

## **WRIT 44.03: Science communication and the public Spring 2020**

Instructor: Kate Rose

Office: 37 Dewey Field Road, Room 219

Email: Kathleen.M.Rose@dartmouth.edu

Office hours: Monday 9:00-10:00am, Thursday 1:00-2:00pm, or by appointment

### **Course description**

Communicating science to the public is critical for modern society. Effective science communication can educate, encourage informed decision-making or policy choices about scientific issues, or ensure funding for scientific research. This course builds an understanding of how our society thinks about science and talks about controversial scientific topics, including how current media structures impact these conversations, to inform sound science communication practices. We will delve into current research on science communication, critically evaluate science communication approaches and practices, and learn basic, theory-driven practices for communicating science to various audiences.

### **Learning objectives**

Upon completion of this course, students will:

1. Identify complex factors and processes that impact how we form science attitudes, including media structures and personal values.
2. Explain the practical implications of these factors and processes for science, such as science journalism, new (information) technology, political aspects of emerging technologies, science literacy, etc.
3. Identify key elements of (in)effective science communication in popular media.
4. Develop theory-driven strategies and practices for communicating scientific information to non-experts effectively.
5. Critically review and synthesize existing scientific literature.

### **Required texts**

There is no required book for this course. Required readings will be posted on the course Canvas site.

### **Attendance policy**

Students are expected to attend all class meetings. If you are unable to attend a class meeting due to illness, emergency, or participation in a college-sanctioned activity, please notify me as soon as possible via email. After two absences, each absence will result in a one third of a letter grade decrease in your final grade (e.g. if you earned an A- in the course, but missed three classes, you will receive a B+. If you missed four classes, you will receive a B).

Some students may wish to take part in religious observances that occur during this academic term. If you have a religious observance that conflicts with your participation in the course, please meet with me before the end of the second week of the term to discuss appropriate accommodations.

### **x-hours**

I reserve the right to schedule an x-hour at any time. Please leave these times open in your schedule.

### **Students with disabilities**

Students with disabilities who may need disability-related academic adjustments and services for this course are encouraged to see me privately as early in the term as possible. Students requiring disability-related academic adjustments and services must consult the Student Accessibility Services office (Carson Hall, Suite 125, 646-9900). Once SAS has authorized services, students must show the originally signed College Policy on the Academic Honor Principle, Accessibility Services, Mental Health and Religious Observances SAS Services and Consent Form and/or a letter on SAS letterhead to their professor. As a first step, if students have questions about whether they qualify to receive academic adjustments and services, they should contact the SAS office. All inquiries and discussions will remain confidential.

### **Academic honesty**

You are expected to follow Dartmouth's Academic Honor Principle (<http://www.dartmouth.edu/judicialaffairs/honor/index.html>). You are welcome to discuss course readings, topics, and assignments with your classmates, but all your writing must be your own work. If you use ideas, quotations, or information from another person, you must cite that source in your paper. Using the ideas or words of others without giving credit for those ideas is plagiarism, and will result in a failing grade for the course.

For further discussion of what constitutes plagiarism, and how to use and cite sources, please see Dartmouth's excellent document on Sources and Citations: <http://writing-speech.dartmouth.edu/learning/materials/sources-and-citations-dartmouth>

### **Other notes/policies**

- If you are currently involved in a research project you are encouraged to use this course to further develop your own work. If you are interested in incorporating your own ongoing research project, meet with me ASAP to discuss this possibility (some of the assignments can be adjusted, such as the public-facing science communication project).
- One extension on an assignment due date is permitted if necessary, but you need to discuss this with me ASAP to determine a new due date. All other late assignments will count against your final assignment grade (one third letter grade for each day late).

## Writing and other resources

- The Student Center for Research, Writing, and Information Technology, RWiT (<http://writing-speech.dartmouth.edu/learning/support-writing-research-and-composing-technology/rwit>): provides free tutoring on all issues pertaining to writing, research and more.
- The Dartmouth Institute for Writing and Rhetoric (<http://writing-speech.dartmouth.edu/learning>): provides many pages of excellent information and advice for students.
- Jones Media Center (<https://www.dartmouth.edu/~library/mediactrl/>): provides software, training, and equipment for producing and editing media (including video and audio).
- Academic Skills Center (<http://www.dartmouth.edu/~acskills/>): provides tutors and counseling on academic issues.
- The academic environment at Dartmouth is challenging, our terms are intensive, and classes are not the only demanding part of your life. There are a number of resources available to you on campus to support your wellness, including your undergraduate dean (<http://www.dartmouth.edu/~upperde/>), Counseling and Human Development (<http://www.dartmouth.edu/~chd/>), and the Student Wellness Center (<http://www.dartmouth.edu/~healthed/>).

## Grade breakdown

- Participation and engagement – 5%
- Student discussion leaders – 5%
- Critical review of science communication example – 15%
- Public-facing science communication project (35%)
  - Scientific literature selection, evaluation, and review – 5%
  - Communication “product” development – 20%
  - Peer review of public communication “product” – 10%
- In-depth controversial scientific topic analysis (35%)
  - Issue overview; public attitudes literature review – 20%
  - Communication strategy development – 15%
- Final project presentation – 5%

## Grade scale

<b>A</b>	100-95%	<b>B-</b>	82-80%	<b>D</b>	69-60%
<b>A-</b>	94-90%	<b>C+</b>	79-77%	<b>E</b>	59-0%
<b>B+</b>	89-87%	<b>C</b>	76-73%		
<b>B</b>	86-83%	<b>C-</b>	72-70%		

## Assignments

### Student discussion leaders

Engaging with the content of the course is critical. Each student will be responsible for summarizing and leading discussion of the course reading(s) for two of the class sessions. To prepare, you will be asked to write a short summary of the reading(s) that highlights the key takeaways and to develop discussion questions. 2 pages summary; 5 discussion questions.

### Critical review and analysis of a science communication example

In the course, we will discuss current research that addresses how members of the public encounter, process, and retain information about science. Based on this research, you will select and evaluate a “real world” example of science communication (e.g., article, blog, podcast, TV show, campaign). Your critical review will include a well-reasoned and backed-up analysis of what your selected example did and/or did not do well. 5 pages.

### Public-facing science communication project

After discussing and critically reviewing other science communication examples and identifying and evaluating relevant research on the topic, you will develop your own public-facing science communication “product.” **You are encouraged to select a topic that is somewhat limited in scope and that can be used for the in-depth analysis.** We will work together to develop an appropriately sized topic. There are three parts to this project:

- 1) *Scientific literature selection, evaluation, and review:* Before communicating about a scientific topic for a non-expert audience, you need to familiarize yourself with the current research on the topic. In a literature review, you will be asked to select and evaluate scientific literature on your topic that you will ultimately communicate to the public. 2 pages literature review; 3 scientific articles published in reputable journals.
- 2) *Public communication “product” development (and revision):* The format of the communication “product” is flexible (e.g., article, blog, podcast). You will have the opportunity to revise your “product” based on peer feedback. Length will depend on the format (approximately 4 pages of text, 10 minutes for a well-produced podcast).
- 3) *Peer review of public communication “product:”* You will be asked to constructively review a peer’s public communication “product,” similar to your analysis of a “real world” science communication example. 2 pages, plus in-class discussion.

### In-depth controversial scientific topic analysis

Using what we’ve learned about how we form attitudes about science and how current media structures influence what science information we encounter, you will conduct an in-depth analysis of how members of the public form attitudes about a specific, controversial scientific topic and propose a communication strategy for your topic. Your paper should draw on theories and insights we discussed in class as well as your own research on the topic. The final paper will be 15 pages.

- 1) *Issue overview; public attitudes literature review and analysis:* You will conduct a review of public opinions research about your selected scientific topic. Your paper should provide an overview of the topic and identify clear, supported reasons for why

the topic is controversial. You will be asked to summarize and critically analyze the public attitudes research you found and develop/explore any common themes you identify.

- 2) *Communication strategy development*: Providing support from relevant theories, class discussions, and the public attitudes research you identified, develop a communication strategy for your topic. You should identify specific communicators, goal(s), and audiences, and outline appropriate actions to achieve your goal(s) (e.g., science journalist informing about a topic; marketing strategy for a private company).

### Final project presentation

Each student will present their findings from their in-depth topic analysis, with an emphasis on their suggested communication strategy. We will discuss the proposed communication strategies and provide feedback.

**Schedule: Tu/Th 2:25-4:15; x-hour W 4:35-5:25**

<b>Week</b>	<b>Day</b>	<b>Discussion Topic</b>	<b>Readings</b>	<b>Assignments; Deadlines</b>
<b>1</b>	<b>Tu 3/31</b>	Introduction; Why do we care about science?	Scheufele (2014)	
	<b>Th 4/2</b>	Politicization of science; ELSI and modern science	Bastian (2017); Sarewitz (2015); Schuppe (2018)	
<b>2</b>	<b>Tu 4/7</b>	Science knowledge and literacy; Knowledge gaps	Scheufele (2006); Bhattacharjee (2010); Corley & Scheufele (2010)	“Product” science topic AND critical review example selection
	<b>Th 4/9</b>	Information processing and cognitive misers; Evaluating scientific sources	Shaw (2017); Segran (2014); EurekAlert (2017)	Science topic initial literature due
<b>3</b>	<b>Tu 4/14</b>	Values and heuristics; Risks/crisis communication sidebar	Pew (2017); Taub (2017)	Science topic literature review due
	<b>x-hour: W 4/15</b>	x-hour, Jones Media Center visit		
	<b>Th 4/16</b>	Evaluating popular science communication	Akin et al. (2017)	
<b>4</b>	<b>Tu 4/21</b>	Translating science strategies	Reichel (2019); Maynard & Scheufele (2016)	
	<b>Th 4/23</b>	Critical review discussion; Introduction to media effects		Critical review due
<b>5</b>	<b>Tu 4/28</b>	Powerful media effects (spiral of silence and cultivation)	Scheufele (2007)	“Product” draft due
	<b>Th 4/30</b>	Subtle media effects (priming, agenda setting, framing) <i>Additional reference: Scheufele &amp; Tewksbury (2007)</i>	Somerville & Hassol (2011); Nisbet & Scheufele (2007)	
<b>6</b>	<b>Tu 5/5</b>	“Product” review and group feedback/discussion		“Product” review due; Analysis topic selection (if change)
	<b>Th 5/7</b>	New information environments, part 1 (agenda building, consolidation of news outlets)	Oremus (2016); Nisbet, Brossard, & Kroepsch (2003)	

<b>7</b>	<b>Tu 5/12</b>	New information environments, part 2 (social media and search algorithms, issue cycles)	Brossard & Scheufele (2013); Smith (2018)	Revised "product" due
	<b>Th 5/14</b>	Values meet information; Motivated reasoning	Brossard, Scheufele, Kim, & Lewenstein (2009); Potenza (2017)	
<b>8</b>	<b>Tu 5/19</b>	Unintended consequences of new media, part 1 (fake news, alternative facts, and science)	Scheufele & Krause (2019); Kaufman (2019)	Analysis initial literature due
	<b>Th 5/21</b>	Unintended consequences of new media, part 2 (selective exposure; filter bubbles; civility)	Wolfgang (2018); Syed (2019); NYT Brossard & Scheufele (2013)	
<b>9</b>	<b>Tu 5/26</b>	Solutions to motivated reasoning	Haidt & Iyer (2016); O'Donnell (2019)	
	<b>Th 5/28</b>	Improving science communication, cont.; Initial findings discussion	Minson, Dorison & Rogers (2019)	Analysis initial findings (draft) due
<b>10</b>	<b>Tu 6/2</b>	Analysis project presentations		Presentations
	<b>x-hour: W 6/3</b>	x-hour, additional time for Analysis project presentations		Presentations
<b>X</b>	<b>Tu 6/9</b>	(NO CLASS)		Analysis due