the National Institute of Environmental Health Sciences, 20 April 2010). (IWGCCCH)
and

Recommended Reading:

Paul Epstein, [Changing Planet, Changing Health: How the Climate Crisis Threatens Our Health and What We Can Do about It](#) (Berkeley, CA, University of California Press, 2011) (published 4 April 2011). [Book announcement](#).

L13 – June 9, 2011, 5:30 – 7:30 pm

Localized Climate Changes: The Middle East & the Mediterranean

While it is vital for public health officials to understand global trends that are becoming apparent from changes in climate, it is crucial as well that they learn how to perceive, monitor and respond to the localized manifestations of these global trends. In Cyprus – and more broadly in the Eastern Mediterranean, North Africa and the Middle East – certain troubling trends are underway. This class will be devoted to examining some of these major trends and equipping students with the means to continue to monitor these developments in the future in relation to their roles as public health professionals.

Assigned reading:

Oli Brown and Alec Crawford, [*Rising Temperatures, Rising Tensions: Climate change and the risk of violent conflict in the Middle East*](#), (Winnipeg, Manitoba, Canada, International Institute for Sustainable Development, 2009).

and

[*Some Basic Information Sources on Cyprus, Climate and Public Health Issues*](#). Please review these and be prepared to discuss them in class.

L14 – June 10, 2011, 5:30 – 7:30 pm

Adaptation Strategies & Alternatives to a Carbon-Fueled Future

Given the scale and scope of the emerging global climate change issues, scientists and engineers are beginning to discuss how the human community might best deploy the latest in technology to arrest and perhaps reverse the build-up of further GHGs in the atmosphere. Some of these general plans and specific proposed schemes for “geo-engineering” will be presented and discussed in this final class session.

Assigned reading:

Paul Crutzen and Christian Schwägerl [*"Living in the Anthropocene: Toward a New Global Ethos,"*](#) Yale360, (24 Jan 2011).

and

Jeff Goodell, [*"Authors@Google: Jeff Goodell,"*](#) YouTube - AtGoogleTalks, (16 November 2010).

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[*Final Quiz – 1 hour exam*](#)

+ Final presentations and posting of research project [in VoiceThread](#) and Google Earth.

Reading Material

The assigned readings will be drawn from, but not limited to the articles, texts, interviews, video lectures and reports linked above in the detailed class session descriptions above.