HSCS2001. Communicating Science: the public and the media

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Introduction

This course is about science communication, an activity that scientists and engineers are increasingly finding to be expected of them in their profession lives. But science communication is about so much more than writing a scientific paper or giving a conference presentation. There are a multitude of platforms that facilitate dynamic relationships between scientists and their various audiences. Whilst the opportunities for reaching the public directly have grown exponentially through the use of social media, traditional media still fulfill an important function in filtering science news for public consumption. Communicating science is not just about putting across ‘the facts’. The contexts that shape scientific information, and indeed ‘make meaning’, are what make the study of science communication important and interesting.

The focus of this course is on practical aspects of communicating and a thorough theoretical grounding in social studies and models that underpin communication. The course aims to equip you with skills and understanding that will be useful in your present studies at Imperial and attractive to future employers, whatever you go on to do.

Course delivery

Classes take place on Mondays from 16.00 to 18.00. The autumn term runs from 10 October to 12 December 2016 and the spring term runs from 16 January to 20 March 2017.

Reading materials and other resources are on the Blackboard Learn portal for the course.

A register is taken each week and you are expected to attend every class. If, for some unavoidable reason, you need to miss a class please e-mail me in advance. There is a minimum attendance requirement of 75%. Please make every effort to be on time for the start of the class. If you are late, it is your responsibility to alert me to update the register at the end of the class.

Assessment

The course is assessed through four components:

- Press release (700 words) based on a news and views article in Nature with an audience justification (300 words) (20%): to be submitted before 5 pm on 24 November
- Persuasive speech of approximately 5 minutes duration (20%): presented during class on 5 and 12 December
- Analytical essay (40%): 2000 words to be submitted before 5 pm on 16 March
- Class participation (20%): engagement in class discussion, use of Blackboard, preparation, feedback to peers, effort in class exercises

Written assignments must be submitted using the Blackboard portal. Please refer to the SCS Assessment Booklet for essential information regarding assignments including how to request an extension for documented mitigating circumstances. Managing your workload is an important skill,
and pressure of work will not be regarded as grounds for an extension. Please note that assignments submitted late will receive zero marks in accordance with College policy.

Course outline

Session 1: Introduction
10 October 2016

Introductory activity. Please bring a camera or a camera-equipped mobile phone if you have one.

Readings:
- Introductory handout on Blackboard
- A Parliamentary Committee is currently undertaking an inquiry into science communication. The scope of the inquiry covers many of the aspects that are relevant to this course. It is recommended that you watch or read the first hour or so of oral evidence presented on 7 September 2016.

Voluntary extra reading:

Session 2: Science in the news
17 October

We will look at how the media cover science and how scientific coverage is measured and assessed. The session will also consider news values and whether these are different for science compared with other types of news, and examine the concept of ‘genre shift’.

Preparatory homework:
- Read a variety of news coverage of science. Think about:
  - where is the newspaper is likely to have sourced the story?
  - is it celebratory or critical of science and scientists?
  - at what level is the scientific language pitched (how much jargon is used)?

Readings:
- Handout on science and the media on Blackboard.

Voluntary extra reading:

Session 3: Social construction of science
24 October

In order to communicate science effectively, we need to get to grips with the nature of science. This session, presented by guest lecturer Jared Keller, will be a brief introduction to philosophy of science. What do we mean by ‘social construction’?

Preparatory homework:
- Excerpt from Somerville, J. (1941) Umbrellaology, Philosophy of Science, 8, 557–66 (handout). Please decide whether or not Umbrellaology is a science or not and write a paragraph of justification, submitted to Blackboard.

Readings:
- Handout on introduction to social construction of science on Blackboard
Voluntary extra reading:
- Collins, H. & Pinch, T. (1993) *The Golem: what you should know about science*. Cambridge, CUP: a series of fascinating case studies that show how circumstances extraneous to the data influenced what came to count as ‘the facts’ in such high-profile discoveries such as relativity, Pasteur’s germ theory and the search for neutrinos.

**Session 4: How to write a press release**

31 October

This session will equip you for answering Assignment 1. We’ll look at the structure and conventions of writing a press release and consider how audiences shape the choice of news angle.

Preparatory homework:
- Write the first paragraph of a news story on the ‘bacterial speech bubble’ paper (on Blackboard). Bring this along to class.

Readings:
- Press release assignment brief
- Press releases on the Eurekalert! website

Voluntary extra reading:

**Session 5: Models of science communication**

7 November

In order to evaluate different modes of science communication, it is useful to distinguish the cognitive-deficit model vs the interactive model of science communication. What are the implications of the interactive model for public engagement with science?

Preparatory homework:
- Handout on tips for reading sociology papers

Readings:
- Handout on models of science communication

Voluntary extra reading:

**Session 6: Controversies and risk**

14 November

Communicating risk is increasingly important in an era of collective hazards. Here, we’ll look at the social amplification of risk and how to communicate risk responsibly. We’ll also consider the role of uncertainty in reporting controversies in science.

Preparatory homework:
- Work on your press release assignment
Session 7: Constructing arguments and speaking persuasively  
21 November

In this session, we will cover the structure of arguments and discuss how to plan and deliver an effective presentation.

Preparatory homework:
• Read brief for Assignment 2 (Presentation)

Readings:
• Handout on ‘Rhetoric and persuasion’ on Blackboard

Voluntary extra reading:
• Dodds, R., Tseelon, E. & Weltkamp, E. L. C. (2008) Making sense of scientific claims in advertising. A study of scientifically aware consumers, Public Understanding of Science, 17, 211. (focus on the introduction and conclusion rather than the details of the methodology and results – although this is a good example of how to write-up focus group research).

Session 8: Metaphor  
28 November

Metaphor, the description of something in terms of something else, is an important literary trope often overlooked in science. We’ll look at how metaphors authorise expectations and are both liberating and limiting within science.

Preparatory homework:
• ‘Spot the metaphor’ exercise on Blackboard

Readings:
• Handout on ‘Metaphor in science’ on Blackboard

Voluntary extra reading:
Sessions 9 and 10: Presentations and visiting the Wellcome Collection
5 and 12 December

Delivery of presentations. The week that you are not speaking, you are expected to please visit the Wellcome Collection (on Euston Road, diagonally opposite the station). There will be a short podcast available to download from Blackboard, highlighting my favourite exhibits. Please contribute to the wiki on Blackboard saying what you liked at the Wellcome. Please note: the Wellcome Collection is not open on Mondays.

CHRISTMAS BREAK

Session 11: Public engagement with science
16 January 2017

This session by Dr Roberto Trotta will look at various forms of audiences and the different ways in which they might engage with science. We’ll look at notions of ‘citizen science’ and consider the role of laypeople in science policy making.

Preparatory homework:
• Read the brief for Assignment 3.

Readings:

Voluntary extra reading:
• There are lots of references on Blackboard which you will find useful for addressing the assignment.

Session 12: The rhetoric of images in science
23 January

Images are often treated as passive ‘snapshots’ of reality. Here we’ll explore how images can be intensely political in the context of science communication.

Preparatory homework:
• Look at the image on Blackboard for this session and come ready to discuss it.

Reading:
• Handout on the Foucauldian gaze on Blackboard

Voluntary extra reading:
• ‘The Bystanders’, *Guardian Weekend* (28 July 2012)

Session 13: Science documentaries
30 January

How are science documentaries made? How have narrative and visual techniques shaped how science is presented?
Preparatory homework:
• Watch an episode of whatever the latest/most interesting science documentary is currently on TV (we’ll discuss what this should be in class)

Readings:
• Handout on modes of documentary on Blackboard

Voluntary extra reading:

**Session 14: Museums and science centres**
6 February

Introduction to some of the aspects of communication in museums that make it challenging to cover contemporary science. Includes a visit to the Science Museum.

Preparatory homework:
• Visit the Natural History Museum’s Darwin Centre with a critical eye to the way it communicates science as a product and a process, and the way it is designed.

Reading:

Voluntary extra reading:

**Session 15: Science in literary fiction**
13 February

Science fiction is a well-loved genre, but science is somewhat underrepresented in literary fiction. Here we’ll have a look at some authors who do incorporate science in fiction and consider whether they have an obligation to be accurate about the science.

Preparatory reading:
• Read *Solar* by Ian McEwan. There are plenty of copies in the library.

Reading:

Voluntary extra reading:
• Other recommended novels are *Ship Fever* by Andrea Barrett, *The Martian* by Andy Weir (botanist gets stranded on Mars and gets a lot of maths and physics spot-on to survive), *Flight Behavior* by Barbara Kingsolver (about butterfly migration) and *We Are All Completely Beside Ourselves* by Karen Joy Fowler (experimental behavioural science).
Session 16: Science and Art
20 February

Guest lecturer Charlotte Jarvis will tell us about how art can be used to engage audiences with science.

Preparatory homework:
- Explore Charlotte’s website here.

Session 17: Science in graphic novels
13 March

Graphic novels are an important new medium for communicating ideas about science, and especially medicine where they have had a big impact. In this session, we’ll look at how graphic novels portray issues in science and medicine.

Preparatory reading:

Reading:
  http://www.hektoeninternational.org/graphicMedicine.html

Voluntary extra reading:

Session 18: Science on radio
27 February

Guest lecturer Gareth Mitchell, presenter of ‘Click’ on the BBC World Service, will be giving a crash course in the challenges and opportunities for presenting science on the radio.

Preparatory homework:
- Listen to an episode of ‘Click’ here.

Reading:

Voluntary extra reading:
- The BBC has a good archive of science on radio you may want to explore.
Session 19. Science and new technology
6 March

In a largely student-led session, we’ll have a look at some of the science apps and discuss their merits and drawbacks.

Preparatory reading:
- Browse, and try if you can, some of the science apps on Sciencenetlinks. Come to class prepared to show and tell.

Reading:

Session 20: Course conclusion
20 March

Wrap-up and round up (gamified, of course).