

Rutgers Graduate School of Biomedical Sciences

“Communicating Science”

Spring 2017, Wednesdays 4:00 – 7:00 PM

Location of class: Busch Campus, Piscataway

Course Numbers:

Graduate School of Biomedical Sciences (GSBS) Newark and Piscataway – **6718 5600S**

Graduate School New Brunswick (GSNB) – **16:718:560**

Who is eligible to take this course – This course is designed for pre-doctoral students in Rutgers GSBS or joint programs of GSBS and GSNB who have been admitted to candidacy for the Ph.D. after completing their propositional qualifying exam. Permission by the course director is also required.

Course Director:

Nicholas M. Ponzio, Professor, Rutgers Graduate School of Biomedical Sciences, Newark Division; 973-972-5238; MSB C-540; ponzio@njms.rutgers.edu

Instructors:

- Carol Lutz, Associate Professor and Assistant Dean, Rutgers Graduate School of Biomedical Sciences, Newark Division
- Janet Alder, Associate Professor and Assistant Dean, Rutgers Graduate School of Biomedical Sciences, New Brunswick/Piscataway Division
- Holly Hilton, Director, Biomarkers and Translational Sciences PPD Laboratories
- David Dannenfelser, Lecturer, Rutgers BA Theater Program
- Nick Linardopoulos, Assistant Teaching Professor & Public Speaking Coordinator; Rutgers University School of Communication and Information
- Mary Nucci, Professor; Department of *Human Ecology* at the Rutgers School of Environmental and Biological Sciences
- Monica Devanas, Director of Faculty Development and Assessment Programs; Rutgers Center for Teaching Advancement and Assessment Research (CTAAR)

Collaborators:

- Louis Wells, Associate Professor; Theater Arts; NJIT
- Steve Ritland, Executive Director – Project Leadership; Celgene
- Shanon Hunt, Senior Global Program Manager; Translational Clinical Oncology; Novartis Pharmaceuticals Corporation

Course Description: We envision our Ph.D. graduates able to speak and write about their research accurately and clearly to scientific colleagues, as well as non-scientists. Unfortunately, time spent learning to communicate their research pales in comparison to time spent learning how to design and conduct their research. A major goal of *Communicating Science* is to instill in students an advanced ability to not only to communicate clearly, accurately, and vividly about their research, but also to emphasize its significance. This

course provides methods of instruction and improvisation to reinforce communication skills obtained in basic courses. It provides our trainees with new ways to communicate more effectively so they can apply these skills to diverse audiences and in different career settings. The course brings together a multidisciplinary faculty of scientists, educators, communication experts, and theater arts professionals from academe and industry to teach, improve, and assess advanced communication skills in our Ph.D. trainees. The course includes elements of didactic and improvisation content with built in opportunities to create and practice written and oral presentations for diverse audiences.

Aims of the Course The overarching aims of *Communicating Science* are to:

- complement and enhance skills obtained by students from their basic courses, using methods involving classroom instruction, improvisational techniques, practice sessions for oral presentations, writing assignments, and real-life simulations.
- help Ph.D. trainees learn and practice new methods to communicate more effectively with colleagues and collaborators in other disciplines, as well as the public (including potential employers, policymakers, donors, students, and media representatives).

Course Content By taking the course, students will:

- learn techniques that focus on communicating science clearly and vividly and develop skills that are central to oral and written communication on any subject.
- practice delivering written and oral scientific messages effectively for different audiences, including defining goals, identifying main points, speaking and writing without jargon, explaining meaning and context, responding to questions, using storytelling techniques and multimedia elements.
- be videotaped during the semester as part of the learning process. As a culminating activity, students will develop and deliver an engaging short oral presentation on a scientific topic.
- actively participate not only as writers and speakers, but also as active peer listeners and constructive peer critics of each other's work in a rigorous but supportive environment.
- choose a science communication related topic and work with a professional in that field to develop a capstone project. Examples include:
 - Make a pitch to a venture capital group for a start-up company
 - Write a press release, newspaper article, op-ed column, or letter to the editor of a newspaper on a contemporary topic
 - Prepare lesson objectives, a lecture, or exam questions for a biology or chemistry class of college students
 - Go on a mock job interview at a biotech company

Course Policies and Evaluation: This course is about the importance of communication. Students will prepare both written and oral communication assignments that will be evaluated by their peers and faculty instructors. Specific assignments will be handed out and discussed in class at least one week prior to their due date. A major assignment in the course will be to develop a three minute talk based on an abstract of their thesis research project. This oral presentation will be videotaped, critiqued by peers and faculty, and further revised for

improvement. Students will receive feedback on their capstone communication project from the professional with whom they work and from faculty involved in the course.

Attendance – The class meets once per week, and attendance at all class meetings is expected.

Grading and Evaluation – Grading will be Pass/Fail. Students will be evaluated on their understanding of information as evidenced by their performance in class discussions, oral presentations, and writing assignments. There will also be a link to a weekly anonymous evaluation by Survey Monkey. All students must complete the course evaluation in order to receive a grade. Those missing 2 or more sessions and/or 2 or more written assignments will receive a grade of Incomplete (“IN”). Incomplete grades must be remediated. Failure to remediate results in grades of IN will be changed to F.

Academic Integrity – Each student is expected to be familiar with the academic integrity policies in the GSBS Student Handbooks:

- Piscataway/New Brunswick http://rwjms.rutgers.edu/gsbs/current/student_handbook.html
- Newark: http://njms.rutgers.edu/gsbs/current_students/docs/2014/PhDHandbook.pdf

All work that carries your name on it is considered yours unless specifically stated otherwise by properly citing the research and ideas of others. **Failure to read and understand the policy is not an acceptable excuse for violating the policy.**

Readings & Media: There are no required books for this course. Audios/videos may be drawn from online sources such as Science Friday, TED talks, Story Collider, Radio Lab, and Stony Brook University’s Alan Alda Center for Communicating Science. Readings may be drawn from scientific journals, popular science publications (e.g., *The Science Times*), and science blogs. Students are encouraged to consult other sources such as the following books, for example:

- Baron, Nancy. (2010). *Escape from the Ivory Tower: A Guide to Making Your Science Matter*. Washington, DC: Island Press. [Developed by [COMPASS](#) lead trainer]
- Dean, C. (2009). *Am I Making Myself Clear? A Scientist’s Guide to Talking to the Public*. Cambridge: Harvard University Press.
- Heath, C. and Heath, D. (2008). *Made to Stick: Why Some Ideas Survive and Others Die*. New York: Random House.
- Kosslyn, S.M. (2007). *Clear and to the Point: 8 Psychological Principles for Compelling PowerPoint Presentations*. New York: Oxford University Press.
- Meredith, D. (2010). *Explaining Research: How to Reach Key Audiences to Advance Your Work*. New York: Oxford University Press. [Additional material is on [Meredith's website](#) (http://dennismeredith.com/explaining-research_397.html)]
- Morgan, S. and Whitener, B. (2006). *Speaking about Science: A Manual for Creating Clear Presentations*. New York: Cambridge University Press.

- Olson, Randy. (2009). *Don't be such a scientist: talking substance in an age of style*. Washington, DC: Island Press. [Olson also runs [a blog](http://thebenshi.com/) with commentary and ideas (<http://thebenshi.com/>)]
- Olsen, R., Barton, D. and Palermo, B. (2013). *Connection: Hollywood Storytelling Meets Critical Thinking*. Los Angeles, CA: Prairie Starfish Productions.

Class Schedule			
Date	Lecture	Activities	Homework
Class 1 Jan 18	Introduction – Course overview; What is effective communication? What are unique aspects of communicating science? Discussion of final project	Icebreakers: Improvisation exercises	Prepare a 3 minute oral presentation about your research (Due date: Class 2)
Class 2 Jan 25	Communicating your science (short lecture)	3 minute oral presentations by all students (videotaped)	Write an abstract about your research – 500 words (Due date: Class 3)
Class 3 Feb 1	Scientific storytelling	Picture exercise for telling a scientific story	Turn your 3 min oral presentation into a 30 second elevator pitch about your research (Due date: Class 4)
Class 4 Feb 8	Distilling your message; Knowing your audience	Feedback on your abstract; Give your elevator pitch to a classmate	Write a short description of a plan for your final project (Due date: Class 5)
Class 5 Feb 15	Building confidence in public speaking; Voice, presence, body language; Amy Cuddy TED talk on presence, body language, etc.	Improvisation methods relevant to lecture content	Rewrite your abstract (Due date: Class 5)
Class 6 Feb 22	Scientific papers; How to structure a written story	Answer questions to sections of a paper	Write an abstract about a clinical trial (Due date: Class 7)
Class 7 March 1	Visualizing science; How to communicate visually with slides	Learn how to create effective graphics	Create a single slide that conveys your research (Due date: Class 8)
Class 8 March 8	Scientific posters	Critique each other's old posters	Revise your poster on your research (Due date: Class 9)

Date	Lecture	Activities	Homework
March 15	Spring Break – No class		
Class 9 March 22	Effective teaching; Lecture objectives, slides, team based learning, flipped classroom; writing exam questions	Learn different teaching styles	Write lesson objectives for a lecture on the background for your research (Due date: Class 10)
Class 10 March 29	Communicating your opinion; Written and verbal opinion pieces How to handle Q&A and media interviews	Persuasive written and oral communication	Write an op/ed piece about a controversial topic (Due date: Class 11)
Class 11 April 5	Negotiation skills; how to get what you want; how to ask for funding	Exercises relevant to lecture content	Practice a 1 minute advocating for a policy on your controversial topic to a mock congressional hearing (Due date: Class 12)
Class 12 April 12	Interviewing for a job and preparing a cover letter	Mock job interviews	Write a cover letter for a job application (Due date: Class 13)
Class 13 April 19	Fine tuning your 3 min research talk	Feedback on your talk	Practice your 3 minute research talk Due date: Class 14)
Class 14 April 26	Presentation of final project	Professionals and faculty evaluate final projects	Sign up for time slot to videotape 3 minute oral presentations
Class 15 May 3	Graduation videotaping and viewing	View videotapes for critiques and feedback	