

# HPSCGA47 Responsible science and innovation

## Course Syllabus

2013-14 session | Dr Jack Stilgoe | [j.stilgoe@ucl.ac.uk](mailto:j.stilgoe@ucl.ac.uk)

Science and innovation have huge potential for benefit and harm. With power should come responsibility, but history is littered with countless cautionary tales that suggest that innovation is a form of 'organised irresponsibility'. Should we expect more from scientists? Should we hold them responsible for the policy or technological failure? Are there ways to steer and improve technologies while they are still emerging? In this course, we will look at rationales and methods for making science and innovation more responsible. We will look at the responsibilities scientists might have to their profession and how these change when they are 'in public', as experts, innovators or communicators. The course will look back at case studies of technological failure and scientific misdemeanour, while looking ahead to emerging issues such as geoengineering and human enhancement. We will use ideas from ethics, sociology of science, philosophy of technology and science policy studies.

### Course Information

#### Basic course information

Moodle Web site:	HPSCGA47
Assessment:	Coursework 1 (blog posts, total 2,500 words) Coursework 2 (essay 2,500 words) (50% each)
Timetable:	<a href="http://www.ucl.ac.uk/sts/hpsc">www.ucl.ac.uk/sts/hpsc</a>
Prerequisites:	no pre-requisites
Required texts:	No required texts. Each week there are one or two essential readings
Course tutor(s):	Dr Jack Stilgoe
Contact:	<a href="mailto:j.stilgoe@ucl.ac.uk">j.stilgoe@ucl.ac.uk</a>   t: 020 7679 7197
Web:	<a href="http://www.ucl.ac.uk/sts/staff/stilgoe">www.ucl.ac.uk/sts/staff/stilgoe</a>
Office location:	22 Gordon Square, Room 2.4
Office hours:	Thursdays, 10-11am, 11am-12pm

## Schedule

UCL Week	Topic	Date	Activity
6	Science and social responsibility	Tues 1 <sup>st</sup> Oct 2013	Do the essential reading before each class
7	Controlling innovation	Tues 8 <sup>th</sup> Oct 2013	
8	Science, policy and expert advice	Tues 15 <sup>th</sup> Oct 2013	
9	Geoengineering	Tues 22 <sup>nd</sup> Oct 2013	
10	Risks, accidents and precaution	Tues 29 <sup>th</sup> Oct 2013	
11	<b>Reading Week</b>	Tues 5 <sup>th</sup> Nov 2013	No class
12	Responsible innovation	Tues 12 <sup>th</sup> Nov 2013	
13	Promises and expectations	Tues 19 <sup>th</sup> Nov 2013	Blog posts due Mon 18 <sup>th</sup>
16	Open access, open source and open innovation	Tues 26 <sup>th</sup> Nov 2013	
15	Global governance of science	Tues 3 <sup>rd</sup> Dec 2013	
14	Human enhancement and ethics	Tues 10 <sup>th</sup> Dec 2013	Essays due Fri 20 <sup>th</sup>

## Assessments

### Summary

	Description	Deadline	Word limit
<b>Blog posts</b>	Blog post one	11.59 pm, Fri 11-Oct	Total 2,500
	Blog post two	11.59 pm, Fri 25-Oct	
	Blog post three (due date for final submission of all three blog posts)	11.59 pm, Mon 18-Nov	
<b>Essay</b>	See titles below	11.59pm Fri 20-Dec	2,500

### Assignments

In order to be deemed 'complete' on this module, students must attempt the blog posts and the essay. The trio of blog posts and the essay must be submitted via Moodle. Blog posts one, two and three should ideally be published online, where they can be viewed and commented upon by others. Blog posts will be discussed in class and feedback provided. Blog posts should be fully hyperlinked. We will discuss in class what makes for a good blog post, and students will be supported in their writing. Students will in general be expected to demonstrate that they have understood the ideas and approaches of the course and are able to apply them in a readable way

to topical and emerging issues. They will be expected to research issues online and demonstrate this with hyperlinks. Students will be assessed on style as well as substance. The assumption will be that students' blogging skills develop over the course of the term, with help from their colleagues.

### **Essay Titles**

1. Given that we can't predict the trajectories of technology, is it futile to try to govern it? Discuss in relation to a particular emerging technology area.
2. Discuss Michael Polanyi's claim that "You can kill or mutilate the advance of science, you cannot shape it"?
3. Was it fair to put Italian scientists on trial for the earthquake in L'Aquila? What are the arguments on both sides?
4. "Open science is responsible science". Discuss.
5. Discuss whether and how we should hold scientists responsible for hyping their research
6. What might a responsible approach to research in geoengineering look like?
7. What can we learn from risks, accidents and 'early warnings'? What can be done to stop such things in the future?
8. "Scientists' responsibilities start and end in the lab". Discuss with respect to a specific scientific field, technology or policy issue.
9. How should global science be governed?

(Students are free to suggest their own alternative essay topics, but they must be agreed with me)

### **Criteria for assessment**

The departmental marking guidelines for individual items of assessment can be found in the STS Student Handbook. Above these criteria, students will also be marked for the accessibility and clarity of their writing in blog posts.

### **Aims & objectives**

The aim of this course is to get students to think and write critically about the practices, politics and policies of science and innovation, taking into account social, political, economic and ethical questions. By the end of this course, students will be familiar with a number of case studies and theories of science policy and governance, and they will be able to apply the lessons from these more widely. The idea is to study concepts and cases in class and apply them to new areas at the frontiers of science and innovation through students' own writing. In addition to assessment via essay, the course also asks students to write accessibly and publicly, via a blog.

### **Reading list**

Please read these before each class. Students are recommended to read other relevant pieces after the class each week in order to clarify their thinking and prompt further questions. Additional readings will be made available on Moodle.

### 1. Science and social responsibility

Peter Herrlich, 2013, The responsibility of the scientist. EMBO reports.

<http://www.nature.com/embor/journal/v14/n9/full/embor2013116a.html>

Also, try to watch Brian Cox's *Science Britannica*, episode 1, on BBC iPlayer (should be available until mid-October)

### 2. Controlling innovation

Bill Joy, 2000, 'Why the future doesn't need us', Wired magazine,

[www.wired.com/wired/archive/8.04/joy.html](http://www.wired.com/wired/archive/8.04/joy.html)

David Collingridge, 1980, *The Social Control of Technology*, Open University Press, Chapter 1, pp. 13-21 (available on Moodle)

Rogers, M, 1975, The Pandora's Box Congress, Rolling Stone magazine, June 19th 1975

<http://climateresponsefund.org/images/Conference/rollingstone1975.pdf> (an account from the time of the original Asilomar conference on recombinant DNA)

### 3. Science, policy and expert advice

Roger Pielke Jr, 2007, *The Honest Broker*, chapters 1 and 2 (available on Moodle)

### 4. Geoengineering: The ultimate techno-fix?

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)

Dan Sarewitz and Richard Nelson, 2008, 'Three rules for technological fixes', *Nature*, 2008,

<http://thebreakthrough.org/blog/Sarewitz-Nature%20tech%20fix.pdf>

### 5. Risks, accidents and precaution

European Environment Agency, 2002, *Late lessons from early warnings*, Chapter 1 - Introduction.

[http://www.eea.europa.eu/publications/environmental\\_issue\\_report\\_2001\\_22](http://www.eea.europa.eu/publications/environmental_issue_report_2001_22)

Charles Perrow, 1981, 'Normal Accident at Three Mile Island', *Society*, Volume 18, Number 5, 17-26, <http://www.penelopeironstone.com/Perrow.pdf>

(if you have time, see also Charles Perrow's new preface to the paperback edition of *The Next Catastrophe: Reducing our Vulnerabilities to Natural, Industrial and Terrorist disasters*. This should be readable on the Amazon web site if you 'click to look inside')

<http://www.amazon.com/The-Next-Catastrophe-Vulnerabilities->

[Industrial/dp/0691150168/ref=tmm\\_pap\\_title\\_0\)](http://Industrial/dp/0691150168/ref=tmm_pap_title_0)

## 6. Responsible innovation

Bruno Latour, 2011, 'Love your monsters' The Breakthrough journal. Reproduced here  
<http://convozine.com/monster-theory/31585>

Stilgoe, J, Owen, R and Macnaghten, P, 2013, Developing a framework for responsible innovation, Research Policy (open access)  
<http://www.sciencedirect.com/science/article/pii/S0048733313000930>

## 7. Promises and expectations

Mike Fortun, 2005, 'For An Ethics of Promising, Or, A Few Kind Words About James Watson.'  
New Genetics and Society 24/2:157-173  
<http://www.tandfonline.com/doi/abs/10.1080/14636770500184792>

## 8. Open access, open source, open innovation

Peter Suber, 2012, Open Access, Chapter 1, free online here  
[http://mitpress.mit.edu/sites/default/files/titles/content/9780262517638\\_Open\\_Access\\_PDF\\_Version.pdf](http://mitpress.mit.edu/sites/default/files/titles/content/9780262517638_Open_Access_PDF_Version.pdf)

## 9. Global governance of science

Caroline Wagner, 2008, The new invisible college: Science for development, Brookings institution press, chapter 1, available online,  
[http://www.brookings.edu/~media/press/books/2008/newinvisiblecollege/newinvisiblecollege\\_chapter.pdf](http://www.brookings.edu/~media/press/books/2008/newinvisiblecollege/newinvisiblecollege_chapter.pdf)

## 10. Human enhancement

Michael Sandel, 2004, The case against perfection, What's wrong with designer children, bionic athletes and genetic engineering, The Atlantic Monthly, April 2004,  
<http://www.theatlantic.com/past/docs/issues/2004/04/sandel.htm>

## Course expectations

In addition to submitting assessed material, students are expected to attend all classes. They are expected to have read the essential reading before each class and be willing to discuss the literature and the lecture. Students are expected to conduct online research into areas of new technology. Students are also expected to publish blog posts online so that they can be read by other members of the class.

## **Important policy information**

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Details of college and departmental policies relating to modules and assessments can be found in the STS Student Handbook [www.ucl.ac.uk/sts/handbook](http://www.ucl.ac.uk/sts/handbook)

All students taking modules in the STS department are expected to read these policies.

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