

# HPSC1004 Science Policy

## Course Syllabus

2012-13 session | Dr Inga Kroener | [i.kroener@ucl.ac.uk](mailto:i.kroener@ucl.ac.uk)

This course offers an introduction to social and political thinking about the role of science and technology in society and the relationship between science and the state. Science plays a vital role in social structures and arrangements. At the same time, social, cultural and political forces shape the production of scientific knowledge. This course offers an insight into both science in society, and science as a social process.

We will focus on current theory in the area of science policy research and STS, asking questions such as: what is the role of the state in regulating, promoting and financing science? What makes an expert? Should scientists be the only ones to make decisions about the direction of scientific research? The course will use a range of case studies alongside theory to explore these issues.

Attend one lecture, one seminar, and one essay tutorial per week.

### Basic course information

Course website:	N/A
Moodle Web site:	search 'HPSC1004'
Assessment:	Two pieces of coursework (1,800 words) (25% each) and one exam (50%)
Timetable:	<a href="http://www.ucl.ac.uk/sts/hpsc">www.ucl.ac.uk/sts/hpsc</a>
Prerequisites:	No prerequisites
Required texts:	No required texts
Course tutor(s):	Course convenor: Dr Inga Kroener Teaching assistant: Tim Nissen
Contact:	<a href="mailto:i.kroener@ucl.ac.uk">i.kroener@ucl.ac.uk</a>   t: 020 7679 1324 <a href="mailto:t.nissen@ucl.ac.uk">t.nissen@ucl.ac.uk</a>
Web:	<a href="http://www.ucl.ac.uk/sts/staff/kroener">http://www.ucl.ac.uk/sts/staff/kroener</a>
Office location:	22 Gordon Square, Room 3.3
Office hours:	Monday 3-4pm Tuesday 2-3pm

## Schedule

UCL Week	Topic	Date	Activity
20	Introduction to the course: what is science policy and who is involved?	09/01/2013	
21	How is science policy done and who funds it?	16/01/2013	Essential reading
22	Big science	23/01/2013	Essential reading
23	Risk and uncertainty: the case of nuclear power	30/01/2013	Essential reading
24	Contemporary Controversies in Science Policy: the case of stem cells  DEADLINE: Essay 1	06/02/2013  08/02/2013	Essential reading
25	<b>Reading Week</b>	13/02/2013	
26	Science, expert advice and policy-making: the case of Climategate	20/02/2013	Essential reading
27	Science and accountability: the case of the L'Aquila earthquake	27/02/2013	Essential reading
28	Techno-fix: the case of geo-engineering	06/03/2013	Essential reading
29	Open access and scientific data	13/03/2013	Essential reading
30	Science policy in global context: the rise of China and India  DEADLINE: Essay 2	20/03/2013  22/03/2013	Essential reading

## Assessments

### Summary

	Description	Deadline	Word limit
<b>Essay One</b>	An essay of 1800 words. Topic to be chosen from the list provided on Moodle	11.59pm Friday 08/02/2013	1800
<b>Essay Two</b>	An essay of 1800 words. Topic to be chosen from the list provided on Moodle	11.59pm Friday 22/03/2013	1800

## **Assignments**

The assessment for this course consists of two essays and an exam. The essays are both 1800 words and are each worth 25% of your final mark. The third piece of assessment takes the form of a 3 hour unseen exam, worth 50% of your final mark.

Essays must be submitted via Moodle.

## **Criteria for assessment**

The departmental marking guidelines for individual items of assessment can be found in the STS Student Handbook.

## **Aims & objectives**

Aims:

This course aims to introduce students to social and political thinking about science. Students will explore a range of case studies against a backdrop of theory in order to understand science as a social and political process; how science is funded; what science policy is and how it affects our lives; how decisions about science and technology are made; as well as thinking about questions such as: what makes an expert? Should scientists be involved in the policy-making process on science and technology; and to what extent should scientists be held to account in terms of their research?

Objectives:

By the end of this course students will:

- Be able to identify the main themes of science policy studies
- Be able to criticise simplistic and popular notions of the relationship between science, technology and society
- Have detailed knowledge of a number of case studies in science policy (and, in particular, the social and political dimensions of the cases)
- Have developed research skills through the seminar work and course assessment

## Reading list

This section provides details of the readings for each week. Under essential reading I have listed papers or chapters that I expect you to read before the seminar. Under additional reading I have listed extra readings that you might find useful for the essays and/or exam. I encourage you to also do your own research to find readings and sources that are not included here.

### Week One: What is science policy and who is involved?

#### Additional reading:

Pielke, R. A. (2007) *The Honest Broker: Making sense of science in policy and politics* Cambridge (read Chapter 3 on science and decision making)

Stilgoe, J. Wilsdon, J. and Wynne, B. (2005) 'The Public Value of Science: Or how to ensure that science really matters' Demos, London

Salter, A. et al. (2000) Talent: Not Technology: Publicly funded research and innovation in the UK (SPRU, Sussex) (electronic copy available on Moodle)

Callon, M. (1994) 'Is Science a Public Good?' *Science, Technology and Human Values* 19 No.4 pp.395-425

Flanagan, K. and Keenan, M. (1998) 'Trends in UK science policy' in Cunningham, P. (ed.) *Science and Technology in the United Kingdom* Cartermill (This chapter gives an overview of developments in science policy from the end of WWII to the late 1980s) (electronic copy available on Moodle)

#### Policy documents

OST (1993) 'Realising Our Potential' (White Paper – electronic copy available on Moodle)

### Week Two: How is science policy done and who funds it?

#### Essential reading:

BIS (2008) 'Innovation Nation White paper' (electronic copy of the Executive Summary available on Moodle)

Edgerton, D. (2009) 'The Haldane Principle and other invented traditions in science policy' (available online at: [www.historyandpolicy.org/papers/policy-paper-88.html](http://www.historyandpolicy.org/papers/policy-paper-88.html))

### **Additional reading:**

Royal Society of Chemistry (2007) 'Funding Science and Technology: Who Pays? Who Benefits?'

Guena, A. et al. (2003) *Science and Innovation: Rethinking the Rationales for Funding and Governance* Edward Elgar Publishing

Erickson, M (2005), *Science, Culture and Society: Understanding Science in the 21<sup>st</sup> Century* (Cambridge: Polity) (Chapter 5: Scientists and Scientific Communities)

Balconi, M *et al* (2010), 'In defence of the linear model: An essay', *Research Policy* 39: 1-13.

Godin, B (2006), 'The linear model of innovation: the historical construction of an analytical framework', *Science, Technology & Human Values* 31(6), pp.639-667

Gibbons, M *et al* (1994), *The New Production of Knowledge: The Dynamics of Research in Contemporary Societies* (Sage) (Introduction and Chapter 1 for a more theoretical approach to recent changes in science: Mode 1 and Mode 2. Glossary at the back if the language gets too dense).

#### *EITHER*

Etzkowitz, H and Leydesdorff, L (1998), 'The endless Transition: a 'triple helix' of university-industry-government relations' *Minerva* 36: 203-208 (Models university-industry-government dynamic relationship)

#### *OR*

Etzkowitz, H and Leydesdorff, L (2000): 'The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university-industry-government relations'. *Research Policy*, 29, 109-123

Edgerton, D. (2009) 'The Haldane Principle and other invented traditions in science policy' (Available online at: [www.historyandpolicy.org/papers/policy-paper-88.html](http://www.historyandpolicy.org/papers/policy-paper-88.html))

Pielke, R. A. (2007) *The Honest Broker: Making sense of science in policy and politics* Cambridge (read Chapter 6 on how science policy shapes science)

### Policy documents

Nesta (2008) Towards an Innovation Nation (response to the White paper from BIS) (electronic copy of this policy briefing available on Moodle)

Department of Trade and Industry (2000) Excellence and opportunity: a science and innovation policy for the 21st century HMSO, London available from:

<http://www.dti.gov.uk/ost/aboutost/dtiwhite/>

### **Week Three: Big Science**

#### **Essential Reading:**

Capshew, JH and Rader, K (1992), 'Big Science: Price to the Present' in A. Thackray (ed.), Science after '40, Special edition of the journal *Osiris* (1992) 7, pp.3-25 (electronic copy available on Moodle)

#### **Additional Reading:**

Hughes, J (2002), *The Manhattan Project: Big Science and the Atom Bomb*, Cambridge: Icon Books, 2002 (A very short and informative book)

De Groot, G (2005), *The Bomb: A Life* (Cambridge, MA: Harvard University Press, 2005), chapters 3-6

Ravetz, J (2006), *The No-Nonsense Guide to Science* (New Internationalist), Chapter 4 'Little Science, Big Science, Mega Science'

Galison, P and Hevly, B (eds.), *Big Science: the Growth of Large-scale Research*, Stanford: Stanford University Press, 1992. (Introduction and See also the other articles in this collection)

Hughes, Jeff, (2002) 'Los Alamos: little science on a big scale?' (Ch.5) from Hughes, Jeff, *The Manhattan Project* pp.64-74 Icon Books (electronic copy available on Moodle)

### **Week Four: Risk and uncertainty: the case of nuclear power**

#### **Essential Reading:**

Pielke, R. A. (2007) *The Honest Broker: Making sense of science in policy and politics* Cambridge (read Chapter 5 – I have scanned this and put it on Moodle)

#### **Additional Reading:**

Ravetz, J. (2006) 'Uncertainty' from Ravetz, J. *The no-nonsense guide to science* pp.78-93 New Internationalist Publications Ltd

Jasanoff, Sheila (1991). "Acceptable Evidence in a Pluralistic Society." In *Acceptable Evidence: Science and Values in Risk Management*. New York: Oxford University Press.

S.O. Funtowicz and J.R. Ravetz, "Three Types of Risk Assessment and the Emergence of Post-Normal Science" in Krimsky and Golding, eds., *Social Theories of Risk* (Westport, CT: Praeger, 1992), pp. 251-274.

Lupton, D (1999), *Risk* (Routledge). (Chapter 2). (Intro. to sociology of risk)

### **Week Five: Contemporary Controversies in Science Policy: the case of stem cells**

#### **Essential Reading:**

Nisbet, M. C. et al. 'Framing Science: The Stem Cell Controversy in An Age of Press/Politics' in *Press/Politics* 8(2) pp.36-70 (electronic copy available on Moodle)

#### **Additional Reading:**

Levine, A. (2012) 'State stem cell policy and the geographic preferences of scientists in a contentious emerging field' in *Science and Public Policy* 39 pp.530-541

Capps, B. J. and Campbell, A. V. (2010) *Contested Cells: global perspectives on the stem cell debate* Imperial College Press; London

Mauron, J. and Maconi, M. E. (2007) 'Stem Cell Science: current ethical and policy issues' in *Clinical Pharmacology and Therapeutics* (electronic copy available on Moodle)

#### STS/theoretical perspectives on scientific controversies

Brante, T. and Elzinga, A. (1990) 'Towards a theory of scientific controversies' in *Science Studies* 2 pp.33 – 46 (electronic copy available on Moodle)

Nelkin, D. (1979) *Controversy* Sage; Beverly Hills

Martin, B. and Richards, E. (1995) 'Scientific Knowledge, Controversy and Public Decision-Making' in Jasanoff, S. et al. (eds) *Handbook of Science and Technology Studies* Sage; Thousand Oaks pp. 506-526 (electronic copy available on Moodle)

#### Media articles

<http://www.guardian.co.uk/science/2012/jun/04/stem-cell-first-human-trials>

<http://www.guardian.co.uk/science/blog/2011/dec/12/eu-ban-stem-cell-patents>

<http://www.newscientist.com/topic/stem-cells>

## **Week Six: READING WEEK**

## **Week Seven: Science, expert advice and policy-making: the case of Climategate**

### **Essential Reading:**

Jasanoff, S. (1990) *The fifth branch: science advisors as policy makers* Harvard University Press  
(Read the first chapter – a link to this chapter is available on Moodle)

### **Additional Reading:**

Collingridge, D. and Reeve, C. (1986) *Science speaks to power: the role of experts in policy making* Frances Pinter; London

Barker, A. and Peters, B. G. (eds.) (1993) *The Politics of Expert Advice: creating, using and manipulating scientific knowledge for public policy* Edinburgh University Press

Irwin, A. (1995) 'Science and the policy process' Chapter 3 in *Citizen Science: a study of people, expertise and sustainable development* Routledge

### Policy documents

BIS (2010) *Guidelines on the use of engineering and scientific advice in policy making*  
(electronic copy available on Moodle)

## **Week Eight: Science and accountability: The case of the L'Aquila earthquake**

### **Essential Reading:**

Smith, B.L.R. (1996) 'The accountability of science' in *Minerva* 34(1) pp.45-56 (electronic copy available on Moodle)

### **Additional Reading:**

Demeritt, D. (2000) 'The new social contract for science: accountability, relevance, and value in US and UK science and research policy' in *Antipode* 32:3 pp.308-329

Guston, D. (1992) 'The demise of the social contract for science: misconduct in science and the nonmodern world' Working Paper no.19 (electronic copy available on Moodle)

Gibbons, M. (1999) 'Science's new social contract with society' in *Nature* 402 (electronic copy available on Moodle)

#### Media articles and opinion pieces

<http://www.guardian.co.uk/commentisfree/2012/oct/25/italy-earthquake-laquila-banknote-predict>

<http://www.guardian.co.uk/science/occams-corner/2012/oct/29/simon-jenkins-laquila-earthquake?intcmp=239>

<http://www.nature.com/news/2011/110914/full/477264a.html>

[http://www.slate.com/blogs/future\\_tense/2012/10/30/l\\_aquila\\_earthquake\\_manslaughter\\_case\\_the\\_importance\\_of\\_scientists\\_saying.html](http://www.slate.com/blogs/future_tense/2012/10/30/l_aquila_earthquake_manslaughter_case_the_importance_of_scientists_saying.html)

### **Week Nine: Techno-fix: the case of geoengineering**

#### **Essential Reading:**

Sarewitz, D. and Nelson, R. 2008, 'Three rules for technological fixes', *Nature* (electronic copy available on Moodle)

#### **Additional Reading:**

Alan Robock, 2008, '20 reasons why geoengineering may be a bad idea', *Bulletin of Atomic Scientists*, 64, No. 2, 14-18, 59, available at: [http://www.thebulletin.org/files/064002006\\_0.pdf](http://www.thebulletin.org/files/064002006_0.pdf)

Clive Hamilton, 2010, *The Return of Dr Strangelove The politics of climate engineering as a response to global warming*, June 2010, [http://www.clivehamilton.net.au/cms/media/documents/articles/dr\\_strangeloves\\_return.pdf](http://www.clivehamilton.net.au/cms/media/documents/articles/dr_strangeloves_return.pdf)

Roger Pielke Jr, 2012, Excerpt in 'Will the future be geoengineered?' [http://seedmagazine.com/content/article/will\\_the\\_future\\_be\\_geoengineered1/](http://seedmagazine.com/content/article/will_the_future_be_geoengineered1/) (argument is developed in his 2010 book, *The Climate Fix*, Basic Books)

Lisa Rosner, 2004, The technological fix, introduction chapter, Taylor and Francis, readable at Google Books [http://books.google.co.uk/books?id=8mrBegA8KXwC&printsec=frontcover&source=gbs\\_ge\\_summary\\_r&cad=0#v=onepage&q&f=false](http://books.google.co.uk/books?id=8mrBegA8KXwC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false)

### **Week Ten: Open access and scientific data**

#### **Essential Reading:**

Royal Society (2012) *Science as an Open Enterprise* (I have put an electronic copy on Moodle for you)

#### **Additional Reading:**

To be added

### **Week Eleven: Science policy in global context: the rise of China and India**

#### **Essential Reading:**

UNESCO (2010) Science Report (read the executive summary, which is available as an electronic copy on Moodle)

#### **Additional Reading:**

Laredo, P. et al. (eds.) (2001) *Research and Innovation Policies in the New Global Economy: An international perspective*

### **Course expectations**

In order to be deemed 'complete' on this module students must attempt both essays and the exam.

## **Important policy information**

---

Please refer to the HPSC Syllabus Supplement available in Moodle.

---