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 government. Science plays a vital role in shaping policy and society. At the same time, social, cultural and political forces shape the production of scientific knowledge.

We will focus on developments in science policy, using case studies and current theory in 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?

Everyone attends two lectures and one tutorial per week.
Aims & objectives

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?

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

Schedule

<table>
<thead>
<tr>
<th>UCL Week</th>
<th>Lecture week</th>
<th>Topic</th>
<th>Lecture Dates</th>
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<tbody>
<tr>
<td>20</td>
<td>1</td>
<td>Why science policy matters</td>
<td>7 and 8 Jan</td>
</tr>
<tr>
<td>21</td>
<td>2</td>
<td>Big Science</td>
<td>14 and 15 Jan</td>
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<tr>
<td>22</td>
<td>3</td>
<td>21st Century science policy</td>
<td>21 and 22 Jan</td>
</tr>
<tr>
<td>23</td>
<td>4</td>
<td>The sociology of science</td>
<td>28 and 29 Jan</td>
</tr>
<tr>
<td>24</td>
<td>5</td>
<td>Risk and uncertainty</td>
<td>4 and 5 Feb</td>
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<tr>
<td>25</td>
<td>6</td>
<td>Reading Week</td>
<td>11 Feb</td>
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<tr>
<td>26</td>
<td>7</td>
<td>Science and expert advice</td>
<td>18 and 19 Feb</td>
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<tr>
<td>27</td>
<td>8</td>
<td>Science, gender, inequalities</td>
<td>25 and 26 Feb</td>
</tr>
<tr>
<td>28</td>
<td>9</td>
<td>Science, technology and innovation</td>
<td>4 and 5 March</td>
</tr>
<tr>
<td>29</td>
<td>10</td>
<td>Open access and open science</td>
<td>11 and 12 March</td>
</tr>
<tr>
<td>30</td>
<td>11</td>
<td>Science policy in global context</td>
<td>18 and 19 March</td>
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DEADLINE: Essay

20 March 2019 (Provisional)
Assessments

<table>
<thead>
<tr>
<th>Summary</th>
<th>Description</th>
<th>Deadline</th>
<th>Word limit</th>
<th>Feedback provided by Tutors</th>
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</thead>
<tbody>
<tr>
<td>Essay (50%)</td>
<td>Question from essay list in this syllabus</td>
<td>5pm Wed 20 March 2019 (Provisional See Moodle)</td>
<td>2,500 maximum</td>
<td>24/04/2019 (to take Easter break into account)</td>
</tr>
<tr>
<td>Exam (50%)</td>
<td>3 Hours</td>
<td>Summer Term</td>
<td>n/a</td>
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Assignments

The assessment for this course consists of one essay and an exam. Essays should have a maximum of 2,500 words (worth 50% of your final mark). The third piece of assessment takes the form of a 3 hour unseen exam, worth 50% of your final mark.

Key readings are listed in this document but there are ADDITIONAL reading suggestions for your essays on Moodle. You are expected to read widely for your essays.

Essays must be submitted via Moodle. Please indicate the topic or question number in your file title.

Essays should be minimum 12 point type and 1.5 line spaced. You should have a list of references at the end (which are not part of the word count).

ESSAY – choose one question

1. The Haldane principle is the idea that decisions about what to spend research funds on should be made by researchers rather than politicians. Should the government follow this principle?
2. What can "Big Science" today learn from historical examples such as the Manhattan Project and NASA's moon mission? How might potential negative outcomes be avoided?
3. "Industrial policy" and Brexit are influencing the ways in which money is allocated to science in the UK. Should research for industry be funded by the public? What role do ideas such as 'Mode 2' have to play in science policy?
4. Using at least one example, discuss the role bias plays in science.
5. How can science policy mitigate against unknown but potentially harmful effects of emerging technologies? Illustrate your essay with examples of controversial issues from today or recent decades.
6. "I think that the people of this country have had enough of experts" - UK Justice Secretary Michael Gove, 2016. Was Mr. Gove right? Discuss the appropriate role for scientists and expert advice in society today?
7. What barriers prevent people of all genders participating equally in science? How can policy overcome these barriers?
8. According to Stirling et al (2018), when research and innovation is driven and steered only by narrow interests, the results will tend to side-line less-privileged perspectives. How can policy ensure the benefits of innovation are evenly distributed?
9. Climate change and the Sustainable Development Goals represent global challenges. What role can science policy play in these global contexts?

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

**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 lectures and tutorials in order to understand the material. There is also recommended reading if you have time. Additional reading for the essays and exam will be posted on Moodle. I encourage you to also do your own research to find readings and sources that are not included here. You should also start taking an interest in live science policy debates. Have a look at these blogs:

- [http://news.sciencemag.org/scienceinsider/](http://news.sciencemag.org/scienceinsider/)
- [https://www.genderportal.eu/blog](https://www.genderportal.eu/blog)
- [https://www.nesta.org.uk/blog/](https://www.nesta.org.uk/blog/)
- [http://www.softmachines.org/](http://www.softmachines.org/)
- [https://rogerpielkejr.com/](https://rogerpielkejr.com/)
- [http://www.theguardian.com/science/political-science](http://www.theguardian.com/science/political-science)

**Week one Why science policy matters**

Science and technology are vital parts of social and political life, but they are often overlooked by politicians and the media. In the first week, we’ll be looking at why science matters, why it matters for policy and why policy matters for science. We’ll also start to think about what features make science and technology similar to and different from other areas of policy.

**Essential reading**

- ...also read this blog post, [http://jackstilgoe.wordpress.com/2012/11/30/should-there-be-more-scientists-in-parliament/](http://jackstilgoe.wordpress.com/2012/11/30/should-there-be-more-scientists-in-parliament/)

**Recommended reading:**

1. Mazzucato, M. (2013) The Entrepreneurial State, Anthem (Chapter 5 – The state behind the iPhone)

**Policy documents**


**Week two Big Science and the evolution of science policy**
The shape and size of science changed hugely during the twentieth century. Rich countries spend vastly more money on science than they did before World War 2. Science has got big.

**Essential reading:**


**Recommended reading**

1. Hughes, J (2002), The Manhattan Project: Big Science and the Atom Bomb, Icon Books (Chapters 1 and 2)

**Week three 21st century science policy**

In the 21st Century, science is seen as a vital source of economic growth, but the financial crisis of 2008 has forced countries to cut spending. Why should we spend money on science when there are other pressing needs? The ways in which money is allocated to science are changing. Politicians and the public want to know more about how their money is being spent. Are we moving from ‘Mode 1’ to ‘Mode 2’ science?

**Essential reading**

- Reid, G (2014) Why should the taxpayer fund science and research?, Report for the National Centre for Universities and Business, [link](https://www.ucl.ac.uk/public-policy/why-should-taxpayer-fund-science-and-research)

**Recommended reading**


**Policy documents**

Week four The sociology of science

Scientists and philosophers offer explanations for how scientific knowledge is supposed to progress. Sociologists of science instead ask what science is really like and how it is really done. Does it live up to the ideal image that we are often presented with? Are there alternative ways of knowing and if so, what are the implications?

Essential reading

- Sismondo, S (2004), An Introduction to Science and Technology Studies (Oxford: Blackwell) Chapter 3 (Questioning Functionalism in the Sociology of Science) (on Moodle)

Recommended reading


Week five Risk and uncertainty

Science and technology have vast potential benefits. But this increased power also brings new risks. We may be able to calculate these risks, or we may be completely uncertain.

Essential reading


Recommended reading


Week six READING WEEK

No lectures or seminar this week.

Week seven Science, expert advice and policy-making
Scientists are often asked to help government with particular policy questions as expert advisers. This relationship is not straightforward. Scientists do not simply ‘speak truth to power’.

**Essential Reading:**

**Recommended reading**

**Policy documents**

**Week eight Science and gender**

Women are underrepresented in science. There are many ways of thinking about the causes and effects of this pattern? How do structures and cultures of science lead to discrimination? Are science and technology are in some way ‘masculine’? How might insights into science and gender translate to other underrepresented groups?

**Essential reading**

**Recommended reading**
1. Saini, Angela. 2017. Inferior: How Science Got Women Wrong and the New Research That’s Rewriting the Story. London: Harper Collins. Specifically, the *Introduction* and *Chapter 4 The Missing Five Ounces of the Female Brain*. [Note: This is the STS OneBook for 2018-19, see [https://www.ucl.ac.uk/sts/sts-current-students/sts1book-programme](https://www.ucl.ac.uk/sts/sts-current-students/sts1book-programme)]
Week nine Science, technology and innovation

Thinking about technology is different from thinking about science, even if we can’t draw a clear line between the two. How is science related to technology? Is technology just ‘applied science’ or is it more complicated? And is innovation always a good thing?

Essential reading
- Chang, H-J (2011) The washing machine has changed the world more than the internet has, ‘Thing 4’ in 23 things they don’t tell you about capitalism, Penguin (on Moodle)

Recommended reading

Week ten Open access and open science

The growth of the Internet has prompted some scientists and others to push for greater openness – improved access to scientific information and new ways of doing science online.

Essential reading (two short pieces on ‘Climategate’)

Recommended reading
On Open Access

On Open Science
Policy documents


**Week eleven** Science policy in a global context

Science, innovation and the production of knowledge has never been confined to the research labs of Europe and North America. Science is being done in new ways in many places. Are European and American science under threat from emerging science powerhouses such as China and India or is global science good for everyone? And what role does science and technology policy play in addressing global challenges such as the Sustainable Development Goals.

**Essential Reading:**


**Recommended reading:**


2. UN SDN 2015, Chapter 1: Getting to know the Sustainable Development Goals. Available from [https://sdg.guide/chapter-1-getting-to-know-the-sustainable-development-goals-e05b9d17801](https://sdg.guide/chapter-1-getting-to-know-the-sustainable-development-goals-e05b9d17801)

**Course expectations**

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

**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