About this course

The aim of the module is to provide students with the knowledge and skills necessary to explore the opportunities for and responsibilities of citizens with respect to science-based decision-making processes of global significance. Particular reference will be made to global climate change debates.

Global climate change is the defining issue of our age. Policies that affect all communities in the world are made, and challenged, on the basis of scientific knowledge. Global climate change provides an ideal case study to explore the contribution and tensions of science in global political arenas. If we are all members of a global community then who should have a strong voice in decisions that affect that community, and how should these and other voices be heard? What are our rights and obligations as global citizens? Scientists can speak authoritatively on important global phenomena, but how should and how does scientific advice on global issues relate to broader political processes? Are scientists model global citizens, or are other models of citizenship just as, or more, pertinent? This course explores such questions, with special reference to global climate change.

By the end of this course you should possess:

- Knowledge of the history of the debate on anthropogenic climate change, with special reference to the roles of scientists and scientific advice
- Understanding of the routes to political engagement with respect to science-based decision making
- Skills, drawing from core STS literature, necessary to interpret science-based decision making in social and political contexts
- Citizen skills in written and spoken communication
- Citizen skills in relating personal experience to the ideas, tools and values of academic research
- Citizen skills in the recognition, collection and analysis of research materials
- Citizen skills in argumentation, listening and constructive dialogue
- Skills in advocacy and public communication
About the Science and Technology Studies (STS) Department

You are advised to familiarise yourself with the departmental Student Handbook and consult them on all procedural matters. The notes are available on the departmental web-site at http://www.ucl.ac.uk/sts/

Lectures

Lectures will take place on Tuesdays 10-11am (in Malet Place Eng 1.04) and Fridays 11-12 (Taviton 433) or 12-1pm (Foster Court 220).

Reading:

The notes that you take in lectures will not be detailed enough to understand a topic or to write an essay on that topic. It is therefore essential that you make use of the reading lists. In essays you are expected read widely and to use (and make reference to) material in addition to that labelled essential reading. You may use material that is not on the reading list but use all readings critically - you don’t necessarily have to agree with everything you read.

The readings in this booklet are divided into three categories:

- **Seminar Reading**: This is reading that you MUST have read by the time of the seminar. You should bring notes on the reading and be ready to discuss.

- **Essential Examinable Reading**: This is reading you MUST read before the exam. It contains material we will assume you are familiar with when answering examination questions. You will also want to read a particular week’s literature if you have chosen to answer that question in an essay.

- **Additional Reading for Essays**: This is reading you MIGHT choose to read in planning or writing your essays.

Where to find the reading material

No one text covers this course. Most of the required and optional reading material is kept in the DMS Watson science library. There is also useful material kept in Senate House Library which you can use with a UCL Identity Card.

You are also encouraged to use the internet for research. However make sure you reference the full web address, the site title and date visited. Be critical of what you read. Be very careful of purely descriptive sites, such as Wikipedia – we are looking for analysis and argument in your essays not just re-hashing basic information. Also note that plagiarism, particularly involving internet sources, will be treated as a severe exam irregularity.
**Attendance**

We will meet twice a week. There will be either two lectures or one lecture and seminar each week. Attendance at both is a course requirement. Anyone who misses more than four lectures or seminars will be asked to provide an explanation via their tutor. Anyone who fails to provide an adequate documented explanation may be declared INCOMPLETE for the course.

**Assessment**

Short Essay 1, contributes 30% to final mark, 2000 words

Long Essay 2, contributes 40% to final mark, 3000 words,

Advocacy project, contributes 30% to final mark, 1000 words.

If you are not used to writing essays then you should also read chapter 5 of A. Northedge’s *The Good Study Guide*.

The question to be answered in Short Essay 1 is: ‘Trace the development of the science of global warming in the 20th Century. At what point did the evidence for global warming become strong? At what point did political action become justified and necessary? Justify your answers.’

The question to be answered in the Long Essay 2 is: ‘Writing as a global citizen, choose and assess a specific strategy for either mitigation of climate change or adaptation to climate change’.

The details of the advocacy project will be given in class.

The due dates for the assignment are:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Essay 1</td>
<td>Monday November 7th, 2008</td>
</tr>
<tr>
<td>Long Essay 2</td>
<td>Friday December 12th, 2008</td>
</tr>
<tr>
<td>Advocacy Project</td>
<td>Monday November 17th, 2008</td>
</tr>
</tbody>
</table>

Work should be handed in via the Turn-it-in system, as well as a hard copy to Dr Agar’s pigeonhole; no hard copy essay will be accepted unless accompanied by a completed Course Work Submission Sheet (available from the departmental office). Do not e-mail coursework direct to us without prior permission.

Late essays will be penalized: up to one week late, five points will be deducted; up to two weeks late, eleven points will be deducted; *after two weeks essays will not be marked*.

*Completion of the course requires that coursework assignments be submitted. Any student who has not completed all coursework assignments (abstract and essay) may be refused permission to sit the exam paper.*
## Schedule of Lectures and Seminars

<table>
<thead>
<tr>
<th>Week</th>
<th>Slot One</th>
<th>Slot Two</th>
</tr>
</thead>
</table>
| 1    | Introduction to Course  
      | What is a Citizen? | Discussion of Citizenship and  
      |                          | Climate Change.  
      |                          | Six Degrees |
| 2    | History of Climate Change from First  
      | Thoughts to Cold War | History of Climate Change from  
      |                          | Models to Politics |
| 3    | Comparable Global Debates | Watch: *An Inconvenient Truth* |
| 4    | Types of scientific citizenship  
      | Other Actions modeled on the IPCC:  
      | Agriculture | Reading the IPCC |
| 5    | Skeptics | Watch: *The Great Global Warming  
      |                          | Swindle* |
| 6    | READING WEEK | |
| 7    | Advocacy Project Workshop (1) | Advocacy Project Workshop (2) |
| 8    | Mitigation: From Kyoto to the Stern  
      | Review | Discussion: Carbon Taxes  
      |                          | Calculate your carbon footprint |
| 9    | Techno-fix (1) Carbon Capture and  
      | Storage | Discussion: the Kingsnorth 6 |
| 10   | Techno-fix (2) Extreme Solutions | Discussion: Extreme Solutions |
| 11   | Adaptation: Natural and Human | Advocacy responses |

### General Background Reading

The following are good reference works.


Quite slim and up-to-date, with further reading.


Surprisingly good. Organised by symptoms, science, and solutions.

A four volume collection of essays examining climate change from a social science perspective.

Volume 1: The societal framework; Volume 2: Resources and technology; Volume 3: The tools for policy analysis; Volume 4: What have we learned?


From an economics perspective.


A science textbook approach

The following are popular science/science journalism books


Follows scientists around. Publisher would like this to be *Silent Spring de jours*.


The same text, packaged for different audiences. The first is gaudy pulp non-fiction, the second is restrained and artful.


A nice conceit: what difference does each degree warmer make?


From the Oz scientist and science writer.
Introduction to the course.

What is a citizen? What is a global citizen? What is scientific citizenship? What is scientific global citizenship? What is global citizenship about science?

**Essential Examinable Reading**


Distinguishes between liberal, communitarian, and civic republican perspectives. This is an edited collection of fairly advanced scholarly papers on citizenship, mostly from an STS perspective.

**Background Reading**


Good survey of citizenship

Week 1 Slot 2
(3rd October 2008)
Seminar: Types of Citizenship; Six Degrees of Change

Discussion of types of citizenship as applied to climate change

Let’s Get Scared: Discussion of the Six Degrees

Essential Seminar Reading

Nigel Dower, *An Introduction to Global Citizenship*, Edinburgh: Edinburgh University Press, 2003, pp.3-49. (Made available in Week 1 Slot 1)

Answer the questions Dower poses at the end of each chapter. Note down any thoughts you might have about how citizenship might relate to science in general and climate change science in particular.

One degree each from Mark Lynas, *Six Degrees; Our Future on a Hotter Planet*. London: Harper Perennial, 2007 (Science Library: GEOGRAPHY E 61 LYN)

Lynas is a journalist and science writer. This popular book is a prediction of what the world would be like assuming global warming from one to six degrees.

Background Reading


A sociology of science analysis on how the same degree range survives rapidly changing climate science.
How was it recognised that global climate could change? What were the arguments and theories? How did research programs in the Cold War produce evidence, such as the Keeling Curve. What was the contribution of computers?

Background Reading


This is a good history of global warming from a history of science perspective. The relevant chapters for this week are: ‘Chapter One: How Could Climate Change?’, ‘Chapter Two: Discovering a Possibility’, ‘Chapter Three: A Delicate System’ and ‘Chapter Four: a Visible Threat’


Paper reviewing global climate change from a history of science perspective. Contains more enlightenment discussion than Weart.


Covers the above, but at greater length and depth.

Modelling a complex, delicately balanced system. The emergence of climate change as a political topic. How does scientists portray uncertainty when advising politicians. The lecture will take us up to the Kyoto agreement of 1997.

Background Reading


The relevant chapters for this week are: ‘Chapter Five: Public Warnings’, ‘Chapter Six: the Erratic Beast’, ‘Chapter Seven: Breaking into Politics’ and ‘Chapter Eight: the Discovery Confirmed’


On scientists’ treatment of uncertainty when on the boundary of science and politics.


Continues the boundary organisation analysis.


Review of several recent STS books on modelling, including *Human Choice and Climate Change* by Steve Rayner and Elizabeth L. Malone
Global warming is not the first debate about the global scale that has depended crucially on disputed scientific expertises. In this lecture we look at three other comparable global debates: the explosive arguments of the Population Bomb, the controversy around the claims of the Club of Rome’s *Limits to Growth*, and the effects of CFCs on the ozone layer. What roles did scientists and citizens play in the opening and resolution of these debates?

Essential Examinable Reading


Argues that climate change debate has been framed as science-led and global, which has encouraged technocratic solutions, which may not be the best ones.

Background Reading


This is Ehrlich’s original book.


This is the Club of Rome’s original book.


‘Offers the first comprehensive history of international efforts to protect the ozone layer by abandoning the use of chlorofluorohydrocarbons (CFCs), and underlines that this is the greatest success yet achieved in managing human impacts on the global environment’


If you want some philosophy of science.

Background Reading


The book of the film of the powerpoint presentation


The judge’s ruling in the court case Dimmock v Secretary of State for Education & Skills (10 October 2007) on “errors” in AIT.

http://www.medialens.org/alerts/07/071017_red_herring_al.php

An interesting blog recording and commenting on media presentation of the Dimmock case
Week 4 Slot 1
(21st October 2008)
Lecture: Types of Scientific Citizenship

There are many ways science can be deployed in citizen action. This lecture focuses on three types of scientific citizenship: 1) The individual as scientific citizen activist (for example Rachel Carson) 2) Pressure groups as scientific citizen (for example, how does Greenpeace use science?), and 3) Collective science as scientific citizen, with the model case study of the International Panel on Climate Change. If there is time we will also look at other programs built on the IPCC model.

Background Reading


Biography of Carson.


Some useful analysis of the Brent Spar case.


Insider’s view. Bolin was chair of the IPCC from 1988 to 1997.

Week 4 Slot 2
(24th October 2008)
Reading the IPCC

This seminar discusses the reports of the IPCC.

Essential Seminar Reading


And browse one of the other reports, available either via:
http://www.ipcc.ch/index.htm

or via the Science Library:


Skeptics have challenged the emerging consensus that climate change is real and dangerous. Are they an essential part of the scientific process? Or are they an organised attempt by vested interests to divert attention? Or something else?


Lomborg’s book was published in Danish in the late 1990s and has been challenged ever since.

http://www.mylinkspage.com/lomborg.html

Essential Examinable Reading. Read Lomborg’s Guardian articles (section 2 in the above website), which summarise his views in accessible form. Then read the responses from scientists in section 5. Browse the other reactions.

http://www.grist.org/advice/books/2001/12/12/short/

Lots more links to commentary on Lomborg’s Skeptical Environmentalist, mostly critical.


Lomborg’s latest.


Fred Singer is one of the main climate change sceptic scientists.

Christopher Booker and Richard North, Scared to Death: From BSE to Global Warming – How Scares are Costing Us the Earth, London: Continuum, 2007. (Not in Library: ask JA)

‘Chapter 14: Saving the Planet: Global Warming: the New Secular Religion’ is an epitome of climate change rubbingish.

Exxon is actively resisting conclusions that the climate is changing, while BP Amoco is more open to the idea. Why the difference?


‘Chapter 5: The present impasse and steps forward’ outlines and criticises skeptics’ arguments and evidence.

---

**Week 5 Slot 2**  
(31st October 2008)  
**Film: The Great Global Warming Swindle**

Channel 4 has a history of anti-climate change programming. We will watch Martin Durkin (director), *The Great Global Warming Swindle*, 2007.

**Background Reading**

http://www.greatglobalwarmingswindle.com/

‘Check out the science behind this film’


Traces Channel 4’s ‘shameful history of misleading its viewers on global warming’. See also his op-ed piece ‘Our craving for deception’ which argues that its the fault of the ‘well-off’

---

**Week 6**

**READING WEEK**
Week 7 Slot 1
(11th November 2008)
Advocacy Project Workshop 1

Discussion: Who should the target of your advocacy?

Week 7 Slot 2
(14th November 2008)
Advocacy Project Workshop 2

Workshop: Writing and discussing advocacy.
Week 8 Slot 1
(18th November 2008)
Mitigation: From Kyoto to the Stern Review

The Kyoto Protocol (1997) is an international agreement, an aspect of the United Nations Framework Convention on Climate Change. It sets binding targets for industrialized countries for reducing greenhouse gas emissions. The United States did not ratify the treaty. Challenges to Kyoto. The economist’s view of climate change: the Stern Review.

Essential Examinable Reading


‘Chapter 4: the climate-change policy debate: impacts and potential responses’ reviews different ways of mitigating or adapting to climate change

Background Reading

http://unfccc.int/kyoto_protocol/items/2830.php

The text of the Kyoto protocol can be found here.


How conservative think-tanks turned climate change into a “non-problem”.


Argues that the decarbonisation envisaged by the Kyoto treaty is more likely to provoke political instability than prevent climate change.

Nicholas Stern, The Economics of Climate Change: the Stern Review, Cambridge: Cambridge University Press, 2007. (Science Library: GEOGRAPHY H 72 STE; other copies elsewhere; also online via library catalogue)

Week 8 Slot 2  
(21st November 2008)  
Discussion: Carbon Taxes and Carbon Footprints

Carbon taxes are a policy for getting governments and large companies to respond to climate change. Carbon footprints are a measuring and comparing the impacts of both individuals and organisations.

Essential Seminar Work

http://actonco2.direct.gov.uk/index.html

Calculate your carbon footprint using the UK Government’s Act on CO2 Calculator. Record your thoughts about the process and the conclusions. Use the FAQs to find out what data was used in the calculation.

Background Reading


‘Chapter 15: Carbon Pricing and Emissions: Markets in Practice’

Week 9 Slot 1  
(25th November 2008)  
Technofix (1): Carbon Capture and Storage

Carbon capture and storage (CCS) are technologies whereby carbon dioxide (such as that produced by coal-burning power stations) is captured and stored, often underground. Several fairly experimental projects are already underway.

Background Reading


http://www.co2storage.org.uk/

A UK consortium of researchers, including academics and the British Geological Society.

Greenpeace is sceptical.


‘Chapter 16: Accelerating Technological Innovation’ discusses the economics of R&D in this area.

‘Chapter 17: Beyond Carbon Markets and Technology’ considers some alternative policies


The original Gaia scientist. ‘Chapter Five: Sources of Energy’ argues that a new nuclear program is essential part of any technological fix.

---

**Week 9 Slot 2**  
**28th November 2008**  
**Discussion: the Kingsnorth 6**

In summer 2008 a Camp for Climate Action event was held close to Kingsnorth Power Station near Hoo, Kent. Greenpeace activists protesting against the power station were cleared in a court-case that some see as having implications for further activism.

**Essential Seminar Reading**

‘Climb every chimney…’, ‘Beyond all reasonable doubt’ and ‘If I was E.On or owned an airport, I’d be very, very worried’, *The Guardian*, 12 September 2008

On the Kingsnorth decision. Best way to access them is to go to [www.guardian.co.uk](http://www.guardian.co.uk) and search for ‘Kingsnorth’

**Background Reading**


Bit old, but argues that global warming needs widespread acceptance of new moral values.
Geo-engineering is the deliberate attempt to intervene on a global scale to combat climate change using technological fixes. Are such extreme solutions a necessary emergency policy, or a consequence of precisely the technocratic thinking that has caused the problem in the first place?

**Background Reading**

*Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, Theme Issue ‘Geoscale engineering to avert dangerous climate change’ compiled by Brian Launder and J. Michael T. Thompson. Online Date Friday, August 29, 2008. (Accessible from UCL computers)

Lots of geo-engineering proposals and discussion. In particular, see the Essential Examinable Reading: Stephen Schneider’s introductory essay ‘Geoengineering: could we or should we make it work?’ at [http://journals.royalsociety.org/content/lnt0676gl7302372/fulltext.html](http://journals.royalsociety.org/content/lnt0676gl7302372/fulltext.html)

**Week 10 Slot 2**

(5th December 2008)

**Discussion: Extreme Solutions**

**Essential Seminar Reading**


Do you agree with Jim or Paul?
Essential Seminar Reading

http://www.defra.gov.uk/environment/climatechange/adapt/index.htm

Read the four sections (‘Understanding adaptation’, ‘Adaptation in the Climate Change Bill’, ‘Adapting to climate change programme’ and ‘Taking action’). Make notes on what adaptation actions are being taken, and whether you consider them adequate or inadequate.

Background Reading

Nicholas Stern, The Economics of Climate Change: the Stern Review, Cambridge: Cambridge University Press, 2007. (Science Library: GEOGRAPHY H 72 STE; other copies elsewhere; also online via library catalogue)

‘Part Five: Policy Responses for Adaptation’

Advocacy responses and results. Concluding thoughts and comments.