HPSC 2001 Policy Issues in the Life Sciences
Course Syllabus

2017-18 session | Convenor: Prof. Brian Balmer | b.balmer@ucl.ac.uk
Postgraduate Teaching Assistant: Alex Mankoo a.mankoo@ucl.ac.uk

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

<table>
<thead>
<tr>
<th>Course website:</th>
<th>On Moodle</th>
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<tbody>
<tr>
<td>Moodle Web site:</td>
<td>Search ‘HPSC2001’</td>
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<tr>
<td>Assessment:</td>
<td>This term’s course will be assessed on the basis of two written assignments: review (40%) and an essay (60%).</td>
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<td>Timetable:</td>
<td><a href="http://www.ucl.ac.uk/timetable">www.ucl.ac.uk/timetable</a></td>
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<tr>
<td>Prerequisites:</td>
<td>no pre-requisites, course designed for year 2 and above undergraduate students</td>
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<tr>
<td>Required texts:</td>
<td>See reading list</td>
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<td>Course tutor:</td>
<td>Prof. Brian Balmer</td>
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<tr>
<td>Contact:</td>
<td><a href="mailto:b.balmer@ucl.ac.uk">b.balmer@ucl.ac.uk</a></td>
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<tr>
<td>Web:</td>
<td><a href="http://www.ucl.ac.uk/silva/sts/staff/balmer">www.ucl.ac.uk/silva/sts/staff/balmer</a></td>
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<tr>
<td>Office</td>
<td>22 Gordon Square, Room 2.4a</td>
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<td>Office hours:</td>
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Schedule

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<tr>
<th>UCL Week</th>
<th>Topic</th>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>6</td>
<td>Introduction: Science &amp; Social Change</td>
<td>2 Oct</td>
<td>Consult Moodle before class</td>
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<td>7</td>
<td>“A conflict of interest?”: Biomedical Research Policy and University-Industry Links</td>
<td>9 Oct</td>
<td>Consult Moodle before class</td>
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<td>8</td>
<td>Genetic Screening and Testing</td>
<td>16 Oct</td>
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<td>9</td>
<td>DNA Profiling and Crime</td>
<td>23 Oct</td>
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<td>10</td>
<td>GM Crops and Science Policy</td>
<td>30 Oct</td>
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<td>11</td>
<td>Assignment 1 deadline</td>
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<td>11</td>
<td>Reading Week</td>
<td>6 Nov</td>
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<td>12</td>
<td>“Mad Cow Disease”: BSE, CJD and Science Advice</td>
<td>13 Nov</td>
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<td>13</td>
<td>Biodiversity</td>
<td>20 Nov</td>
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<td>14</td>
<td>Controlling Biological Weapons</td>
<td>27 Nov</td>
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<td>15</td>
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<td>16</td>
<td>Animal Experimentation</td>
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Assessments

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<td>Long Essay (60%)</td>
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Due dates are checked for clashes within the first few weeks of term and so are indicative. Check Moodle for final due dates.

Full details and instructions are at the end of this document.
Assignments
This term’s course will be assessed on the basis of two written assignments (see above and end of this document). 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 both assignments and attend at least 7 out of 10 seminar sessions.

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, bioprospecting, 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
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• Have detailed knowledge of a number of case studies of policy issues in the life sciences
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Course expectations
There will be one lecture each week on Mondays, See UCL Timetable for time and locations, and one seminar each week (see UCL timetable for times and rooms). You will be allocated to a seminar group. The seminars are not optional.

There will be a reading week, with no lectures or seminars, see course schedule.

A poor seminar attendance record, usually 3 undocumented absences, may 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 assignment 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 read everything, you can agree or disagree with everything you read – but you should be able to say why you hold your views and where possible use other things you have read to support your reasons.

**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 or through on-line electronic journals accessible through the library web-site.

A small number of more difficult to find readings marked [D] have been digitized by the Library and can be obtained by clicking on the link to the Online Reading List on the Moodle page.

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**

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.
Topic 1: Science and Social Change

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 Readings:


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 https://www.demos.co.uk/files/receivedwisdom.pdf]

Additional Readings:


Topic 2: Research Policy and the Life Sciences

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:


Additional Reading:

Theories:


[Thoughtful discussion of a case study about avian flu research and how global issues shape what research gets done]

*Industry-Academia:*

Vedel, Jane Bjørn, and Alan Irwin. "‘This Is What We Got, What Would You Like?’: Aligning And Unaligning Academic-Industry Relations." *Social Studies of Science* 47.3 (2017): 417-438. (Argues against a firm division between academia and industry)


Sarah Wadmann (2014) ‘Physician–industry collaboration: Conflicts of interest and the imputation of motive, *Social Studies of Science August 2014 44: 531-554* (argues that ‘conflicts of interest’ is unhelpful in analyzing industry-academia relations)


[Digital reading list]


Topic 3. Genetic Testing and Screening

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:**


**Additional Reading**

Hogarth, Stuart, and Paula Saukko. "A Market In The Making: The Past, Present And Future Of Direct-To-Consumer Genomics." *New Genetics and Society* 36.3 (2017): 197-208. (Good review of the literature on direct to consumer genetic tests, also links this to wider developments in genetic testing. Use the bibliography and other articles in this special edition to follow up aspects that interest you)

Sharon, T (2015), Healthy Citizenship beyond autonomy and discipline: tactical engagements with genetic testing. *BioSocieties* 10(3):295-316 (argues that when people reject genetic tests or results it is more than simply a case of willful ignorance)


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

*Compare with:*


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**Topic 54 DNA Profiling (Fingerprinting)**

DNA fingerprinting can be regarded as a relatively 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:**
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 Executive Summary for a quick overview of the issues):

http://nuffieldbioethics.org/report/bioinformation-2/key-findings

**Additional Reading:**


Kruse, C (2012), Legal storytelling in pre-trial investigations: arguing for a wider perspective on forensic evidence, New Genetics and Society 31(3): 299-309


http://www.thehastingscenter.org/briefingbook/dna-and-law-enforcement/


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)

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

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**Topic 5. Release of GMOs into the Environment**

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


Also

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

*EMBO Reports* 8(4):309-315

**Additional Reading:**

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)

Hicks, (2017), “Genetically Modified Crops, Inclusion and Democracy”, Perspectives on Science [Available as a pre-print article on journal web-page access via UCL library e-journals].


Bonneuil, C, Foyer, J and Wynne, B (2014), ‘Genetic Fallout in biocultural landscapes: Molecular imperialism and the cultural politics of (not) seeing transgenes in Mexico, Social Studies of Science 44(6): 901-29 (more on how the debate is ‘framed’)


(This gives the perspective from the Biotech Industry Trade Association http://www.europabio.org/)

Hunter, P (2014), ‘Genetically Modified Lite’ Placates Public But Not Activists, EMBO Reports, Vol15 No.2 138- (think about how this new proposal to defuse the debate is ‘framing’ the issue)

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**Topic 6: BSE, CJD and Science Advice**

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:*


Additional Reading


[Available at http://www.demos.co.uk/publications/receivedwisdom ]


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

**Topic 7. Biodiversity, Bioprospecting And Biopiracy**

This topic introduces the political and ethical implications of conceptualising biodiversity as a valuable resource to be conserved and used. We will think about the effects of regulating international access to biodiversity through the 1993 UN Convention on Biological Diversity (1993) and explore the concepts of bioprospecting and biopiracy to discuss what value means in this context (and to whom), what ideas of ownership of nature and knowledge are at play, and how the uneven global distribution of biodiversity, knowledge and technology is relevant to these discussions.

Reading List

**Essential Reading:**

*The first paper is by two of the anthropologists directing this project, the second is a short news release by the NGO that coined the term ‘biopiracy’. Read both for opposing views on the controversy by actors involved.*


**Additional Reading**


project. Pp 85-89, 100-105.


Considers biomedical and clinical research as well as bioprospecting to comment on the asymmetries caused by the commercialisation of the results of research and attempts to solve it by instituting benefit sharing.

Critical paper from a geographical perspective that argues that the Convention for Biological Diversity is a consequence of a 'green developmentalism' paradigm that constructs genetic diversity as valuable raw material that can be traded internationally.


A critical, activist perspective which maintains that industrialised countries are exploiting the resources of non-industrialised ones for profit.

You may also find this legal primer to biopiracy interesting: http://www.actionbioscience.org/biodiversity/gollin.html

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**Topic 8. Biological Weapons Control**

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:**

Use the internet to look up the difference between chemical and biological weapons.

Links to both readings are on the Moodle site:
Also read the text of the 1972 Biological Weapons Convention (it is a short treaty): https://www.un.org/disarmament/wmd/bio/
**Additional Reading:**


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


Dando M (1994), *Biological Warfare in the 21st Century* (London: Brasseys) (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/
Harvard Sussex Program on CBW Armament and Arms Limitation: www.sussex.ac.uk/spru/hsp/
Federation of American Scientists (Has initiative on CBW arms control): www.fas.org/

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**Topic 9 Human Experimentation**

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


OR


OR


**Additional Reading**

See also [http://www.ucl.ac.uk/researchvolunteersforum/](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]


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


Active patients and research subjects


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


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.


Researcher-subject relationships


**Topic 10. Animal Experimentation**

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**


**Additional Reading:**


Greenhough, Beth, and Emma Roe. "Exploring The Role Of Animal Technologists In Implementing The 3Rs." *Science, Technology, & Human Values* (2017) [[Pre-print available from journal web-site if accessed through UCL library e-journals]


ESSAY TOPICS FOR POLICY ISSUES
IN THE LIFE SCIENCES
Autumn 2017-18

Assignment 1: Review

This assignment should be a brief (1500 word) review of one item from the reading list which should be taken from a topic on the course for which you do not write an essay.

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).

The best reviews tend to be of items that present a strong argument – articles that merely describe policies or events can be informative but are harder to review. You can then position your review around whether or not you were convinced by the item.

Your review should concentrate on one item, but also read 3-4 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 which captures the main message you want to get across.

- 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 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? Remember that qualitative studies – and there are plenty on the reading list - don’t aim to be representative – they go for depth rather than breadth.¹

  *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

¹ If you want to quickly read a bit more about this see: https://www.simplypsychology.org/qualitative-quantitative.html
• 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 (when the word limit was 1000 words) are on the Moodle site.

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Assignment 2

Assignment 2: Essay
This essay should be 3000 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. There are no set number of sources that make a good essay and it is not necessary to read everything on the reading list or in the same amount of depth or detail. Keep focused on the question ‘is this helping me answer the essay question?’ as a rough guide.

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*. There are e-versions available from UCL library. 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 Questions:

1. Is there really a “great divide” between academic research and industry R&D? [Note the phrase comes from the Vedel and Irwin reference p. 420]

2. “The growing market for direct-to-consumer genetic testing may promote awareness of genetic diseases, allow consumers to take a more proactive role in their health care, and offer a means for people to learn about their ancestral origins.” [https://ghr.nlm.nih.gov/primer/testing/directtoconsumer] Critically discuss whether greater regulation of direct-to-consumer genetic testing would stifle these advantages.

3. “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?

4. Does it matter how the GM crop debate is ‘framed’?

5. Was there a BSE ‘crisis’?

6. Can ‘bioprospecting’ ever be carried out responsibly?

7. What, if anything, can be done to prevent the use of biological weapons?

8. Can participants in biomedical research ever be more than just ‘guinea pigs’?

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)?