

# HPSC 2001 Policy Issues in the Life Sciences

## Course Syllabus

2013-14 session | Convenor : Prof. Brian Balmer | [b.balmer@ucl.ac.uk](mailto:b.balmer@ucl.ac.uk)

Postgraduate Teaching Assistants : Ms Sara Peres

Mr Erman Sozudogru,

### Course Information

#### *About this course*

The purpose of this course is to provide students with a critical overview of policy issues arising from developments in the biological sciences. The course will cover a variety of issues which will include: medical research policy, the BSE crisis, debates about the social acceptability of recombinant DNA research (GM crops, genetic testing, DNA profiling), controlling biological weapons research, biodiversity, human and animal experimentation. The course will also introduce students to some of the theories dealing with the complex relationship between science and society.

By the end of this course you should:

- Be able to analyse the social and political dimensions of debates in the life sciences
- Be able to evaluate the consequences of developments in life sciences
- Have detailed knowledge of a number of case studies of policy issues in the life sciences
- Be able to criticize simplistic and popular notions of the relationship between science, technology and society.

### Basic course information

Course website:	On Moodle
Moodle Web site:	Search 'HPSC2001'
Assessment:	This term's course will be assessed on the basis of <i>three</i> written assignments: two essays (one short, one long) and a book review. The three pieces carry equal weight.
Timetable:	<a href="http://www.ucl.ac.uk/sts/hpsc">www.ucl.ac.uk/sts/hpsc</a>
Prerequisites:	no pre-requisites, course designed for year 2 and above undergraduate students
Required texts:	See reading list
Course tutor:	Prof. Brian Balmer
Contact:	<a href="mailto:b.balmer@ucl.ac.uk">b.balmer@ucl.ac.uk</a>   t: 020 7679 3924

Web:	<a href="http://www.ucl.ac.uk/silva/sts/staff/balmer">www.ucl.ac.uk/silva/sts/staff/balmer</a>
Office location:	22 Gordon Square, Room 2.2
Office hours:	See Moodle or Staff Website (above)

## Schedule

UCL Week	Topic	Date	Activity
6	Introduction: Science & Social Change	30 Sept	Consult Moodle before class
7	"A conflict of interest?": Biomedical Research Policy and University-Industry Links	7 Oct	Consult Moodle before class
8	Human Experimentation	14 Oct	Consult Moodle before class
9	Genetic Screening and Testing	21 Oct	Consult Moodle before class
10	DNA Profiling and Crime	28 Oct	Consult Moodle before class
11	<b>Assignment 1 deadline</b>	<b>6 Nov</b>	
11	<b>Reading Week</b>	<b>4-8 Nov</b>	
12	GM Crops and Science Policy	11 Nov	Consult Moodle before class
13	"Mad Cow Disease": BSE, CJD and Science Advice	18 Nov	Consult Moodle before class
14	Controlling Biological Weapons	25 Nov	Consult Moodle before class
14	<b>Assignment 2 deadline</b>	<b>27 Nov</b>	
15	Biodiversity	2 Dec	Consult Moodle before class Consult Moodle
16	Animal Experimentation	9 Dec	Consult Moodle before class
	<b>Assignment 3 deadline</b>	<b>13 Jan 2013</b>	

## Assessments

### Summary

	Description	Deadline	Word limit
1	Short essay	11.59 pm Weds 6 Nov	1,500
2	Review article	11.59pm Sun 1 Dec	1,000
3	Long Essay	11.59pm Mon 13 Jan	2,500

**Full details and instructions are at the end of this document.**

### **Assignments**

This term's course will be assessed on the basis of *three* written assignments: two essays (one short, one long) and a book review. The three pieces carry equal weight. A list of suggested essay questions is included with this reading list. If you wish to write an essay connected with the course but not on the list you should see me to discuss a title. Students may discuss any aspects of their essays with me during my office hours. There is no exam for this course but you are expected to show evidence of wide reading and critical thought in your essays.

*Full details and instructions are at the end of this document*

Essays must be submitted via Moodle

In order to be deemed 'complete' on this module students must attempt one assignment.

### **Criteria for assessment**

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

### **Aims & objectives**

The purpose of this course is to provide students with a critical overview of policy issues arising from developments in the biological sciences. The course will cover a variety of issues which will include: medical research policy, the BSE crisis, debates about the social acceptability of recombinant DNA research (GM crops, genetic testing, DNA profiling), controlling biological weapons research, nanotechnology, human and animal experimentation. The course will also introduce students to some of the theories dealing with the complex relationship between science and society.

By the end of this course you should:

- Be able to analyse the social and political dimensions of debates in the life sciences
- Be able to evaluate the consequences of developments in life sciences
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- Be able to criticize simplistic and popular notions of the relationship between science, technology and society.

### **Course expectations**

There will be one lecture each week on Mondays 10 - 11am, See UCL Timetable for locations, and one seminar each week on Monday afternoon (1-2pm, 2-3pm; 4-5pm see UCL timetable for rooms). The seminars are **not** optional.

There will be a reading week, with no lectures or seminars, November 4th-8th.

***A poor seminar attendance record, usually 3 undocumented absences, may result in a mark of zero for any further essays submitted during the course. Continued absence will result in an 'incomplete' mark which is equivalent to a fail.***

Please note that electronic recording of lectures is not permitted without permission from the course tutor.

### **Reading for this course**

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 list. You are *not* expected to read all of the material. You will be expected to read at least one piece each week in preparation for seminars and you will certainly need to read widely for your essays and may include material from beyond the reading list. However, read critically: you don't have to agree or disagree with everything you read – but you should be able to say why you hold your views.

#### *Where to find the reading material*

There is no one text which covers this course. Most of the reading material is kept in the DMS Watson library, material marked [TC *nnnn*] is in the teaching collection so usually available electronically or from the issue desk. The number, *nnnn*, is the teaching collection reference number. Some material is in the library and *also* in the teaching collection. Senate House Library holds some of the material. *The library takes an increasing number of journals on-line, so make sure you check whether articles are available on-line.*

A small number of marked readings marked [D] have been digitized by the Library and can be obtained by clicking Online Resources then Reading Lists on line and searching for the course code. Or go to <http://ls-tlss.ucl.ac.uk/> [remember to click on 'previous years lists']

You are also encouraged to use the Wellcome Library (183 Euston Road). This a reference library with a large collection of science policy material - including much of the material relevant to the course.

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 and be careful of purely descriptive sites such as Wikipedia – I will be looking for evidence of some hard thinking and argument in your essays, not simple regurgitation of basic information. Also note that plagiarism, particularly involving internet sources, will be treated as a severe exam irregularity.

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### **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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## Topic 1: Science and Social Change

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In order to engage seriously with debates concerning science, technology and society it is important to think beyond oversimplified models of the science-society relationship. This session will introduce you to some of the critical thinking that has taken place on this subject.

### Essential Reading:

Stilgoe, J et al (2006), *The Received Wisdom: Opening Up Expert Advice* (London: Demos).

Chapter 1 'Speaking truth to power' ... but if you are enjoying it keep reading... Demos is a think-tank, so think rather than take copious notes... which bits do you agree/disagree with? [Available at <http://www.demos.co.uk/publications/receivedwisdom> ]

### Additional Reading

Bridgstock, M et al (1999), *Science, Technology, and Society : an Introduction* (Cambridge: CUP) Chapter 5 'Controversies Regarding Science and Technology'

[Available on-line from library: click Online <http://ls-tlss.ucl.ac.uk/> and search for this course, tick the 'previous year' box to make sure]

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## Topic 2: Research Policy and the Life Sciences

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This topic explores how the landscape of academic research has changed over the past quarter century or so. Given that we cannot spend an infinite amount of money on biomedical research, we have to decide what to fund and what not to fund. 'We' in this context used to mean only scientists – after all, they do the science – but has increasingly included Government, industry and 'consumers'.

### Essential Reading:

Johnston, J (2008), 'Conflict of Interest in Biomedical Research' in *From Birth to Death and Bench to Clinic: The Hastings Center Bioethics Briefing Book*  
<http://www.thehastingscenter.org/Publications/BriefingBook/>

Angell, M (2008), 'Industry-Sponsored Research: A Broken System', *JAMA* 200(9):1069-71

### Additional Reading:

*Theories:*

*EITHER*

Hessels, LK and van Lente, H (2008), 'Re-thinking new knowledge production: A literature review and a research agenda', *Research Policy* 37(4):740-760

[Summarises some of the key criticisms of the Mode 1/2 thesis]

Frickel, S et al (2010), 'Undone Science: Charting Social Movement and Civil Society Challenges to Research Agenda Setting', *Science, Technology and Human Values* 35(4):444-473.

Mirowski, P and Sent E (2008), 'The Commercialization of Science and the Response of STS' in Hackett, EJ *et al* (eds) *The Handbook of Science and Technology Studies*, Third Edition (Cambridge: MIT Press).

Royal Society (2010), *The Scientific Century: Securing Our Future Prosperity* (London: Royal Society) <http://royalsociety.org/policy/publications/2010/scientific-century/>  
[A recent report that is worth skimming through to see how the global landscape of science has changed in the early 21<sup>st</sup> century]

*Government funding:*

Lakoff, A (2010), 'Two Regimes of Global Health', *Humanity Journal* 1(1) on-line at <http://www.humanityjournal.org/humanity-volume-1-issue-1>  
[Thoughtful discussion of a case study about avian flu research and how global issues shape what research gets done]

Nightingale, P and Scott, A (2007), 'Peer Review and the Relevance Gap: Ten Suggestions for Policy Makers', *Science and Public Policy* 34(8) 543-533.

Morris, N and Rip, A (2006), 'Scientists' coping strategies in an evolving research system: the case of life scientists in the UK', *Science and Public Policy*, Volume 33, Number 4, 1 May 2006, pp. 253-263.

Hessels, LK *et al* (2009), 'In search of relevance: the changing contract between science and society', *Science and Public Policy* 36(5):387-401

*Industry-Academia:*

Sergio Sismondo (2009) 'Ghosts in the Machine: Publication Planning in the Medical Sciences', *Social Studies of Science*, Apr 2009; vol. 39: pp. 171 - 198.[A study of ghost writing]

Sismondo,S. (2008). How pharmaceutical industry funding affects trial outcomes: Causal structures and responses. *Social Science & Medicine*, 66(9), 1909-1914.

Nelkin, D and Andrews, L (1998), 'Homo economicus: commercialisation of body tissue in the age of biotechnology', *Hastings Center Report* Vol.28 pp.30-39.  
On-line at: <http://ls-tlss.ucl.ac.uk/cgi-bin/displaylist?module=10HPSC2001>

Weatherall, D (2000), 'Academia and Industry: Increasingly Uneasy Bedfellows', *The Lancet*, Vol. 355 (9215) 1574 (5 May 2000)

Oliveri, NF (2003), 'Patient's Health or Company Profits? The Commercialisation of Academic Research', *Science and Engineering Ethics* Vol.9 No.1 pp.29-41. (Wellcome library)

Weatherall, D (2003), 'Problems for Biomedical Research at the Academia-Industry Interface', *Science and Engineering Ethics* Vol.9 No.1 pp43-48 (Wellcome library).

Nathan, DG and Weatherall D (1999), 'Academia and Industry: Lessons from Unfortunate Events in Toronto', *The Lancet* 353 (9155) 771-772 (6 March).

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### Topic 3 Human Experimentation

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This topic covers human experimentation from a sociological and policy perspective. Although we will touch on the ethics of human experimentation, we will be more concerned with what motivates people to take part in biomedical research, what (if any) contribution they can make if they are given a 'voice' rather than being treated as passive research material, and how we theorise the researcher-subject relationship.

#### Essential Reading:

#### EITHER

Steven Epstein (1995) 'The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials' *Science, Technology & Human Values*, Vol. 20, No. 4, 408-437

#### OR

Goodare,H., & Lockwood,S. (1999). Involving patients in clinical research. *British Medical Journal* 319 724-725.

#### OR

Williamson,C. (2001). What does involving consumers in research mean? *Quarterly Journal of Medicine* 94(12), 661-664. [for a consumer perspective]

#### Additional Reading

See also <http://www.ucl.ac.uk/researchvolunteersforum/>

This website, established in 2011, has an online information resource with readings and brief commentary

*Gripping yarns* [Books you can dip into – sensational and thoughtful stories about human experimentation. Make a selection]

Goodman,J., McElliot,A., & Marks,L. (2003). *Useful bodies: humans in the service of medical science in the twentieth century*. Baltimore: Johns Hopkins University Press

Lederer,S.E. (1995). *Subjected to science: human experimentation in America before the second world war*. Baltimore: Johns Hopkins University Press.

Moreno,J. (2001). *Undue risk: secret state experiments on humans*. London: Routledge

Oakley, A (2000). Chapter 11 of *Experiments in knowing: gender and method in the social sciences*, Polity Press, Cambridge.

*Governance of research on humans* [Useful background; get the gist]

DoH/Department of Health (2001). *Research Governance framework for health and social care*. London: Department of Health

Nuremberg Code (1949). [find this and others on the web or reprinted in: Vanderpool, H.Y. (1996). *The ethics of research involving human subjects*. Frederick, MD: University Pub. Group].

World Medical Association (2002). *Declaration of Helsinki*. Washington DC: World Medical Association.

Fisher, J A (2007) 'Governing human subjects research in the USA: individualized ethics and structural inequalities', *Science and Public Policy*, 3 (2) pp 117-126.

#### *Active patients and research subjects*

Rabeharisoa, V and Callon, M, 2004. 'Patients and scientists in French muscular dystrophy research'. In Jasanoff, S (ed) *States of Knowledge: the co-production of science and social order*, London, Routledge.

Weinstein, M. (2001). 'A public culture for guinea pigs: US human research subjects after the Tuskegee study'. *Science as Culture* 10(2), 195-223. [fascinating insight into 'professional guinea pigs']

Epstein, S (2008), 'Patient Groups and Health Movements' in Hackett, EJ *et al* (eds) *The Handbook of Science and Technology Studies*, Third Edition (Cambridge: MIT Press).

Epstein, S. (1996). *Impure science: AIDS, activism and the politics of knowledge*. Berkeley: University of California Press.

Rajan, K.S. (2005). Subjects of Speculation: Emergent Life Sciences and Market Logics in the United States and India. *American Anthropologist*, 107(1), 19-30.

Rajan, K S 2002 Banking (on) biologicals: commodifying the global circulations of human genetic material Available at <http://www.sarai.net/publications/readers/02-the-cities-of-everyday-life/02biologicals.pdf> [Analysis of the John Moores case used in the seminar]

#### *Volunteers' understandings*

Corrigan, O. (2003). Empty ethics: the problem with informed consent. *Sociology of Health and Illness* 25(3), 768-792.

Featherstone, K., & Donovan, J. (2002). "Why don't they just tell me straight, why allocate it?" The struggle to make sense of participating in a randomised controlled trial'. *Social Science and Medicine* 55 709-719.

Morris, N. and Balmer, B. (2006). Volunteer human subjects' understandings of their participation in a biomedical research experiment. *Social Science & Medicine*, 62(4), 998-1008

*Researcher-subject relationships*

Corrigan, O and Tutton, R (2006). 'What's in a name? Subjects, volunteers, participants and activists in clinical research'. *Clinical Ethics*, 1, 101-104.

Morris, N. and Balmer, B. (2006). Are you sitting comfortably? Perspectives of the researchers and the researched on 'being comfortable' *Accountability in Research*, 13, 111-133.

*Motivation / Social perspectives*

Ross, S., Grant, A., Counsell, C., Gillespie, W., Russell, I., & Prescott, R. (1999). Barriers to participation in randomised controlled trials: a systematic review. *Clinical Epidemiology* 52(12), 1143-1156.

Titmuss, R.M. (1971). *The gift relationship: from human blood to social policy*. London: LSE Books.

ALSO RELEVANT: papers by Rabeharisoa and Callon, and by Weinstein, listed earlier.

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**Topic 4 Genetic Testing and Screening**

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The Human Genome Project was a global attempt to locate all of the genes in the human genetic complement. Commentators are now talking about a postgenomic age, particularly as we head towards ideas such as 'personalised medicine' and whole genome testing. The social and ethical implications for health care, insurance and employment have been widely discussed with benefits for health but also possible discrimination in a 'genetic supermarket'.

**Essential Reading:**

Press, N. (2008) 'Genetic Testing and Screening' Chapter 16 in *From Birth to Death and Bench to Clinic: The Hastings Center Bioethics Briefing Book*

<http://www.thehastingscenter.org/Publications/BriefingBook/>

**Additional Reading**

Also the journal *New Genetics and Society* publishes up-to-date research on this topic.

**Two very different views of genetic testing:**

Saukko, P. *et al* (2006) 'Are genetic tests exceptional? Lessons from a qualitative study on thrombophilia'. *Social Science and Medicine* 63 (7): 1947-1959.

*Compare with:*

Lock, M (2011), 'Dementia Entanglements in a Postgenomic Era', *Science, Technology and Human Values* 36(5): 685-703

**Additional Reading**

Hennen, L *et al* (2010), 'Direct to Consumer Genetic Testing: Insights from an Internet Scan', *New Genetics and Society* 29(2):167-186.

- Markens, S (2013), 'It just becomes much more complicated': Genetic Counselors' Views on Genetics and Pre-Natal Testing', *New Genetics and Society* 32(3):302-21.
- Murray, T (1997), 'Genetic Exceptionalism and 'Future Diaries': Is Genetic Information Different from Other Medical Information?' in *Genetic Secrets: Protecting Privacy and Confidentiality in the Genetic Era* by Rothstein, M (editor) (Yale University Press) [Also in TC SCIENCE 4918]
- Hallowell, N *et al* (2003), 'Balancing Autonomy and Responsibility: The Ethics of Generating and Disclosing Genetic Information', *Journal of Medical Ethics* 29:74-83.
- Clayton, WE (2003), 'Ethical, Legal and Social Implications of Genomic Medicine', *New England Journal of Medicine*, 349: 562-569 (Short, accessible overview of some of the key issues)
- Human Genetics Commission (2006), *Choosing the Future: Genetics and Reproductive Decision-Making* (Report covers a wider range of issues than testing – but gives a good feel for the fairly recent UK situation) (See note below on the HGC:  
<http://www.hgc.gov.uk/UploadDocs/DocPub/Document/ChooseFuturefull.pdf>)
- Mitra, J (2006), 'Genetic exceptionalism' and precautionary politics: regulating for uncertainty in Britain's genetics and insurance policy process', *Science and Public Policy* 33(8): 585-600.
- Draper E (1992), 'Genetic Testing in the Workplace', in Nelkin D (1992), *Controversy: The Politics of Technical Decisions* (3rd Edition) (Newbury Park: Sage). pp147-176 (Still some of the only research to be carried out on testing in the workplace).

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### Topic 5. DNA Profiling (Fingerprinting)

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DNA fingerprinting can be regarded as a relatively new and powerful tool for forensic science. Alternatively, with the possibility of a national DNA fingerprint database, the technology could be regarded as an infringement of civil liberties. This session will cover the debate over the virtues and dangers of the technique.

#### **Essential Reading:**

#### ***EITHER:***

Nuffield Council on Bioethics (2007), *The Forensic Use of Bioinformation: Ethical Issues* (Comprehensive so read selectively, especially look at Ch 3 which deals briefly with the 'if you've nothing to hide, you've nothing to fear' arguments or the Short Guide for a quick overview of the issues):

[http://www.nuffieldbioethics.org/go/ourwork/bioinformationuse/publication\\_441.html](http://www.nuffieldbioethics.org/go/ourwork/bioinformationuse/publication_441.html)

**Additional Reading:**

Heinemann, T et al (2012), 'Risky Profiles: Societal Dimensions of Forensic Uses of DNA Profiling Technology', *New Genetics and Society* 31(3): 249-258 (This is an introduction to a special edition of this journal, with all the articles dealing with DNA profiling – read this intro to see whether the other articles are going to be helpful)

Maschke, K (2008) 'DNA and Law Enforcement' in *From Birth to Death and Bench to Clinic: The Hastings Center Bioethics Briefing Book*  
<http://www.thehastingscenter.org/Publications/BriefingBook/>

Simon A. Cole, Michael Lynch (2006) 'The Social and Legal Construction of Suspects' *Annual Review of Law and Social Science*, Vol. 2: 39-60 (Thought-provoking discussion of DNA databases)

Dahl, J. Y. and Sætnan, A. (2009). 'It all happened so slowly'—on controlling function creep in forensic DNA databases. *International Journal of Law, Crime and Justice*, 3(37): 83–103

Jasanoff, S. (2006). Just evidence: the limits of science in the legal process. *The Journal of Law, Medicine & Ethics*, : 328–341.

Wallace, H (2006), 'The UK National Database: Balancing Crime Detection, Human Rights and Privacy', *EMBO Reports*, Vol 7 (Special Issue) pp26-30

Williams, R and Johnson, P (2005), 'Inclusiveness, Effectiveness and Intrusiveness: Issues in the Developing Uses of DNA Profiling in Support of Criminal Investigations', *Journal of Law, Medicine and Ethics* 33:454-558.

[See also their 2008 book *Genetic Policing: The Use of DNA in Criminal Investigations*]

Lynch, M and McNally, R (2003), ' "Science", "common sense", and DNA evidence: a legal controversy about the public understanding of science', *Public Understanding of Science*, 12(1): 83-104. (Detailed case study that challenges the distinction between 'common sense' and 'scientific' evidence)

Linacre, A (2003) 'The UK National DNA Database', *Lancet* 361:1841-42  
AND

Pascali, VL *et al* (2003), 'The Dark Side of the UK National DNA Database', *Lancet* 362:834

Kitcher, P (1996), *The Lives to Come* (Penguin) (Chapter 7)  
(Older piece – but explores some more enduring philosophical issues)

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## Topic 6. Release of GMOs into the Environment

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Biotechnology presents modern societies with immense opportunities - but also immense challenges. A key problem is whether or not the deliberate release of genetically modified organisms (GMOs) into the environment is safe – both for human health and the environment. In an area of contested claims and where the evidence is not clear-cut, this topic raises more fundamental issues about the role of science and expertise in the regulation of technology.

### Essential Reading

Two sharply contrasting views of the GM Debate – read **both**:

Burke, D (2004), ‘GM Food and Crops: What went wrong in the UK?’, *EMBO Reports* [European Molecular Biology Organisation], Vol 5(5): 432-436

Grove-White, R (2006), ‘Britain’s Genetically Modified Crop Controversies: The Agriculture and Environment Commission and the Negotiation of ‘Uncertainty’’, *Community Genetics* Vol.9: 170-177

### Also

*If Grove-White’s ideas about precaution and uncertainty seem a bit vague read:*

Stirling, A (2007), ‘Risk, Precaution and Science: Towards a More Constructive Debate’, *EMBO Reports* 8(4):309-315

### Additional Reading:

Jasanoff, S (1995), ‘Product, Process, or Programme: Three Cultures and the Regulation of Biotechnology’, in M. Bauer (ed) *Resistance to New Technology: Nuclear Power, Information Technology and Biotechnology* (Cambridge: Cambridge University Press) pp311-331 (An older article but shows how different regulatory frameworks can treat the same technology differently, particularly depending on how they think about the role of science in informing the debate). [Available on-line from library: click Online <http://lsslss.ucl.ac.uk/> and search for this course]

Mayer, S and Stirling, A (2004), ‘GM crops, for good or bad? Those who choose the questions, determine the answers’, *European Molecular Biology Organisation Reports*, 5 (11): 1021-24 (On-line under *EMBO Reports* or from Genewatch website).

Schoones, I and Glover, D (2009), *GM Crops in Africa: Polarising the Debate* (Sussex: Institute of Development Studies) <http://www.ids.ac.uk/publication/gm-crops-in-africa-polarising-the-debate>

EuropaBio Initiative (2012), *Science not Fiction: Time to Think Again About GM* <http://seedfeedfood.eu/wp-content/uploads/2013/02/flipbook2.pdf>  
(This gives the perspective from the Biotech Industry Trade Association <http://www.europabio.org/> )

Gaskell, G (2004), ‘Science policy and society: the British debate over GM agriculture’, *Current*

*Opinion in Biotechnology* 15(3): 241-45.

Bonneuil, C *et al* (2008), 'Disentrenching Experiment: The Construction of GM Crop Field Trials as a Social Problem', *Science, Technology & Human Values* 33:201-229 (Uses quite a bit of STS theory, non-STs students persist though, shows how the debate was not just about one thing, but was 'framed' differently over time)

Freeman, J *et al* (2011), 'Agricultural biotechnology and regulatory innovation in India', *Science and Public Policy* 38(4): 319-331. (This gives a good perspective on the GM debate in a non-western country).

Jasanoff, S (2005), 'In the Democracies of DNA: Ontological Uncertainty and Political Order in Three States', *New Genetics and Society* 24(2):139-156. (Compares GM crops with other biotech issues in three different countries to argue that there are patterns in national responses)

Bowring, F (2003), *Science, Seeds and Cyborgs: Biotechnology and the Appropriation of Life* (Verso) Chapter 2 (A particularly critical argument).

Compare with

Batista, R and Oliviera, M (2009), 'Facts and Fiction of Genetically Engineered Food', *Trends in Biotechnology* 27(5):277-286 (A particularly supportive argument).

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### Topic 7: BSE, CJD and Science Advice

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The BSE saga that took place in the UK from 1986 onwards is one of the most dramatic public health crises of the 20th century. Over three million cattle have now been slaughtered and the overall cost of the crisis now exceeds four billion pounds. For years, the Government and its scientific advisers kept repeating that "British Beef is safe". Yet, in March 1996 they announced that BSE had spread to humans. How can we explain this spectacular shift.

#### Essential Reading

Two very different views of the BSE affair, read both:

Millstone, E and van Zwanenberg, P (2003) 'BSE: A Paradigm of Policy Failure' in *The Political Quarterly* Vol.74 No1. pp27-37

Forbes, I (2004), 'Making a Crisis out of a Drama: The Political Analysis of BSE Policy-Making in the UK', *Political Studies* 52: 342-357

#### Additional Reading

Basic information on BSE: <http://www.who.int/mediacentre/factsheets/fs113/en/>

Millstone, E and van Zwanenberg, P (2001), 'Politics of Expert Advice: Lessons from the Early History of the BSE Saga', *Science and Public Policy*, Vol 28 (April) No.2 (More detailed empirical analysis which shows how 'scientific' decisions were framed by wider social, economic and political considerations) [TC 5105]

Stilgoe, J et al (2006), *The Received Wisdom: Opening Up Expert Advice* (London: Demos).  
Chapter 2 'The new shape of expert advice'.  
[Available at <http://www.demos.co.uk/publications/receivedwisdom> ]

Beck, M et al (2005), 'Public Administration, Science, and Risk Assessment: A Case Study of the U.K. Bovine Spongiform Encephalopathy Crisis' *Public Administration Review* Volume 65 Issue 4, Pages 396 – 408 [Besides analysis, this has a useful chronology and overview of key committees]

Millstone, E (2009), 'Science, risk and governance: Radical rhetorics and the realities of reform in food safety governance' *Research Policy* Volume 38, Issue 4, May 2009, Pages 624-636 [Sets BSE and its legacy in a wider context]

Millstone, E and van Zwanenberg, P (2005), *BSE: Risk, Science and Governance* (Oxford: OUP).

Frewer, L and Salter, B (2002), 'Public attitudes, scientific advice and the politics of regulatory policy: the case of BSE', *Science and Public Policy*, 29(2), p137- 45

Jasanoff, S (1997), 'Civilization and Madness: The Great BSE Scare of 1996', *Public Understanding of Science* Vo.6 pp.221-232

Miller, D (1999) 'Risk, science and policy: definitional struggles, information management, the media and BSE', *Social Science and Medicine* 49(9), pp.1239-1255

Goethals, C *et al* (1998), 'The Politics of BSE: Negotiating the Public's Health', in Ratzan, Scott C (ed) *The Mad Cow Crisis: Health and the Public Good* (London: UCL Press) [[Available on-line from library: click Online Resources then Reading Lists and search for this course]

Winter, M (1996), 'Intersecting Departmental Responsibilities, Administrative Confusion and the role of science in Government: The Case of BSE', *Parliamentary Affairs* Vol.49 No.4 pp.550-565.

Wilson, Chris (2004), 'Intersecting Discourses: MMR vaccine and BSE', *Science as Culture* 13(1): 75-88.

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### Topic 8. "Plant Biodiversity"

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- Reading List to be Added by Guest Lecturer

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## Topic 9. Biological Weapons Control

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In 1991 it was *estimated* that a 20kt nuclear warhead could kill 40,000 people and injure another 40,000; a chemical warhead of 300kg Sarin (nerve gas) could under the same conditions kill 200-3,000 people; a 30kg anthrax bomb would probably kill between 20,000 - 80,000 people. Biological weapons are relatively easy and cheap to make and it is believed that between 8 and 10 countries currently have undeclared biological weapons programmes. This session looks at the nature of biological warfare and possible methods for controlling biological weapons.

### Essential Reading:

Kelle, A et al (2006), 'Science, Technology and the BW Prohibition Regime' in Kelle, A *et al*, *Controlling Biochemical Weapons: Adapting Multilateral Arms Control for the 21<sup>st</sup> Century* (Palgrave) [Available on-line from library: click Online Resources then Reading Lists and search for this course]

### Additional Reading:

Kelle, A M. Dando and K. Nixdorff (2010) 'Strengthening BWC Prevention of State-sponsored Bioweapons', in *Bulletin of the Atomic Scientists*, Vol.66, No.1, pp.18-23

McLeish, C and Nightingale, P (2007), 'Biosecurity, Bioterrorism and the Increasing Convergence of Science and Security Policy', *Research Policy* Vol.36 No.10 pp.1635-1654

Buchanan, A and Kelley, M (2013), 'Biodefence and the Production of Knowledge: Rethinking The Problem', *Journal of Medical Ethics* 39: 195-204.

Littlewood, J (2008), 'Managing Biological Disarmament: The UK Experience', *Science and Public Policy* 35(1): 13-20. [Senate House library, you can get this electronically if you have a Senate House library card]

Tucker, J (2012), *Innovation, Dual-Use and Security: Managing the Risks of Emerging Biological and Chemical Technologies* (Cambridge MA: MIT Press) (Chapters 1 and 2).(E-book ordered for the library).

Guillemin, J (2005), *Biological Weapons: From State-Sponsored Programs to Contemporary Bioterrorism* (Columbia) (Chapters 1, 8 and 9)

John Rubin Productions (2007) 'The Living Weapon' (Emmy award winning documentary)  
<http://www.pbs.org/wgbh/amex/weapon/filmmore/index.html>

Foreign and Commonwealth Office (2002) *Strengthening the Biological and Toxin Weapons Convention: Countering the Threat from Biological Weapons* (Cmd 5484) (London: TSO).  
(At <http://www.fco.gov.uk/Files/kfile/btwc290402.pdf> )

Rappert, B and McLeish, C (2007) (eds), *Web of Prevention: Biological Weapons, Life Sciences and the Governance of Research* (London: Earthscan, 2007) (esp chapter by Atlas)

Durodie, B (2004), 'Facing the Possibility of Bioterrorism', *Current Opinion in Biotechnology* 15: 264-268.

Dando M (1994), *Biological Warfare in the 21st Century* (London: Brassey's) (Chapter 4) (A very readable introduction on the nature of BW) (See also chapters 1,8,10)

*Useful web sites:*

Peace Studies, University of Bradford (lots of introductory information and analysis – including videos!): <http://www.brad.ac.uk/acad/sbtwc/>

Stockholm International Peace Research Institute: [www.sipri.se/](http://www.sipri.se/)

Harvard Sussex Program on CBW Armament and Arms Limitation:

[www.sussex.ac.uk/spru/hsp/](http://www.sussex.ac.uk/spru/hsp/)

The Program also publishes *The CBW Conventions Bulletin* with news, background and commentary. Back issues available on the web: <http://www.fas.harvard.edu/~hsp/bulletin/>

Federation of American Scientists (Has initiative on CBW arms control): [www.fas.org/](http://www.fas.org/)

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## Topic 10. Animal Experimentation

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Most of the literature on animal experimentation focuses on ethics – is it right or wrong. While not wholly ignoring this debate, a more policy-orientated social science literature tries to understand the social dynamics of the debate. From this perspective analysis tries to understand how the debate gets fought; what sort of rhetoric, strategies or tactics are employed on both sides; why people become involved in the issue etc.

The Wellcome Information Service (see front of reading list) has a large collection of material on issues in animal experimentation and you are encouraged to explore their resources.

***The social dynamics of the debate:***

These are not arguments for or against, but analyses of the history of the issue and of the types and styles of arguments used:

**Essential Reading**

**Sanders, S and Jasper, JM (1994), 'Civil Politics in the Animal Rights Conflict: God Terms versus Casuistry in Cambridge, Massachusetts', *Science, Technology and Human Values* Vol.19 No.2 pp169-188**

**Additional Reading:**

Michael M and Birke L (1994), 'Accounting for Animal Experiments: Identity and Disreputable "Others"', *Science, Technology and Human Values* Vol.19 No.2 pp189-204

Nelkin D and Jasper JM (1992), 'The Animal Rights Controversy', in Nelkin D (1992), *Controversy: The Politics of Technical Decisions* (3rd Edition) (Newbury Park: Sage) pp26-44. [[Available on-line from library: click Online <http://ls-tlss.ucl.ac.uk/> and search for this course, tick the 'previous year' box to make sure]

Pivetti, M (2007), 'Natural and unnatural: activists' representations of animal biotechnology', *New Genetics and Society* Vol.26(2): 137-157.

- Frickel, S et al (2010), 'Undone Science: Charting Social Movement and Civil Society Challenges to Research Agenda Setting', *Science, Technology and Human Values* 35(4):444-473. [See CASE STUDY No.4.]
- von Roten, FC (2013), 'Public perceptions of animal experimentation across Europe', *Public Understanding of Science* 22: 691-70
- Holmberg, T and Ideland, M (2012), 'Secrets and lies: "selective openness" in the apparatus of animal experimentation', *Public Understanding of Science* vol. 21 no. 3: 354-368
- Jasper, JM and Poulsen, J (1995), 'Recruiting Strangers and Friends: Moral Shocks and Social Networks in Animal Rights and Anti-nuclear Protest', *Social Problems* 42(4):493-512 (Looks at recruitment to protest movements via 'moral shocks' of visual and verbal rhetoric).
- Jasper, JM and Poulsen, J (1993), 'Fighting Back: Vulnerabilities, Blunders, and Countermobilization by the Targets in Three Animal Rights Campaigns', *Sociological Forum* Vol.8 (4): 639-57.
- Munro, L (2005), 'Strategies, Action Repertoires and DIY Activism in the Animal Rights Movement', *Social Movement Studies* Vol 4 (1): 75 – 94. (Argues, based on empirical study, that the majority of animal activists employ non-violent means).

**Web-Sites:**

- The Research Defence Society: <http://www.rds-online.org.uk/>  
People for the Ethical Treatment of Animals: <http://www.peta-online.org>  
Royal Society for Prevention of Cruelty to Animals: <http://www.rspca.org.uk/>

ESSAY TOPICS FOR POLICY ISSUES  
IN THE LIFE SCIENCES  
**Autumn 2013-14**

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*Assignments 1 and 3: Essay*

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**Essay 1: Focussed Essay**

This essay should be approximately 1,500 words long and focus on the main issues in order to answer the question set (i.e. don't write a general essay on the subject). As a rough guideline, I would expect you to draw on the essential reading(s) for the topic plus about 3-4 other sources.

**Essay 2:** *Detailed separately later*

**Essay 3: Longer Essay**

This essay should be approximately 2,500 words long and you are expected to read widely around the topic. You do not need to use all your sources to the same extent in order to answer the question set (i.e. don't write a general essay on the subject), but you do need to demonstrate that you have consulted a range of relevant sources.

**Format**

Essays should be spell-checked, 1.5 line spaced, minimum 12 point type with citations to references both in the essay and with a list of these references at the end. You must include **page numbers** and a **word count** (that excludes bibliography). I prefer Harvard referencing style (Google it) but you can use any citation convention as long as you are consistent, consult some of the journals on the reading list for styles.

Please read the guidelines on how to write an essay or consult: **A. Northedge (1990), *The Good Study Guide***. Students who wish to write an essay connected with the course but not on the list should see me to discuss a title. See the front of your reading list for due dates.

**NB:** *You can do an essay on a topic that we have not covered yet; this will be taken into consideration during marking*

**Essay 1 and 3 Questions:**

1. To what extent are academic and industrial biomedical research 'uneasy bedfellows'?  
{ Alternative option for short essay (assignment 1):  
What are the most contentious issues when academic biomedical research becomes linked to industry?  
Explain your answer }
2. **EITHER**  
If human volunteers in experiments are treated as more than just research material, is this likely to make any significant difference to science?  
**OR**  
What does it mean to say that experiments involving humans are political?  
[Second question: This reading list supplements the lecture reading list:  
<http://www.ucl.ac.uk/silva/researchvolunteersforum/info-res/theories-biopolitics/clinical-trials> ]

3. Where, and to whom, should DNA testing for genetic traits be made available?  
{i.e. the main point about 'traits' is that this essay should not overlap with DNA testing in the criminal justice system}
4. "Just as science can free the innocent, it can also identify the guilty" (Romney cited in Jasanoff 2006). To what extent can DNA profiling live up to this expectation?  
  
[Short essay, Assignment 1: if you want, you may restrict your discussion to either DNA databases or DNA evidence in court]
5. Is the GM crop debate only about GM crops?
6. The BSE crisis is often depicted as the result of bad science or bad politics. Are these explanations over-simplistic?
7. *Plant biodiversity – question to come*
8. What, if anything, can be done to prevent the use of biological weapons?  
[Short essay, Assignment 1. Optional wording: Assess the strengths and weaknesses of one or two measures that have been proposed or introduced to prevent the use of biological weapons] [eg the BWC, codes of conduct, import/export controls, defensive research etc]
9. Have the public debates over animal experiments become irredeemably characterized by 'mutual suspicion and name calling that preclude communication or compromise' (Sanders and Jasper, 1994)?

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### *Assignment 2: Review*

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This assignment should be a brief (1000 word) review of *one* item<sup>1</sup> from the reading list which should be taken from a topic on the course for which you do not write an essay.

**Your review should concentrate on one item, but also read 2-3 other items to place the review in context.**

You should use the following as a check list. Not all of the points will be relevant or necessary for every review.

- Clearly set out the title(s) of the piece(s) you are reviewing. You should also give your review a title.
- Provide the reader with an outline of the contents of the pieces(s), including:

What question(s) is (are) being asked by the author(s)? What problems are being addressed? What are the main arguments or claims being made? What evidence is used to support this argument? *If*

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<sup>1</sup> An item from the reading list would be (a) a journal article (b) all assigned chapters from a single authored book or (c) a single chapter from an edited book collection (a) a book. Avoid purely technical pieces. Do not review short news items or commentaries that are less than two pages (if in doubt ask BB before starting your review).

*relevant:* what research methods and theoretical perspectives have been used?

However - do not spend too much of your word quota on this descriptive material.

- Your review should also be analytical:

What are the strengths and weaknesses of the argument(s)?

What are the strengths and weaknesses of the authors' use of evidence?

*If relevant:* what are the strengths and weaknesses of the research methods and theoretical perspectives used?

***Note: It is essential that you don't just provide a judgement but also the reasons for your judgement e.g. don't just say that 'the argument is strong', 'the section on X is good' say why it is strong or what is good about it***

- While the clarity of the writing is important and can be commented on, this is not the main point of your review which should focus on the substantive content of the piece reviewed.
- What is the context of the review – i.e. how does this item fit in with the topic in general (this is why it is important to do two or three other readings for context).
- If reviewing more than one chapter/article: How do the articles relate to each other?
- Final points - e.g. ask yourself: What use has the book or article(s) been for me (and why)? Are there any remaining questions to be cleared up? Finish with an *overall* judgement about the articles or book.
- The journals *Public Understanding of Science*; *Social Studies of Science*; *Science, Technology & Human Values* and *Minerva* have reviews, covering individual books and also longer essay reviews, which may be worth using as models.
- Three examples of high scoring assignments from previous years are on the Moodle site.