

Communicating Science to the Public
Instructors: Eric Hilton & Rachel Mitchell
2 Credits
M: 2:30-5:30
<http://engage-science.com/seminar/>

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"We have also arranged things so that almost no one understands science and technology. This is a prescription for disaster. We might get away with it for a while, but sooner or later this combustible mixture of ignorance and power is going to blow up in our faces." ~ Carl Sagan

"So here you have Barack Obama going in and spending the money on embryonic stem cell research.... Eugenics. In case you don't know what Eugenics led us to: the Final Solution. A master race! A perfect person.... The stuff that we are facing is absolutely frightening." ~ Glenn Beck

"I'd make it a goal to make sure that local folks got to make the decision as to whether or not they said creationism has been a part of our history and whether or not people ought to be exposed to different theories as to how the world was formed." ~ George W. Bush

Course Description

This course focuses on developing effective techniques for sharing scientific research with non-specialists. We will focus on development of sound-bytes, elevator talks, accessible visualizations and story-telling. Students will spend time exploring their voice, crafting their message and telling their story through improv and group discussion. The product of this course will be a 30-minute, engaging public presentation.

Introduction

"It would be possible to describe everything scientifically, but it would make no sense; it would be without meaning, as if you described a Beethoven symphony as a variation of wave pressure." ~ Albert Einstein

Science is critical to the advancement and safety of human society. Unfortunately, scientific knowledge and discovery has become restricted to a few, highly trained specialists: graduate students and PhDs. What is perhaps more unfortunate these same specialists are completely without training in how to convey the importance of their work to the general public, allowing those with media training and ulterior motives to create controversy where none exists.

Scientists are trained to investigate, report, and interpret facts and data. What we often fail to understand is that this ability is the result of years of training on **how** to think. A training that most non-scientists have never received.

Scientific information, when presented as a dry collection of facts and figures, often fails to capture the appropriate attention or have the impact it deserves. In order to reach a broad, at times uninterested audience, scientists must learn to convey important information in an engaging and accessible way. This course, through lectures by guest speakers, improvisational games, group discussion and feedback, and most importantly, practice, will help emerging scientists prepare a bag of tricks for public communication.

Course Goals

This course will provide students with the resources and opportunity to spend time learning effective communication techniques and crafting the story of their research. Ultimately, students will be expected to produce a 30-minute presentation on their research topic appropriate for a public lecture. Students will also be expected to give this talk during the winter speaker-series associated with this class. This unique opportunity will also give the students a chance to have themselves videotaped while giving a talk, a great piece of media for their CV or resume.

Course Schedule

| Week | Date | Lesson Topic | Guest Speaker(s) |
|-------------|-------------|--|---|
| Week 1 | M 10/4 | Storytelling Intro to Improv, | Aomowa Shields Astronomer and actress, formerly host and reporter for PBS's Wired Science |
| Week 2 | M 10/11 | Analogies, hooks and jargon | Ty Robinson , Astrobiologist, Pacific Science Center Science Communication Fellow Cluny McCaffrey , Director of Marketing for The Nature Conservancy in Washington Katherine Sather , Digital Marketing Specialist, The Nature Conservancy in Washington |
| Week 3 | M 10/18 | Sound-bytes and Elevator talks - Cocktail Party | Lauren Russell , Portal to the Public Project Manager, Pacific Science Center |
| Week 4 | M 10/25 | Audience - improv - visualizations | Dr. Sarah Perez-Kriz , Ass't Prof, Department of Human Centered Design & Engineering, UW |
| Week 5 | M 11/1 | Choosing Content - making pitches - analogies - accuracy | Melissa Phillips , Science Writer, National Association of Science Writers |
| Week 6 | M 11/8 | Science vs. non-Science - distilling vs. dumbing down - Radiolab discussion | Dr. Toby Smith , Senior Lecturer in Astronomy, UW |

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| Week 7 | M 11/15 | Introduction and Background - distilling, creating hook - improv and evaluation | Allison Coffin , Senior Fellow, Hearing Research Center, UW, Toastmasters International |
| Week 8 | M 11/22 | Practice Talks - group critique | Allison Coffin |
| Week 9 | M 11/29 | Demos | |
| Week 10 | M 12/6 | TBA | |

Assignments and Grading

This course builds towards a 30-minute talk about science research for a general audience. To get there, we will practice many elements of good communication and will work hard at structuring the talk. Attendance and participation are critical components of the skills taught in this class.

20% - short written assignments some based on readings

20% - participation in class activities (improv, discussions, stories)

60% - final talk (judged by the quality and effort put into your talk, and how well you incorporated what we learn in this class)

Sources

Highly Recommended Books

Dean, Cornelia. Am I Making Myself Clear? A Scientists Guide to Talk to the Public. Cambridge: Harvard University Press, 2009.

Hayes, Richard and Daniel Grossman. A Scientist's Guide to Talking with the Media: Practical Advice from the Union of Concerned Scientists. Rutgers University Press, 2006.

Mooney, Chris and Cheryl Kirshenbaum. Unscientific America: How Scientific Illiteracy Threatens Our Future. New York: Basic Books, 2009.

Olsen, Randy. Don't Be Such a Scientists: Talking Substance in an Age of Style. Island Press 2009.

Recommended Books

Bell, Philip, et al. Ed. Learning Science in Informal Environments: People, Places and Pursuits. Washington DC: National Academy Press, 2009.

Best, Joel. Social Problems. New York: W.W. Norton & Company, 2008.

Chittenden, Dave, Graham Farmelo, and Bruce V. Lewenstein. Ed. Creating Connections: Museums and the Public Understanding of Current Research. Walnut Creek, CA: AltaMira Press, 2004.

Diamond, Judy. Practical Evaluation Guide: Tools for Museums & Other Settings. Walnut Creek, CA: AltaMira Press, 1999.

Heath, Chip and Dan Heath. Made to Stick: Why Some Ides Survive and Other Die. New York: Random House, 2007.

Falk, John and Lynn Dierking. Learning from Museums. Walnut Creek, CA: AltaMira Press, 2000.

Farmer, J. Doayne. "The Everyday Practice of Physics in Silver City, New Mexico." Curious Minds: How a Child Becomes a Scientist. Ed. John Brockman. New York: Pantheon Books, 2004.

Fenichel, Marilyn and Heidi A Schweingruber. Surrounded by Science. Washington DC: National Academy Press, 2009.

Blogs and Internet Resources

Center for Advancement of Informal Science Education <http://caise.insci.org/>

Science Café's <http://www.sciencecafes.org/>

Science Buzz <http://www.sciencebuzz.org/>

Coalition on the Public Understanding of Science <http://www.copusproject.org/index.php>

Education Resources Information Center <http://www.eric.ed.gov/>

Citizen Science Central <http://www.birds.cornell.edu/citscitolkit/>

Association of Science Technology Centers <http://www.astc.org/>

Informal Science <http://informalscience.org/>

Institute of Inquiry <http://www.exploratorium.edu/ifi/about/index.html>

Data Visualization <http://www.informationisbeautiful.net/>

Overcoming Bias <http://www.overcomingbias.com/>

Explain it in 60 seconds <http://www.symmetrymagazine.org/cms/?pid=1000253>

Communicating Science with AAAS <http://communicatingscience.aaas.org/Pages/newmain.aspx>

Useful References

- Bell, Philip, et al. Ed. Learning Science in Informal Environments: People, Places and Pursuits. Washington DC: National Academy Press, 2009.
- Best, Joel. Social Problems. New York: W.W. Norton & Company, 2008.
- Chittenden, Dave, Graham Farmelo, and Bruce V. Lewenstein. Ed. Creating Connections: Museums and the Public Understanding of Current Research. Walnut Creek, CA: AltaMira Press, 2004.
- Colin, Mathilde and Maria C. Powell. "Meaningful Citizen Engagement in Science and Technology: What would it Really Take?" Science Communication 30 (2008): 126-135.
- Diamond, Judy. Practical Evaluation Guide: Tools for Museums & Other Settings. Walnut Creek, CA: AltaMira Press, 1999.
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- Farmer, J. Doyne. "The Everyday Practice of Physics in Silver City, New Mexico." Curious Minds: How a Child Becomes a Scientist. Ed. John Brockman. New York: Pantheon Books, 2004.
- Fenichel, Marilyn and Heidi A Schweingruber. Surrounded by Science. Washington DC: National Academy Press, 2009.
- Feynman, Richard. "The Pleasure of Finding Things Out." Horizon. BBC. London. 23 November, 1981.
- Friedman, Allan. Ed. Framework for Evaluating Impacts of Informal Science Education Projects [On-line]. Washington DC: National Science Foundation, 2008.
- Graves, Robert. "Warning to Children." The Complete Poems. London: Penguin Classics, 2003. 297-8.
- Lane, N. "The Civic Scientist and Science Policy." AAAS Science and Technology Policy Yearbook. Ed. A.H. Teich, S.D. Neilson, C. McEnaney, and T.M. Drake. Washington DC: American Association for the Advancement of Science, 1999.
- Poliakoff, Ellen and Thomas L. Webb. "What Factors Predict Scientists' Interactions to Participate in Public Engagement of Science Activities." Science Communication. 29 (2007): 242-263.
- Rogers, Carl. Freedom to Learn. Columbus, OH: Charles Merrill, 1969. 164-5.

