

SCIENCE COMMUNICATION

Instructor: Maria Avxentevskaya
Course times: Thursdays, 15:45-19:00
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Office hours: by appointment

Making sense of scientific information has become part of our daily lives. Questions about digital data, vaccination, or the environment, all involve interpreting scientific materials. Scientists in a variety of fields also need to get their insights across to the public and policymakers. Science communication occurs when society and science meet on common ground. However, that often requires a willingness to consider uncomfortable questions that may arise in democratic debates about specific policies. How to bring society and science into a dialogue for the benefit of mankind? This course will discuss science communication as a process that produces shared proof and persuasion. We will look at how metaphors help bring astounding discoveries to whole new audiences; how rhetoric can foster and shatter scientific expertise; and how scientific debates help cultural minorities achieve their social and political goals. We will explore contentious socio-scientific issues in genetics, AI automation, and space exploration in a series of case studies that will begin with early modernity and extend to future ways in which science communication might help make a difference in people's lives. We will learn how to craft science stories, create science podcasts, and collaborate with artists to improve mutual understanding between science and society. These skills are also part of the job of a professional in science communication, which has grown in popularity as a branch of public relations. The students will complete their own mini-research projects and work towards online publications in science communication.

Requirements

Academic Integrity

Bard College Berlin maintains the staunchest regard for academic integrity and expects good academic practice from students in their studies. Instances in which students fail to meet the expected standards of academic integrity will be dealt with under the Code of Student Conduct, Section 14.3 (Academic Misconduct) in the Student Handbook.

Attendance

Attendance at all classes is a crucial part of the education offered by Bard College Berlin. To account for minor circumstances, one absence from a once-per-week course will not affect the participation grade or require documentation.

Bard College Berlin does not offer credit for any course in which a student has missed more than 30% of classes, regardless of the reasons for the absences, whether excused or

unexcused. The full Bard College Berlin attendance policy can be found in the Student Handbook, Section 2.8.

Assessment

Reading

Students are required to complete the essential reading for each session (see below), and are encouraged to take a look at the further reading, which should also be used as the starting point in preparing essays. There is no required textbook, but all essential reading and some sources for further reading will be provided via Google Classroom or Email.

Writing Assignments

Students must write one essay proposal and one final essay.

Word count: Final essay proposal: 300 words

Final essay: ca. 3,000–4,000 words

Essay Deadlines

Deadline for the final essay proposal: 15 November 2022

Deadline for the final essay: 11 December

Policy on Late Submission of Papers

Essays that are up to 24 hours late can be downgraded up to one full grade (from B+ to C+, for example). Instructors are not obliged to accept essays that are more than 24 hours late. Where an instructor agrees to accept a late essay, it must be submitted within four weeks of the deadline. Thereafter, the student will receive a failing grade for the assignment. For more information, please consult the Student Handbook.

Grade Breakdown

Students receive mid- and end-of-semester grades for their work. Students are encouraged to make an appointment to discuss assignments and feedback during instructor's office hours. Grades and comments will be returned to students in a timely fashion.

Attendance and Active Participation in Classes – 40%

Final essay proposal – 20%

Final essay – 40%

Grades Submission

All grades are submitted digitally to the Registrar's Office. Midterm grades are due end of week 8, which is 23 October 2022. Final grades are due 16 December 2022. Final grades for the fall 2022 graduates or senior students, if needed earlier, will be provided by the required deadline.

Schedule

Sessions 1 and 2. Introduction: Science in Transit 1 September

There is no assigned reading for this class, but students should prepare brief statements (ca. 5 min) about their interest in the topic of science communication and their own experience, of

any kind, in communicating scientific information to an audience. We will discuss the main course aims and themes, the writing assignments, and the competences to be developed.

Further Reading:

James A. Secord, "Knowledge in Transit," *Isis*, Vol. 95, No. 4 (December 2004), 654-672.

Robert Craig, "Communication Theory as a Field," *Communication Theory*, 9 (1999), 119-161.

Part I. Scientific Language in Communication

Sessions 3 and 4. Scientific Tongue: Natural and Artificial Languages 8 September

Essential Reading:

Michael D. Gordin, *Scientific Babel. How Science Was Done Before and After Global English*, Chicago University Press, 2015, "Introduction," Chapter 4 "Speaking Utopian," 1-22, 105-130.

Further Reading:

Matthias Dörries, *Experimenting in Tongues: Studies in Science and Language*, Stanford University Press, 2002.

David R. Gruber, Lynda Walsh, *The Routledge Handbook of Language and Science*, New York, NY: Routledge, 2019.

Sessions 5 and 6. Scientific Narratives: Analogies, Metaphors, and Models 15 September

Essential Reading:

S.F. Martínez, N. Carrillo, "The Metaphoric Sources of Scientific Innovation," in S. Wuppuluri, A.C. Grayling (eds), *Metaphors and Analogies in Sciences and Humanities*, Springer, 2022, 33-47.

Maarten Boudry, Michael Vlerick, Taner Edis, "Demystifying Mysteries. How Metaphors and Analogies Extend the Reach of the Human Mind," in S. Wuppuluri, A.C. Grayling (eds), *Metaphors and Analogies in Sciences and Humanities*, Springer, 2022, 65-83.

Further Reading:

Andrew E. Benjamin, Geoffrey N. Cantor, and John R.R. Christie (eds), *The Figural and the Literal: Problems of language in the history of science and philosophy, 1630-1800*, Manchester: Manchester University Press, 1987.

Sessions 7 and 8: Scientific Rhetoric: Proof and Persuasion 22 September

Essential Reading:

Alan G. Gross, *The Rhetoric of Science*, Harvard University Press, 1990, 1-52.

Further Reading:

Jeanne Fahnestock, *Rhetorical Figures in Science*, Oxford: Oxford University Press, 2002.

Part II. Historical Case Studies in Science Communication

Sessions 9 and 10: Early Popular Cosmology 29 September

Essential Reading:

John Wilkins, *A Discourse Concerning a New World and Another Planet*, London: Printed by John Norton for John Maynard, 1640, 1-20, 185-242.

Further Reading:

Bernard de Fontenelle, *Conversations on the Plurality of Worlds* (1686).

William Shea, "Looking at the Moon as Another Earth: Terrestrial Analogies and Seventeenth-Century Telescopes," in Fernand Hallyn (ed), *Metaphor and Analogy in the Sciences*, London: Kluwer Academic Publishers, 2000, 83-103.

Sessions 11 and 12: Plague Discourses over Time 6 October

Essential Reading:

Daniel Defoe, *A Journal of the Plague Year: Or, Memorials of the Great Pestilence in London, in 1665*, London: Printed for E. Nutt at the Royal-Exchange, 1722, 1-58.

Further Reading:

L. Engelmann, J. Henderson, and C. Lynteris (eds), *Plague and the City*, London: Routledge, 2018.

Sessions 13 and 14: Future in the Past: Historical Science Fiction 13 October

Essential Reading:

Louis-Sébastien Mercier, *Memoirs of the year two thousand five hundred*, London, Pr. for G. Robinson, 1772, 1-60.

Further Reading:

Adam Roberts, *The History of Science Fiction*, London: Palgrave Macmillan, 2016.

Part III. Contemporary Science Controversies in Public Communication

Sessions 17 and 18: Biotechnology in the Media 20 October

Essential Reading:

Martin W. Bauer, "Genes, Biotechnology and Genomics," in *Atoms, Bytes & Genes: Public resistance and techno-scientific responses*, New York: Routledge, 2015, 160-182.

Further Reading:

Sandra Braman, *Biotechnology and Communication: The Meta-Technologies of Information*, New York, NY: Routledge, 2013.

Martin W. Bauer, George Gaskell (eds), *Biotechnology: The making of a global controversy*, Cambridge: Cambridge University Press, 2002.

Deadline for Mid-Term Grades: 23 October

Fall break: October 24 – October 30

Sessions 19 and 20: Anthropocene: Public Discourses on the Environment 3 November

Essential Reading:

Ignacio Bergillos, "Approaches to the Anthropocene from Communication and Media Studies," *Social Sciences*, Basel Vol. 10, Iss. 10, (2021): 365-377.

Further Reading:

Jürgen Renn, *The Evolution of Knowledge: Rethinking Science for the Anthropocene*, Princeton, NJ: Princeton University Press, 2020.

Sessions 15 and 16: Space Explorations in the Public Eye 10 November

Essential Reading:

Avi Loeb, *Extraterrestrial: The First Sign of Intelligent Life Beyond Earth*, Boston: Mariner Books, 2021, 1-20, 62-90.

Further Reading:

Slava Gerovitch, *Soviet Space Mythologies: Public Images, Private Memories, and the Making of a Cultural Identity*, Pittsburgh, PE: University of Pittsburgh Press, 2015.

Deadline for Final Essay Proposals: 15 November

Part IV. Science Communication Practices

Sessions 21 and 22: Science News and Podcasts 17 November

Essential Reading:

Martin W. Angler, *Science Journalism: An Introduction*, Milton Park, UK: Taylor & Francis, 2017, 27-107.

Further Reading:

Editor: Susanna Priest Martin W. Bauer, Massimiano Bucchi (eds), *Journalism, Science and Society: Science communication between news and public relations*, NY: Routledge, 2007.

Sessions 23 and 24. Science and Art: Cooperation with Artists 24 November

Essential Reading:

Megan K. Halpern, Hannah Star Rogers, "Art–science collaborations, complexities and challenges," in *Routledge Handbook of Public Communication of Science and Technology*, NY: Routledge, 2021, 202-218.

Further Reading:

Dehlia Hannah, Hannah Star Rogers et. al. (eds), *Routledge Handbook of Art, Science, and Technology Studies*, New-York, NY: Routledge, 2021.

Horst Bredekamp, *Galileo's Thinking Hand: Mannerism, Anti-Mannerism and the Virtue of Drawing in the Foundation of Early Modern Science*, trans. Cohen Mitch, Berlin: De Gruyter, 2019.

Sessions 25 and 26. Science in Popular Culture: Museums and Films 1 December

Essential Reading:

Bernard Schiele, "Science Museums and Centres: Evolution and Contemporary Trends," in *Routledge Handbook of Public Communication of Science and Technology*, NY: Routledge, 2021, 30-51.

David A. Kirby and Ingrid Ockert, "Science and Technology in Film: Themes and Representations," in *Routledge Handbook of Public Communication of Science and Technology*, NY: Routledge, 2021, 52-74.

Further Reading:

Eva-Sabine Zehelein, *Science: Dramatic. Science Plays in America and Great Britain, 1990–2007*, Universitätsverlag Winter-Heidelberg, 2009.

Sessions 27 and 28: Final discussion 8 December

There is no assigned reading for this class, but students should look back at the primary and secondary sources which they have read during the semester. We will also discuss the final essays and exchange feedback about the final assignments and the course in general.

Further Reading:

Susanna Hornig Priest (ed), *Encyclopedia of Science and Technology Communication*, Thousand Oaks, CA: SAGE Publications, 2010.

Kathleen Hall Jamieson, Dan M. Kahan, and Dietram A. Scheufele (eds), *The Oxford Handbook of the Science of Science Communication*, Oxford: Oxford University Press, 2017.

Deadline for Final Essays: 11 December

Deadline for Final Grades: 16 December