

**Postgraduate Certificate in  
Practical Science Communication**

**2020-2021**

Course code: 2021PCB231

**COURSE GUIDE**

University of Cambridge Institute of Continuing Education, Madingley Hall,  
Cambridge, CB23 8AQ

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Welcome to the **Postgraduate Certificate in Practical Science Communication**, a University of Cambridge award offered by the Institute of Continuing Education (ICE). The Certificate is taught and awarded at FHEQ level 7 (i.e. postgraduate level) and attracts 60 credits. It is completed in one academic year. For further information about academic credit please see our website: [www.ice.cam.ac.uk/studying-with-us/information-for-students/qualifications-that-we-offer](http://www.ice.cam.ac.uk/studying-with-us/information-for-students/qualifications-that-we-offer).

Science communication is an important part of scientific endeavour. Many scientific institutions and businesses see communicating science as part of their core mission. These missions cover a wide range of activity: in developing countries, for example, science communication not only supports the roll-out of new technologies to make people's lives healthier and easier, but also contributes to campaigns to reduce exploitation and preserve the environment. In the industrialised West, science communication has become part of marketing for big business, fundraising for medical charities, and policymaking in areas such as agriculture, energy and transport. Scientific expertise provides the information for communication professionals; and, often, the experts themselves are being called on to communicate directly with the public.

This Postgraduate Certificate in Practical Science Communication is designed to support people working in contexts such as these. Students might be:

- Working as scientists and looking to extend their skill-set
- Working in science communication and looking for an opportunity to reflect and develop in a supportive environment
- Wanting to study science communication, but alongside their present commitments
- Looking to think about science and society in new ways.

The course focuses on the core skills and knowledge that bring science communication efficiently into the students' repertoire of professional and life skills. The course is delivered in three one-term units, and an indicative syllabus and a reading list for each of these units are included in this course specification. For the Michaelmas (autumn) term of the 2020-2021 Academic Year this course is being taught remotely, online. This means there will be no face-to-face teaching and students will not need to be present in person in Cambridge. The course content will be delivered, and the learning outcomes met, through the use of video-based teaching platforms and a dedicated course Virtual Learning Environment. Face-to-face teaching will resume when it is safe and possible to do so.

There is a substantial literature in science communication, academic and practical. A full bibliography will be made available in the Virtual Learning Environment (VLE) that will support the course. Doing some further reading will give students a broader range of tools, alert them to a wider variety of perspectives, and equip them with a deeper academic appreciation of the subject. Making reference to the literature will be essential for some if not all assessments. Students who are considering further study after their PG Cert are especially encouraged to read from the recommended lists. Other specific short readings will be recommended at the start of the course.

The extensive resources of the University Library will be accessible to students on this course, both in person and online. Students are advised to explore the Library's iDiscover service before deciding to buy any study materials.

As the course develops over the year, students will find the VLE and online library resources increasingly useful, both for their own learning and for keeping in touch with classmates and tutors. It is worth spending some time learning how to use these resources early on in the course.

There is potential for public lectures relevant to science communication studies to be scheduled in the evenings of the day schools. These lectures would be freely available to PG Cert students, and open to others by ticket.

The course aims to:

- enhance the students' systematic knowledge and critical understanding of the importance, relevance and diversity of science communication in the world.
- increase students' understanding of the academic and theoretical knowledge that underpins effective communication and engagement, including fundamental issues and current debates in communication theory, sociology, politics, ethics, psychology and history of science.
- develop students' ability to critically evaluate subject matter to identify what is relevant and appropriate for public communication.
- enable students to describe and critique key practical techniques and approaches used for science communication.
- create an enquiring perspective to enable critical and evaluative discussion that extends student understanding of key ethical and moral issues in the communication of science.
- develop an appropriate understanding of the available methods for communicating with and engaging new audiences with diverse professional, specialist and non-specialist backgrounds and to understand how and when to apply these methods.
- provide an understanding of the requirements and importance of science communication in terms of the Impact agenda in Higher Education.

The students will:

- gain discipline-specific skills for the delivery of a wide-range of science communication approaches.
- work constructively and sensitively with others in particular social and political contexts.
- gain skills for all stages of science communication activity, including designing, proposing, seeking funding for and evaluating the activity.
- respect audiences' needs and interests, and strive for social justice.

## General skills for further study and employability

In general:

- The capacity for independent thought and judgement
- The development of independent learning, study and time-management skills
- The deployment of skills in critical reasoning
- The development of competence in using relevant IT
- The ability to work with others, productively and equitably
- The capacity to exercise some personal responsibility and demonstrate appropriate levels of motivation and personal commitment through part-time study.

Specifically from studying science communication:

- Alertness to the workings, uses and effects of the mass media and other communication channels
- The capacity to use words, numbers and images to communicate meaningfully to a variety of audiences
- The ability to structure, express and deliver particular messages
- The ability to select and combine appropriate media for particular tasks
- The skill of finding stories and background information from professional, mass-media and live sources
- The ability to pitch an idea and persuade other agencies to support it
- The competence to plan, schedule and deliver a project, with respect for regulation, practical limitations and cultural sensitivities
- The ability to liaise with a range of professionals and publics
- The sensitivity to respond to a range of social needs, and to take responsibility for outcomes.

## Study hours

The award of academic credit is a means of quantifying and recognising learning. In the UK, one credit notionally represents 10 hours of learning<sup>1</sup>. Each of the units in this course attracts 20 credits so students should expect to need to study for approximately 200 hours in total to complete each unit successfully. However, it is recognised that students study at different paces and use a variety of approaches, so this is a recommendation, rather than a hard-and-fast requirement.

Some of these study hours will be taken up with small tasks in advance of certain classes, such as collecting science communication items, writing a short note about their personal experiences or expectations, or making a start on an original piece of science communication to share with the group. These tasks will not be credit-bearing but will equip the students to make best use of the course.

Assignments for credit play an important role in learning. Submission will be to pre-arranged deadlines and, where possible, online. For any problems with submission of assessment (such as illness or other personal problem), the procedure is as set out in the Institute's student handbook, at [www.ice.cam.ac.uk/info/student-handbook](http://www.ice.cam.ac.uk/info/student-handbook).

## Teaching staff

Dr Jane Gregory (Course Director) developed science communication courses for Imperial College in the early 1990s, and since then has set up and taught UG and PG courses at Birkbeck, UCL and Manchester University. She has published on the role of public science communication in the development of scientific ideas, and on the global political and economic contexts for science communication. Jane has also worked in science publishing and for the Science Museum, London. In 2019, she was Chair of the judging panel for the British Society for the History of Science's Hughes Prize for popular writing about the history of science.

Dr Tom Monie is the Academic Director for STEM at the Institute for Continuing Education and a Fellow of Christ's College, Cambridge. He has held a Wellcome Trust Research Career Fellowship at the University and led a research group studying the innate immune system. He has a long-standing interest in science communication and has been involved in the design and delivery of numerous courses on science writing, storytelling, audience engagement and effective communication. He has delivered a number of activities and events for the Cambridge Science Festival and is, slowly, writing his first popular science book.

Specialist professional teaching is delivered by guest tutors. In previous years, these have included:

Jack Ashby, Museum of Zoology, University of Cambridge  
Craig Brierley, Research Communication Office, University of Cambridge  
Dr Nicola Buckley, Centre for Science and Policy, University of Cambridge  
Dr Steve Cross, Bright Club/Science Showoff  
Dr Kieron Flanagan, University of Manchester  
Greg Foot, broadcaster  
Dr Eric Jensen, University of Warwick  
Elizabeth Killen, Faculty of Education, University of Cambridge  
Anthony Lewis, *Lancet*  
Dr Simon Lock, University College London  
Ed Prosser, social media consultant  
Dr Chris Smith, the Naked Scientist, University of Cambridge  
Lucinda Spokes, Public Engagement Office, University of Cambridge  
Dr Ed Turner, Museum of Zoology, University of Cambridge

## Administrative staff

**Head of Academic Centre Administration:** Ms Gillian Barclay, t. 01223 760063

**Academic Centre Coordinator:** Ms Lizzie Burgess, t. 01223 760864

**Email:** [pg-stem@ice.cam.ac.uk](mailto:pg-stem@ice.cam.ac.uk)

## Venue

For the Michaelmas term of the 2020-2021 Academic Year, this course is being taught online. The course content will be delivered, and the learning outcomes met, through the use of video-based teaching platforms (usually Zoom) and a dedicated course Virtual Learning Environment. Face-to-face teaching will resume when it is safe and possible to do so.

Madingley Hall is the University's campus dedicated to continuing education for adults. The Hall was built in the sixteenth century and acquired by the University in 1948. It has been home to the Institute of Continuing Education since 1975.

Any face-to-face sessions will be taught in one of 14 classrooms at Madingley Hall and, occasionally, at other venues. Classrooms are arranged and equipped to encourage effective small group learning and peer interaction. Technology-enhanced learning, including lecture capture where appropriate, is used in many classes, and wi-fi is available throughout the site. We also provide a range of social learning spaces that students can use before, or after, class.

Seven acres of superb gardens and grounds designed by Capability Brown provide space to think, reflect and relax. We offer a range of catering including formal dining, sandwiches and snacks, and a full-service bar. Students travelling a long distance may wish to book accommodation in one of the Hall's 62 en-suite bedrooms.

The Hall is situated three miles west of Cambridge with easy access from the M11 and the A14. There is ample free on-site car parking. Central London and Stansted Airport can be reached in under an hour by train from Cambridge railway station. Taxis from the railway station to Madingley Hall typically take around 20-25 minutes. Full directions are given on our website at: <http://www.ice.cam.ac.uk/about-us/how-find-us>.

## Contact details of ICE

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*Please also refer to the 'information for students' section on ICE's website*

*[www.ice.cam.ac.uk/studying-with-us/information-for-students](http://www.ice.cam.ac.uk/studying-with-us/information-for-students) and the 2020/21 Student Handbook for award-bearing courses for further information and guidance relating to all aspects of the course including study skills, assignments, assessment and moderation. The Course Information and Help and Guidance section of the ICE VLE will also contain valuable information specific to your course.*

*Information correct as at 22 June 2020*

# Unit 1

## The fundamentals of practical science communication

<b>Start date</b>	22 September 2020	<b>End date</b>	15 December 2020
<b>Day</b>	22 and 29 September 6, 20 and 27 October 3 and 17 November 1 and 15 December	<b>Time</b>	Tuesday evenings 7-9pm
<b>Venue</b>	Remote delivery		
<b>Tutor(s)</b>	Dr Jane Gregory	<b>No of meetings</b>	9 evening sessions

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### Aims

This unit will prepare the ground for students' later practical work by:

- Providing students with the academic tools to handle the theoretical, historical and practical aspects of science communication.
- Developing knowledge and understanding of science communication, its methods and impacts.
- Instilling the ethical and critical awareness required to identify the importance, the relevance, and the problems of science communication from a professional perspective.

### Indicative content

- **The history and politics of science communication:** what is it and whom does it serve? Developing an understanding of what science communication is and why it is important; connections with the Impact agenda in Higher Education.
- **Understanding audiences:** what happens to your message? The psychology and theory of effective engagement and communication.
- **Effective communication:** Identifying, understanding and engaging your audience; the use of storytelling and narrative; key skills for science communication.
- **Science and the media:** roles, responsibilities and interests.
- **Why communicate what science and to whom?** Critical evaluation of science – choosing stories and approaches, and the ethical elements of science communication.

- **Becoming a critical consumer of science communication:** how to see, and what to learn.
- **Effective evaluation: how did it go?** The design, delivery and success measures of science communication.

## **Presentation of the unit**

This unit will be taught remotely, online. Students are expected to contribute to all sessions, including asking questions during lectures and contributing examples from their own experience. Some students embrace this style of learning more readily than some others, who may take their time to settle in.

Participation is essential for each student's learning as well as for learning across the group. One important form of participation is listening: students will listen respectfully to others' contributions and offer constructive criticism when appropriate.

It is usual in science communication studies to consider a range of worldviews, standpoints and understandings. Therefore, disagreement and argument are normal aspects of engagement with this subject, both within the University and beyond. It is important for both students and professional communicators to develop the skills to disagree and argue courteously and constructively.

During this unit students will begin working on small items of science communication (such as short articles, designs, or short recordings) that will be subject to formative assessment and will be credited at the end of the course as part of the Portfolio.

## Provisional lecture list

		<b>Tutor</b>	<b>Further reading/preparation</b>
Session 1 7-9pm	<b>Tuesday 22 September</b>  Meet the class  How the course works	Dr Jane Gregory & Dr Tom Monie	Broks (2006) <i>Understanding Popular Science</i> Hilgartner (1990) The dominant view <i>Public Understanding of Science</i> (2014) Special issue: Public engagement in science, 23(1) C. Thorpe and J. Gregory (2010), Producing the Post-Fordist Public
Session 2 7-9pm	<b>Tuesday 29 September</b>  The history and politics of science communication  The network society	Dr Jane Gregory	Gregory and Lock (2008) 'The evolution of 'Public Understanding of Science' Gregory and Miller (2000) <i>Science in Public</i> Trench and Bucchi (2008) <i>Handbook</i> Irwin and Wynne (1996) <i>Misunderstanding Science</i> Bell et al. (2008) <i>Science and its Publics</i>
Session 3 7-9pm	<b>Tuesday 6 October</b>  Science and the media  Newswriting workshop	Dr Jane Gregory	Balnaves et al. (2008) <i>Media Theories and Approaches</i> Allan (2002) <i>Media, Risk and Science</i> Bauer and Bucchi (2007) <i>Journalism, Science and Society</i> Harcup (2015), <i>Journalism: Principles and Practice</i> Holliman, et al. (2009) <i>Investigating Science Communication</i> McNair (2000) <i>Journalism and Democracy</i> Wagner (2008) <i>The New Invisible College</i>
Session 4 7-9pm	<b>Tuesday 20 October</b>  Social psychology of science communication: attitudes and representations	Dr Jane Gregory	Howarth in Hook et al. (2011) <i>Social Psychology</i> Turney (1998) <i>Frankenstein's Footsteps</i> Bauer & Gaskell (2002) <i>Biotechnology</i> Nelkin & Lindee (1995) <i>DNA Mystique</i>
Session 5 7-9pm	<b>Tuesday 27 October</b>	Dr Jane Gregory	Lakoff & Johnson (1980) <i>Metaphors</i>

	Metaphors, signs and narratives		
Session 6 7-9pm	<b>Tuesday 3 November</b>  What is effective communication?  Engaging critically with science communication: examples and tools  Introducing effects and evaluation	Dr Jane Gregory and guest tutor	
Session 7 7-9pm	<b>Tuesday 17 November</b>  Why do we communicate science? Motives and audiences	Dr Jane Gregory	Gregory in Hook et al. Gregory and Miller (2000) Science in Public Stilgoe, Lock and Wilsdon (2014) Why should we promote public engagement with science?
Session 8 7-9pm	<b>Tuesday 1 December</b>  Critical consumption: students perform, share and critique with the group	Peer-led	
Session 9 7-9pm	<b>Tuesday 15 December</b>  Reflection and setting assessment  Critical consumption cont.	Dr Jane Gregory  Peer-led	Reflection and setting assessment

## Student assessment

**There are two summative assignments associated with the unit. Note that they are not equally weighted.**

The first assignment will be a critical analysis of two items of science communication (1500 – 2000 words / 10 credits).

**Closing date for the submission of assignment 1: Tuesday 22 December 2020 by 12:00 (noon) GMT**

The second assignment will be a reflective piece on the student's own learning about science communication during this unit (800 – 1000 words / 5 credits).

**Closing date for the submission of assignment 2: Tuesday 12 January 2021 by 12:00 (noon) GMT**

Students should submit their assignments online through ICE's Virtual Learning Environment (VLE). Feedback on assignments is delivered online via the VLE.

## **Learning outcomes**

When they have completed the unit, the students should have achieved the following outcomes:

### *Knowledge and understanding*

- Enhanced knowledge and understanding of the role and application of theory to science communication practice
  - Increased understanding of the political contexts that frame science communication
  - Improved awareness of the academic literature that supports effective communication and engagement
  - Improved understanding of how the needs of audiences frame science communication practice
  - Insight into potential audiences
  - Enhanced systematic knowledge and critical understanding of the significance, relevance and range of science communication in the global community
- Enhanced ability to critically evaluate subject matter to identify what could or should be reported in the public domain

### *Skills and other attributes*

- Improved communication skills across a range of areas as well as in a specific area of interest
- Enhanced ability to match skills to media and audiences

## **Reading and resource list**

S. Allan (2002) *Media, Risk and Science* (New York: McGraw Hill).

M. Balnaves, S. Hemelryk Donald and B. Shoesmith (2008) *Media Theories and Approaches: A Global Perspective* (Basingstoke: Palgrave Macmillan).

M. Bauer and M. Bucchi (2007) *Journalism, Science and Society: Science Communication between News and Public Relations* (London: Routledge).

M. Bauer and G. Gaskell (eds), (2002) *Biotechnology - the Making of a Global Controversy* (Cambridge University Press).

A. Bell, S. Davies and F. Mellor (2008) *Science and its Publics* (Cambridge: Cambridge Scholars Press).

P. Broks (2006) *Understanding Popular Science* (Maidenhead: Open University Press).

- J. Gregory and S.J. Lock (2008), 'The evolution of 'Public Understanding of Science': Public engagement as a policy tool in the UK', *Sociology Compass*, 2/4, 1252 – 1265.
- J. Gregory and S. Miller (2000) *Science in Public: Communication, Culture and Credibility* (London: Plenum Trade).
- J. Gregory (2015) *Science communication. International Encyclopedia of the Social and Behavioural Sciences*, edited by James D. Wright (Oxford: Elsevier).
- T. Harcup (2015), *Journalism: Principles and Practice* (2nd edn) (London: Sage).
- S. Hilgartner (1990) *The dominant view of popularization*, *Social Studies of Science*, 20(3): 519-39.
- R. Holliman, et al. (2009) *Investigating Science Communication in the Information Age* (Oxford: Oxford University Press.).
- D. Hook, B. Franks and M.W. Bauer (2011) (eds) *Science Communication*, by Jane Gregory, in *Social Psychology of Communication* (Basingstoke: Palgrave Macmillan).
- House of Lords (2000) *Science and Society* (found at [www.parliament.the-stationery-office.co.uk/pa/ld199900/ldselect/ldsctech/38/3801.htm](http://www.parliament.the-stationery-office.co.uk/pa/ld199900/ldselect/ldsctech/38/3801.htm)).
- A. Irwin and B. Wynne, eds. (1996) *Misunderstanding Science* (Cambridge: Cambridge University Press).
- G. Lakoff and M. Johnson (1980) *Metaphors we Live By* (University of Chicago Press).
- M. Lindauer (2005) What to ask and how to answer: a comparative analysis of methodologies and philosophies of summative exhibit evaluation. *Museum and Society*, 3(3), 137-152.
- B. McNair (2000) *Journalism and Democracy: An Evaluation of the Political Public Sphere* (London: Psychology Press).
- D. Nelkin and S.M. Lindee (1995) *The DNA Mystique* (New York: W.H. Freeman).
- Public Understanding of Science* (2014), Special issue: Public engagement in science, 23(1)
- F. Stalder (2006) *Manuel Castells* (London: Polity).
- S. Sismondo (2009), *An Introduction to Science and Technology Studies* (1st or 2nd edn) (Oxford: Wiley/Blackwell).
- J. Turney (1998) *Frankenstein's Footsteps: Science, Genetics and Popular Culture* (New Haven: Yale U. Press).
- J. Turow (2010) *Playing Doctor: Television, Media, and Medical Power* (University of Michigan Press).
- B. Trench and M. Bucchi (2008, eds.), *Handbook of Public Communication of Science and Technology* (New York: Routledge).
- C. Wagner (2008) *The New Invisible College: Science for Development* (Brookings Institute Press).
- S. Watts <https://www.nature.com/news/society-needs-more-than-wonder-to-respect-science-1.15012>
- J. Gregory and S.J. Lock (2008), 'The evolution of 'Public Understanding of Science': Public engagement as a policy tool in the UK', *Sociology Compass*, 2/4, 1252 – 1265.
- J. Gregory and S. Miller (2000) *Science in Public: Communication, Culture and Credibility* (London: Plenum Trade).
- J. Gregory (2015) *Science communication. International Encyclopedia of the Social and Behavioural Sciences*, edited by James D. Wright (Oxford: Elsevier).
- T. Harcup (2015), *Journalism: Principles and Practice* (2nd edn) (London: Sage).
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- R. Holliman, et al. (2009) *Investigating Science Communication in the Information Age* (Oxford: Oxford University Press.).

D. Hook, B. Franks and M.W. Bauer (2011) (eds) *Science Communication*, by Jane Gregory, in *Social Psychology of Communication* (Basingstoke: Palgrave Macmillan).

House of Lords (2000) *Science and Society* (found at [www.parliament.the-stationery-office.co.uk/pa/ld199900/ldselect/ldsctech/38/3801.htm](http://www.parliament.the-stationery-office.co.uk/pa/ld199900/ldselect/ldsctech/38/3801.htm)).

A. Irwin and B. Wynne, eds. (1996) *Misunderstanding Science* (Cambridge: Cambridge University Press).

G. Lakoff and M. Johnson (1980) *Metaphors we Live By* (University of Chicago Press).

M. Lindauer (2005) What to ask and how to answer: a comparative analysis of methodologies and philosophies of summative exhibit evaluation. *Museum and Society*, 3(3), 137-152.

B. McNair (2000) *Journalism and Democracy: An Evaluation of the Political Public Sphere* (London: Psychology Press).

D. Nelkin and S.M. Lindee (1995) *The DNA Mystique* (New York: W.H. Freeman).

*Public Understanding of Science* (2014), Special issue: Public engagement in science, 23(1)

F. Stalder (2006) *Manuel Castells* (London: Polity).

S. Sismondo (2009), *An Introduction to Science and Technology Studies* (1st or 2nd edn) (Oxford: Wiley/Blackwell).

J. Turney (1998) *Frankenstein's Footsteps: Science, Genetics and Popular Culture* (New Haven: Yale U. Press).

J. Turow (2010) *Playing Doctor: Television, Media, and Medical Power* (University of Michigan Press).

B. Trench and M. Bucchi (2008, eds.), *Handbook of Public Communication of Science and Technology* (New York: Routledge).

C. Wagner (2008) *The New Invisible College: Science for Development* (Brookings Institute Press).

S. Watts <https://www.nature.com/news/society-needs-more-than-wonder-to-respect-science-1.15012>

## Unit 2

### The art of practical science communication

Teaching dates and venue for this unit are provisional and may be subject to change in accordance with government/University guidelines.

<b>Start date</b>	14 January 2021	<b>End date</b>	12 March 2020
<b>Days</b>	14 and 15 January 2021 4 and 5 February 2021 11 and 12 March 2021	<b>Time</b>	9.30-17.00 each day
<b>Venue</b>	Madingley Hall, Madingley, Cambridge, CB23 8AQ		
<b>Tutors</b>	Dr Jane Gregory & guest tutors	<b>No of meetings</b>	Three 2-day teaching blocks

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#### Aims

This module will develop students' capacity for competent professional practice by:

- Developing students' competence in the core skills of writing and speaking.
- Encouraging adaptability towards a range of new and traditional media, with an emphasis on radio and podcasting.
- Using feedback and dialogue to respond to audience needs and preferences.
- Instilling respect for, and knowledge of, the legal, ethical and policy contexts that frame science communication practice.

#### Indicative content

- **Core skills of writing and speaking:** developing confidence and technique, and exploring the demands of different media and audiences.
- **Communicating in museums:** display, explaining, interactivity, informal education, visitor studies, hard to reach groups.
- **Public events:** meanings of 'public', communicating in public spaces, understanding festivals.
- **Broadcasting in sound and vision:** television, video, radio, podcasting.

- **Online communication:** visual and written content on the web; the challenge of the hyperlink; adapting to new media, such as YouTube, vlogging and Tweeting; communication in the 'network society'.
- **Science journalism;** forms: news, features, comment; interviewing; public relations.
- **Communicating science for policy:** advice, activism, science for charities and interest groups.

## **Presentation of the unit**

This unit will respond to the range of interests of the cohort. It combines background information and techniques explained by tutors with students' active participation in workshops to develop their skills.

Students will, individually or in small groups, develop projects that illustrate and exhibit their knowledge and understanding of science communication practice. They will take on supporting roles in other students' projects, and also act as 'critical friends' to classmates. A series of 'showcase' sessions will allow students to present their work to the group.

Students will study a range of techniques, media and audiences, although they may choose for assessment to focus on a more specific task or area.

Students will learn from tutors and visiting specialist professionals, and will scrutinise successful examples of science in the public domain to learn about professional standards and good practice.

Organisations that present science in public usually publish documents about their work such as mission statements, planning documents, accounts, visitor feedback and so on. Students are encouraged to read this 'grey' literature, which is usually readily available online.

**Provisional lecture list (all dates are provisional and may be subject to change)**

<b>Time</b>	<b>Thursday 14 January 2021</b>	<b>Tutor</b>	<b>Further reading / preparation</b>
9.30-10.30	Introduction to science museums	Dr Jane Gregory	Visit museums and science centres. Bradburne Dawson MacGregor
10.30 – 13.00	Collection and display: the challenges of natural objects. Site visit to a museum	Guest tutor	
	Lunch		
14.00-16.30	Introduction to research communication: how research becomes news	Guest tutor	Consume mass media; collect press releases for comparison  Balnaves, <i>et al.</i> Harcup Bauer and Bucchi
16.30-17.00	Briefing for tomorrow	Guest tutor	
	<b>Friday 15 January 2021</b>		
9.30 – 10.30	Introduction to radio and podcast journalism Making a programme Distributing podcasts	Guest tutor	Cohen Jones
10.30-11.00	Tea		
11.00-12.00	Interviewing	Guest tutor	
12.00 - 13.00	Students work in project groups		
13.00 - 14.00	Lunch		
14.00 – 16.00	Students work on projects		
16.00 - 17.00	Performance and critique		

	<b>Thursday 4 February 2021</b>		
9.30-10.30	Museum showcase	All	
11.00-13.00	Science festivals: challenges and opportunities	Guest tutor	Jensen and Buckley (2014) Why people attend science festivals
13.00-14.00	Lunch		
14.00-17.00	Communicating online: challenges and opportunities	Guest tutor	

	<b>Friday 5 February 2021</b>		
9.30-10.30	Journalism showcase	All	
11.00-17.00	Television and video: forms and professions	Guest tutor	

	<b>Thursday 11 March 2021</b>		
9.30-10.30	Events showcase		
10.30-17.30	Science communication for policy, activism and the third sector	Guest tutor	Wilsdon and Willis (2004). <i>See-through Science</i> Harcup (2015), <i>Journalism: Principles and Practice</i> Bauer and Bucchi (2007) <i>Journalism</i> <u>Current parliamentary Research Briefings</u> , POST Notes, and similar grey literature from other agencies

	<b>Friday 12 March 2021</b>		
9.30-10.30	Online showcase		
11.00-13.00	Multimedia challenges in science communication	Dr Jane Gregory	
13.00-14.00	Lunch		
14.00-15.30	Preparing for assessment: students present informal proposals for unit 3 project for class feedback	Dr Jane Gregory	
16.00-17.00	Perspectives on science communication: where are we now?	All	
Depart			

## **Student assessment**

**There are two summative assignments associated with the unit and they are equally weighted. Assignment dates are provisional and may be subject to change.**

The first assignment is a written insight or overview into a science communication tool or approach (1200 -1500 /7.5 credits).

The second assignment is a talk or video (featuring a performance by the student) delivered on 19 April 2021 (7.5 credits).

**Closing date for the submission of written assignments: Thursday 8 April 2021 by 12:00 (noon) British Summer Time**

Students are expected to submit their assignments online through ICE's Virtual Learning Environment (VLE) and feedback on assignments is delivered online.

## **Learning outcomes**

When the students have completed the course, they should have achieved the following outcomes:

### *Knowledge and understanding*

- Improved awareness of the academic literature that supports effective communication and engagement
- Improved understanding of how the needs of audiences frame science communication practice
- Enhanced knowledge and understanding of pitching, proposing and evaluating science communication

- Increased ability to understand and respond to local schedules and regulation
- Awareness of professional and public standards
- Awareness of capacities and limits of given resources
- Insight into potential audiences

### *Skills and other attributes*

- Advanced competence in the core skills of writing and speaking
- Enhanced familiarity with audio-visual and digital technology
- Enhanced capacity to be a critical friend to others' work
- Enhanced ability to match skills to media and audiences
- Enhanced adaptable skills for the delivery of a wide range of science communication approaches to a variety of audiences.

### **Reading and resource list**

G. Anderson (2012) *Reinventing the Museum: The Evolving Conversation on the Paradigm Shift*, 2nd edition. (Lanham: AltaMira).

P.J. Anderson and G. Ward (2007) *The Future of Journalism in Advanced Democracies* (Aldershot: Ashgate).

M. Balnaves, S. Hemelryk Donald and B. Shoesmith (2008) *Media Theories and Approaches: A Global Perspective* (Basingstoke: Palgrave Macmillan).

M. Bauer and Massimiano Bucchi (2007) *Journalism, Science and Society: Science Communication between News and Public Relations* (London: Routledge).

T. Bennett (1995) *The Birth of the Museum: History, Theory, Politics* (London, New York: Routledge).

A. Besley and R. Chadwick (1992/2003), *Ethical Issues in Journalism and the Media* (London: Routledge).

S. Bicknell and G. Farmelo (ed.) (1993) *Museum Visitor Studies in the 90s* (London: Science Museum).

J.M. Bradburne (1998) Dinosaurs and white elephants: the science center in the twenty-first century. *Public Understanding of Science*, 7(3), 237-253.

S. Dudley (ed.) (2009) *Museum Materialities: Objects, Engagements, Interpretations* (London: Routledge).

J.H. Falk, S. Randol and L.D. Dierking (2012) Mapping the informal science education landscape: An exploratory study. *Public Understanding of Science*, 21(7), 865-874.

T. Harcup (2015), *Journalism: Principles and Practice* (3rd edn) (London: Sage)

I. Hargreaves (2003), *Journalism: Truth or Dare?* (Oxford UP).

B.K. Haywood and J.C. Besley (2014) Education, outreach, and inclusive engagement: Towards integrated indicators of successful program outcomes in participatory science. *Public Understanding of Science*, 23(1), 92-106.

P. Hodder (2010) Out of the laboratory and into the knowledge economy: A context for the evolution of New Zealand science centres. *Public Understanding of Science*, 19(3), 335-354.

Eilean Hooper-Greenhill (2011) *Museums and their Visitors* (London: Routledge).

Eric Jensen and Nicola Buckley (2014) Why people attend science festivals: Interests, motivations and self-reported benefits of public engagement with research. *Public Understanding of Science*, 23(5), 557-573.

Margaret Lindauer (2005) What to ask and how to answer: a comparative analysis of methodologies and philosophies of summative exhibit evaluation. *Museum and Society*, 3(3), 137-152.

Janet C. Marstine (ed.) (2011) *The Routledge Companion to Museum Ethics: Redefining Ethics for the Twenty-First Century Museum* (Routledge Companions) (New York, London: Routledge).

Sharon Macdonald and Helen Rees Leahy (eds) (2015) *The International Handbooks of Museum Studies* (4 volumes) (Oxford: Wiley-Blackwell).

Guy Starkey and Andrew Crisell (2009) *Radio Journalism* (London: SAGE Publications Ltd)

Wilsdon, J., and R. Willis (2004). *See-through Science: Why Public Engagement needs to Move Upstream* (London: Demos), Chap. 3 ("The Rules of Engagement"), pp. 37 et seq,

# Unit 3

## Designing and delivering practical science communication

Teaching dates and venue for this unit are provisional and may be subject to change in accordance with government/University guidelines.

<b>Start date</b>	19 April 2021	<b>End date</b>	21 June 2021
<b>Day</b>	19 April 2021 10 May 2021 7 June 2021 21 June 2021	<b>Time</b>	9.30-17.00 each day
<b>Venue</b>	Madingley Hall, Madingley, Cambridge, CB23 8AQ		
<b>Tutor(s)</b>	Dr Jane Gregory	<b>No of meetings</b>	4 day-schools

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### Aims

This module will develop and demonstrate students' competence in science communication practice by:

- supporting the students in designing and planning a science communication event or product to the standards of public communication
- encouraging and rewarding adherence to timetables, regulation, custom and practice
- exercising and developing the students' skills in evaluation
- developing competence in teamwork and mutual support

### Indicative content

- pitching and proposing science communication activities
- preparation: research, organisation, scheduling and rehearsing
- delivery: performance and supporting materials and equipment
- evaluation: critical responses to one's own and others' work

### Presentation of the unit

By this stage of the programme, students will be working on individual projects. They will have access to face-to-face and online tutorials as appropriate while they develop their project. The day-schools will be occasions for sharing problems and trying out strategies with the group, as well as providing an opportunity for charting progress and setting

standards. The day-schools will be scheduled in detail once the projects are chosen: they may lend themselves to sub-groups having specialist further training, or reveal gaps in the teaching so far that can now be filled. The tutors will therefore be responsive to student needs, with the core aim of readying the class for assessment by the end of the unit. Students will be rehearsing in front of classmates, commenting on other students' work, and organising themselves for their final performance.

**Provisional lecture list (all dates are provisional and may be subject to change)**

	<b>Monday 19 April 2021</b>		
			<b>Preparation/reading</b>
9.30-10.00	Introduction to the unit		
10.00-13.00	Assessment of talks from Unit 2	Dr Jane Gregory Dr Tom Monie	
14.00-16.00	Assessment of talks from Unit 2	Dr Jane Gregory Dr Tom Monie	
16.00-17.00	Preparing your pitch and proposal	Dr Jane Gregory	Examples of proposal documents/requirements from professional organisations

	<b>Monday 10 May 2021</b>		
9.00-17.00	Assessment: Pitching your idea	Dr Jane Gregory, specialist guest tutors	

	<b>Monday 7 June 2021</b>		
9.00-10.30	Thorny topics in funding, delivery and evaluation	Guest tutor	Background reading suited to individual projects
11.00-17.00	Rehearsals, teamwork and tutorials	All	

	<b>Monday 21 June 2021</b>		
9.30-17.00	Performance: sharing your project with the group	All	

## **Student assessment**

Students will be assessed summatively using a reflective and critical account of the pitching, production, delivery and evaluation of an event or activity. (15 credits).

**Assignment dates are provisional and may be subject to change.**

**Closing date for the submission of assignments: Monday 5 July 2021 by 12:00 (noon) British Summer Time**

Students are expected to submit their assignments online through ICE's Virtual Learning Environment (VLE) and feedback on assignments is delivered online.

## Learning outcomes

When they have completed this unit, the students should have achieved the following outcomes:

### *Knowledge and understanding*

- Improved understanding of how the needs of audiences frame science communication practice
- Enhanced knowledge and understanding of pitching, proposing and evaluating science communication
- Increased ability to understand and respond to local schedules and regulation
- Awareness of professional and public standards
- Awareness of capacities and limits of given resources
- Insight into potential audiences
- Enhanced capacity for critical and evaluative discussion that extends understanding of key ethical and moral issues in science communication
- Improved decision-making about which methods to use for reaching a wider range of audiences, and for which purposes.

### *Skills and other attributes*

- Advanced competence in the core skills of writing and speaking
- Competence in proposing and pitching a science communication project
- Enhanced capacity to be a critical friend to others' work
- Enhanced ability to match skills to media and audiences
- Demonstrated capacity to design, implement and evaluate a science communication activity from start to finish
- Improved ability to plan, organise and deliver on time.

## Reading and resource list

Students will have the opportunity to compile their own reading list and gather resources as needed, depending on their choice of project.

# Portfolio

## Student assessment

In addition to the unit assignments, students will be required to submit a portfolio of science communication items (15 credits). These items should not have been submitted for credit elsewhere during the course, but might include, for example, a critical review of an item submitted for credit earlier in the course. Items from the students' workplace are also eligible, provided due credit is given to any other contributors. The portfolio should show a wide range of skills, and so should include a minimum of two items related to each

unit (800-1000 words per unit). **Assignment dates are provisional and may be subject to change.**

**Closing date for the submission of the portfolio: Monday 19 July 2021 by 12:00 (noon) British Summer Time**

Students are expected to submit their assignments online through ICE's Virtual Learning Environment (VLE), and feedback on assignments is delivered online via the VLE.

## **Learning outcomes**

The Portfolio contains a selection of the student's own work that is not submitted for assessment elsewhere on the programme. The learning outcomes are therefore particular to each student, and are likely to reflect the learning outcomes across the programme. These outcomes could include:

### *Knowledge and understanding*

- Advanced competence in the core skills of writing and speaking
- Enhanced knowledge and understanding of the role and application of theory to science communication practice
- Increased understanding of the political contexts that frame science communication
- Improved awareness of the academic literature that supports effective communication and engagement
- Improved understanding of how the needs of audiences frame science communication practice
- Enhanced knowledge and understanding of pitching, proposing and evaluating science communication
- Increased ability to understand and respond to local schedules and regulation
- Awareness of professional and public standards
- Awareness of capacities and limits of given resources
- Insight into potential audiences
- Enhanced systematic knowledge and critical understanding of the significance, relevance and range of science communication in the global community
- Enhanced ability to critically evaluate subject matter to identify what could or should be reported in the public domain
- Enhanced capacity for critical and evaluative discussion that extends understanding of key ethical and moral issues in science communication
- Improved decision-making about which methods to use for reaching a wider range of audiences, and for which purposes.

### *Skills and other attributes*

- Advanced competence in the core skills of writing and speaking
- Improved communication skills across a range of areas as well as in a specific area of interest
- Enhanced familiarity with audio-visual and digital technology
- Competence in proposing and pitching a science communication project

- Enhanced capacity to be a critical friend to others' work
- Enhanced ability to match skills to media and audiences
- Demonstrated capacity to design, implement and evaluate a science communication activity from start to finish
- Enhanced adaptable skills for the delivery of a wide range of science communication approaches to a variety of audiences.
- Improved ability to plan, organise and deliver on time.

## TIMETABLE

### Michaelmas 2020

Session 1	Tuesday 22 September
Session 2	Tuesday 29 September
Session 3	Tuesday 6 October
Session 4	Tuesday 20 October
Session 5	Tuesday 27 October
Session 6	Tuesday 3 November
Session 7	Tuesday 17 November
Session 8	Tuesday 1 December
Session 9	Tuesday 15 December

### Lent 2021

Session 10	Thursday 14 January
Session 11	Friday 15 January
Session 12	Thursday 4 February
Session 13	Friday 5 February
Session 14	Thursday 11 March
Session 15	Friday 12 March

### Easter 2021

Session 16	Monday 19 April
Session 17	Monday 10 May
Session 18	Monday 7 June
Session 19	Monday 21 June

*Whilst every effort is made to avoid changes to this programme, published details may be altered without notice at any time. The Institute reserves the right to withdraw or amend any part of this programme without prior notice.*