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.

### Basic course information

<table>
<thead>
<tr>
<th>Moodle Web site:</th>
<th><a href="https://moodle.ucl.ac.uk/course/view.php?id=38545">https://moodle.ucl.ac.uk/course/view.php?id=38545</a></th>
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<tbody>
<tr>
<td>Assessment:</td>
<td>One piece of coursework (2,500 words) (50%) and one exam (50%)</td>
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<tr>
<td>Timetable:</td>
<td><a href="https://timetable.ucl.ac.uk/">https://timetable.ucl.ac.uk/</a></td>
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<tr>
<td>Prerequisites:</td>
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<td>Required texts:</td>
<td>No required texts</td>
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<tr>
<td>Course tutor(s):</td>
<td>Course convenor: Dr Jack Stilgoe</td>
</tr>
<tr>
<td></td>
<td>Teaching assistant: Alessandro Allegra</td>
</tr>
<tr>
<td>Contact:</td>
<td><a href="mailto:j.stilgoe@ucl.ac.uk">j.stilgoe@ucl.ac.uk</a></td>
</tr>
<tr>
<td>Web:</td>
<td><a href="http://www.ucl.ac.uk/sts/staff/stilgoe">http://www.ucl.ac.uk/sts/staff/stilgoe</a></td>
</tr>
<tr>
<td>Office location:</td>
<td>22 Gordon Square, Room 2.4</td>
</tr>
<tr>
<td>Stilgoe office hours:</td>
<td>Tuesdays 11-1</td>
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Schedule

<table>
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<tr>
<th>UCL Week</th>
<th>Topic</th>
<th>Lecture Dates</th>
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<tbody>
<tr>
<td>20</td>
<td>Why science policy matters</td>
<td>8 and 9 Jan</td>
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<tr>
<td>21</td>
<td>Big Science</td>
<td>15 and 16 Jan</td>
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<tr>
<td>22</td>
<td>21st Century science policy</td>
<td>22 and 23 Jan</td>
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<tr>
<td>23</td>
<td>The sociology of science</td>
<td>29 and 30 Jan</td>
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<tr>
<td>24</td>
<td>Risk and uncertainty</td>
<td>5 and 6 Feb</td>
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<tr>
<td>25</td>
<td>Reading Week</td>
<td>12 Feb</td>
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<tr>
<td>26</td>
<td>Science and expert advice</td>
<td>19 and 20 Feb</td>
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<tr>
<td>27</td>
<td>Science, technology and innovation</td>
<td>26 and 27 Feb</td>
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<tr>
<td>28</td>
<td>Open access and open science</td>
<td>5 and 6 March</td>
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<tr>
<td>29</td>
<td>Science and gender</td>
<td>12 and 13 March</td>
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<tr>
<td>30</td>
<td>Science policy in global context</td>
<td>19 and 20 March</td>
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<tr>
<td></td>
<td><strong>DEADLINE: Essay</strong></td>
<td><strong>21 March 2017</strong> (Provisional)</td>
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Assessments

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<tr>
<th></th>
<th>Description</th>
<th>Deadline</th>
<th>Word limit</th>
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<tr>
<td>Essay (50%)</td>
<td>Question from essay list in this syllabus</td>
<td>5pm Wed 21 March 2017 (Provisional. See Moodle)</td>
<td>2500 maximum</td>
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<tr>
<td>Exam (50%)</td>
<td>3 Hours</td>
<td>Summer Term</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. Paul Nurse’s 2015 review of UK science policy starts by arguing that science should be supported because it is both useful and inherently worthwhile. Is he correct? Should Government increase their investments in science, even when public spending is decreasing?
2. Using a recent example, describe how contemporary ‘Big Science’ compares with the model of the Manhattan Project.
3. How did science policy change in the final decades of the 20th Century and the first decades of the 21st? Does the idea of ‘Mode 2’ knowledge production explain these changes?
4. Does science live up to the ideal described by Robert Merton?
5. What are the limits of risk assessment?
6. Dan Sarewitz (2003) argues that in some cases “science makes environmental controversies worse” rather than better. How? And what should be done about it?
7. Using examples, explain how technology is related to science
8. Why should policymakers attempt to fix the ‘leaky pipe-line’ for women in science?
9. Should the UK government insist that all the science they fund should be open to the public? Why/Why not?

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

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

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://www.theguardian.com/science/political-science
http://www.softmachines.org/
http://rogerpielkejr.blogspot.co.uk/
http://blogs.royalsociety.org/in-verba/
http://blogs.nature.com/news/
http://news.sciencemag.org/scienceinsider/
http://www.newscientist.com/blogs/thesword/

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/

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

https://www.escholar.manchester.ac.uk/api/datastream?publicationPid=uk-ac-man-scw:3b4379&datastreamId=FULL-TEXT.PDF


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

Recommended reading

Policy documents
Ensuring a successful UK research endeavour A Review of the UK Research Councils by Paul Nurse, November 2015

Our plan for growth: Science and innovation, BIS and Treasury, December 2014 (A “Long Term strategy to make the UK the best place in the world for science and business”),

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?

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

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

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
Lupton, D (1999), Risk (Routledge). (Chapters 1 and 2). (Introduction to the sociology of risk).

Week Six: READING 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:
Jasanoff, S. (1990) The fifth branch: science advisors as policy makers, Harvard University Press (First chapter)

Recommended reading


Policy documents

Week Eight: 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?

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 Nine: 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
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

On Open Science
Michael Nielsen, Reinventing Science, Chapter 1, free online here http://press.princeton.edu/chapters/s9517.pdf

Policy documents

Week Ten: 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
Schiebinger, L (1999), Has Feminism Changed Science? (Harvard) (Chapter 4 ‘The Clash of Cultures) [Electronic Version Available]

Policy document

Week Eleven: Science policy in global context
Science is being done in new ways and in new places. As the Chinese and Indian economies grow, they are rapidly becoming scientific contenders. How should the West respond? Are European and American science under threat or is global science good for everyone?

Essential Reading:

Recommended reading:

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

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