

**NORTHEASTERN UNIVERSITY  
Department of  
Communication Studies**

**COMM 2XXXX  
Science, Communication, and Society**

**Proposed New Course for  
Fall 2016 Semester**

**COURSE DESCRIPTION**

This course introduces students to major areas of research analyzing the role of communication and the media in shaping debates over science, technology, and the environment. In studying what the U.S National Academies calls the "science of science communication," students acquire the integrated knowledge necessary to critically assess the complicated interplay between science, engineering, and society including the implications for strategic communication, public engagement, personal decisions, and career choices. Students examine the scientific, social, and communication dimensions of debates over climate change, evolution, human genetic engineering, childhood vaccination, food biotechnology, and other leading case studies. In doing so, students improve their ability to find, discuss, evaluate, and use expert sources of information; to formulate research questions and expectations; to think effectively about professional situations and choices; and to write evidence-based, persuasive papers, and essays.

**COMMON CORE REQUIREMENTS  
AND LEARNING OUTCOMES**

This course fulfills learning outcomes related to two different Northeastern University Common Core requirements:

**#1. Engaging with the Natural and Designed World**

Students study and practice scientific investigation and/or engineering design in order to understand the natural world and to effect changes in it to meet human and societal needs and wants. They learn critical thinking and analytical problem solving; the biological, chemical, and/or physical principles that govern the natural world; and the efforts that underlie the origins, development, acceptance, and applications of those principles.

Learning Goals: By the end of the course, students should be able to

1. Formulate a question that can be answered through investigation or a challenge

that can be addressed through research or design.

2. Develop and use models based on evidence to predict and show relationships among variables between systems or components of systems in the natural and/or designed world.

3. Use and question scientific principles and practices to evaluate issues raised by the interplay of science, technology, and society.

## #5. Understanding Societies and Institutions

Students study and practice social science, historical, and/or literary methods of inquiry and theories in order to understand human behavior and cultural, social, political, and economic institutions, systems, and processes. They learn theories of social behavior as they relate to phenomena such as globalization, social change, and civic sustainability.

Learning Goals: By the end of the course, students should be able to

1. Describe current theories of how social, political, or economic institutions, systems, and processes work.
2. Explain the historical and cultural contingency of many descriptions and explanations of human behavior, institutions, systems, and processes.
3. Evaluate social, political, or economic theories by applying them to local and global phenomena.

## COURSE ASSIGNMENTS

- **Class Participation and Discussion Leadership (10%):** You are expected to attend every class; to do the reading in advance of class; and to actively participate in discussion; asking questions about the reading; commenting on, critiquing, and responding to the authors' arguments, those of classmates, or those offered by the professor. In addition, for each weekly topic, 3-4 students will be designated discussion leaders and will provide 1-2 page summaries of each reading. Students should compile their reading summaries into a single PDF document and email the document to Prof. Nisbet by the Monday evening before the class sessions. These summaries will then be posted on the course page in advance of class.
- **Midterm and Final (60%):** These exams will test your comprehension, recall, and application of class material via a series of multiple-choice and open-ended questions. The midterm will focus on the first half of the semester; and the final on the second half, but you should expect that questions on the final will be asking you to apply what you learned across the course.
- **Annotated Bibliography\* and Final Paper (30%):** In consultation with me, you will select a research topic relevant to the course focus. To start to analyze this topic, you will identify and summarize 10 peer-reviewed studies on the subject. You will then summarize these sources in the form of an annotated bibliography.

Drawing on this bibliography and class readings, you will then write a 2,500-word evidence based paper analyzing the communication and media dimensions of your topic, discussing the implications for societal decisions. In your conclusion you should propose methods for how this topic can be more effectively studied or analyzed by scholars and the relevant or new questions that should be asked. You should also discuss the implications of research for effective communication by experts, journalists, advocates, and others. You will turn in a first draft of your bibliography and paper to me for comment and feedback. You will then turn in a revised version for a final grade.

### **\*Compiling an Annotated Bibliography**

An annotated bibliography is a list of citations to scholarly books, book chapters, journal articles, and reports. Each citation – usually around 300 words -- is followed by a brief descriptive and evaluative paragraph called “the annotation.” For your annotated bibliography, you should be able to find and describe in your own words relevant journal articles, book chapters, and books on your topic. The journals, edited volumes, authors, and fields referenced in this course are good places to start to search for relevant sources.

### **[Primer on Getting Started with Your Research](#)**

## **CLASS SCHEDULE / READING**

### **Week 1 — Course Overview and Introduction**

### **Week 2 — Science Communication: History, Models, and Debates**

#### **Readings:**

- Achenbach, J. (2015, March). Why do many reasonable people doubt science? National Geographic.
- Nisbet, M.C. & Scheufele, D.A. (2009). What’s Next for Science Communication? Promising Directions and Lingering Distractions. *American Journal of Botany*, 96(10), 1767–1778.
- Brossard, D., & Lewenstein, B. V. (2009). A critical appraisal of models of public understanding of science. *Communicating science: new agendas in communication*. New York: Taylor and Francis, 11-39.

### **Week 3 - Popular Science Books and the Framing of Scientific Issues**

- Bell, A., & Turney, J. (2014). Popular science books. In *Routledge Handbook of Public Communication of Science and Technology*, 15.

- Nisbet, M. C., & Fahy, D. (2013). Bioethics in popular science: evaluating the media impact of *The Immortal Life of Henrietta Lacks* on the biobank debate. *BMC medical ethics*, 14(1), 10.
- Nisbet, M. C. (2014). Disruptive ideas: public intellectuals and their arguments for action on climate change. *Wiley Interdisciplinary Reviews: Climate Change*, 5(6), 809-823.

#### **Week 4 — The Shifting Role of Science Journalism in the Digital Age**

- Brumfiel, J. (2009). Supplanting the Old Media? *Nature*, 458, 274-277.
- Gibson, T. A., Craig, R. T., Harper, A. C., & Alpert, J. M. (2015). Covering global warming in dubious times: Environmental reporters in the new media ecosystem. *Journalism*.
- Nisbet, M.C. & Fahy, D. (2015). The Need for Knowledge-based Journalism in Politicized Science Debates. *Annals of the American Academy of Political and Social Science*, 658, 223-234.

#### **Week 5 — Science News Audiences and Media Effects in a Digital Age**

- Hmielowski, J. D., Feldman, L., Myers, T. A., Leiserowitz, A., & Maibach, E. (in press). An Attack on Science?: Media Use, Trust in Scientists, and Perceptions about Global Warming. *Public Understanding of Science*.
- Brewer, P. R., & McKnight, J. (2015). Climate as Comedy The Effects of Satirical Television News on Climate Change Perceptions. *Science Communication*, 1075547015597911.
- Brossard, D., & Scheufele, D. A. (2013). Science, new media, and the public. *Science*, 33(6115), 40-41.

#### **Week 6 — Entertainment Media and Scientific Celebrity**

- Nisbet, M.C. & Dudo, A. (2013). Entertainment Media Portrayals and their Effects on Public Understanding of Science. In Donna J. Nelson, Kevin Grazier, Jaime Paglia & Sidney Perkowitz (Eds), *Hollywood Chemistry*. Philadelphia, PA: American Chemical Society.
- Fahy, D. (2014). *The New Celebrity Scientists: Out of the Lab and into the Limelight*. New York: Rowman & Littlefield (Chapter 1 & 9)

#### **Week 7 — Science Politicization, Advocacy, and Denial**

- Dunlap, R. E., & McCright, A. M. (2011). Organized climate change denial. *The Oxford handbook of climate change and society*, 144-160.
- Sarewitz, D. 2009. The Rightful Place of Science. *Issues in Science and Technology*, Summer 2009: 89-94.

- Yearley, S. (2014). Environmentalists as communicators of science. In *Routledge Handbook of Public Communication of Science and Technology*, 113.
- Federoff, N. et al (2015, March 9). The Anti-GMO activists take playbook from Climategate. *The Guardian*.
- Kata, A. (2012). Anti-vaccine activists, Web 2.0, and the post-modern paradigm: An overview of tactics and tropes used online by the anti-vaccine movement. *Vaccine*, 30: 3778–3789.

### **Week 8 — Worldviews, Politics, and Perceptions of Science**

- Scheufele, D. A. (2014). Science communication as political communication. *Proceedings of the National Academy of Sciences*, 111(Supplement 4), 13585-13592.
- Hoffman, A. J. (2012). Climate science as culture war. *Stanford Social Innovation Review*, 10(4), 30-37.
- Voosen, P. (2014, Nov 3). Seeking a Climate Change. *Chronicle of Higher Education*.

### **Week 9 — Science, Religion, and Evolution**

- Mooney, C., & Nisbet, M. C. (2005). Undoing Darwin. *Columbia Journalism Review*, 44(3), 30-39.
- Nisbet, M. (2008). Ben Stein's Trojan Horse: Mobilizing the state house and local news agenda. *Skeptical Inquirer*, 32(5), 16-18.
- Scheitle, C. P., & Ecklund, E. H. (2015). The influence of science popularizers on the public's view of religion and science: An experimental assessment. *Public Understanding of Science*.
- Labov, J. B., & Pope, B. K. (2008). Understanding our audiences: the design and evolution of science, evolution, and creationism. *CBE-Life Sciences Education*, 7(1), 20-24.

### **Week 10 — Communication, the Media, and Pseudoscientific/Paranormal Beliefs**

- Caulfield, T. (2012). "Alternative Remedies," Chapter 4 in *The Cure For Everything: Untangling Twisted Messages About Health, Fitness and Happiness*. Boston, MA: Beacon Press.
- Sparks, G. O. (1998). Paranormal depictions in the media: How do they affect what people believe?. *Skeptical Inquirer*, 22, 35-39.
- Brewer, P. R. (2012). The trappings of science: media messages, scientific authority, and beliefs about paranormal investigators. *Science Communication*, 1075547012454599.

### **Week 11 — Climate Change, Communication, and the Public**

- Geiling, N. (2014, May 7). Why doesn't anyone know how to talk about global warming? *The Smithsonian magazine*.

- Nisbet, M. C. (2009). Communicating climate change: Why frames matter for public engagement. *Environment: Science and Policy for Sustainable Development*, 51(2), 12-23.
- Nisbet, M. C., & Kotcher, J. E. (2009). A two-step flow of influence? Opinion-leader campaigns on climate change. *Science Communication*.
- Van der Linden, S., Leiserowitz, A. A., Feinberg, G. D., & Maibach, E. W. (2015). The scientific consensus on climate change as a gateway belief: Experimental evidence. *PloS one*, 10(2), e0118489.

### **Week 12 — Debates Over Biomedical Advances and Breakthroughs**

- Ledford, H. (2015). CRISPR, the disruptor. *Nature*, 522(7554), 20-24.
- Nisbet, M. C., Brossard, D., & Kroepsch, A. (2003). Framing science: the stem cell controversy in an age of press/politics. *The International Journal of Press/Politics*, 8(2), 36-70.
- Nisbet, M., & Markowitz, E. M. (2014). Understanding public opinion in debates over biomedical research: looking beyond political partisanship to focus on beliefs about science and society. *PloS one*, 9(2), e88473.

### **Week 13 — Debates Over Food Biotechnology**

- National Academies (2015). *Public Engagement on Genetically Modified Organisms: When Science and Citizens Connect: A Workshop Summary*.
- Spector, M. (2014, Aug 25). Vandava Shiva's Crusade Against Genetically Modified Crops. *The New Yorker*.
- Brody, H. (2015, June 8). Fears, Not Facts Support GMO Labeled Food. *The New York Times*.
- Kolindinsky, J. (July 29, 2015). Study: GM food labels do not act as a warning to consumers. *The Conversation*.

### **Week 14 — Conclusion: What Role for Scientists, Universities, and Other Expert Institutions?**

- Borchelt, R. E., & Nielsen, K. H. (2014). Public relations in science. In *Routledge Handbook of Public Communication of Science and Technology*, 58.
- Alvarez, G. (2014, April 2). What Role for Scientists in the Climate Debate? *The Breakthrough.org*
- Nisbet, M. C. (2014). Engaging in science policy controversies. In *Routledge Handbook of Public Communication of Science and Technology*, 173.

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