

ESM 556/ESR 656: Advanced Science Communication Skills

10-11:05 Fridays Winter 2023

Dr. Catherine de Rivera (Environmental Science & Management)

email: derivera@pdx.edu

office hours: Fridays 12:30-1 pm and 2:05-2:30 pm (same Zoom link as class) or by arrangement

Overview

Welcome! In this seminar we will outline the objectives involved in presenting scientific information and discuss how those objectives may be met. Discussions and assignments will mostly focus on oral and written communication of scientific information. This seminar can stand on its own but is part of a two-term series. Fall term we began exploring how best to use words and images as tools to convey the results of our scientific studies and how to focus one's research message for better effect. We now continue this exploration of communicating science to general to expert audiences.

This course strives to improve students' ability to communicate science clearly. **Objectives** include:

- improving comfort level during presentation;
- continuing to determine the core message that should be conveyed and develop useful supporting components;
- continuing to practice effective use of words, images, and pacing to convey the results of scientific studies;
- developing a framework for a 12-min talk that highlights your key findings;
- developing, improving, presenting/critiquing a 12-min scientific talk to identify which elements are important for a clear, memorable talk;
- creating the framework for a grant proposal (or manuscript), especially working on the opening.

Course topics

Talk evaluation. Early in the term we will discuss the elements of creating and giving successful science talks. We will review one particular rubric for evaluating a talk and use it to critique some short examples in class. You are asked to carry this forward by giving a scientific talk 12 or more minutes long and asking a peer to watch (as a member of the audience) and evaluate the talk using that rubric. The talk may be for a general or technical audience, may be in this class or an assignment for another class, at a meeting or seminar, or something else. The only requirement is that the talk be scientific in nature, gets evaluated, and you consider how to improve it and your other talks based on that evaluation.

12-minute talks. The 12-minute talk (plus 3 for questions) is a standard at major scientific meetings. Speaking in this setting presents two challenges, conveying a clear yet complete message and standing out from the crowd. In this exercise, you will be asked to prepare an outline of sorts (a 6-slide story board) with a few key graphics for a 12-minute talk on a topic related to your research. How would the technical content change? Two to three volunteers will present their talks to the group. You may wish to use this as practice if you have a presentation scheduled at an upcoming meeting. We'll also briefly discuss how you might prepare the same material for a different audience (elementary school students, general public, professional public, ...), including how the balance between background and results may change.

Writing: Grant proposals. Grant proposals also rely on clear communication of ideas and supporting evidence. A fundable proposal requires clear goals, key structural components, and supported yet novel content addressing the rfp. We will touch upon and start to practice the components of proposals. We will compare elements of proposals to papers. As the lessons apply to papers as well, you have the choice of workshopping a paper or grant proposal during the last part of the course.

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Tentative Order of Topics. Assignments are due the following class.

1. (1/13) Improv Intro; Critique a Ted talk with evaluation rubric
Assignment: watch two Ted talks: For one of them, use the presentation rubric to score it and also note what makes it good and how to could improve it (and also the rubric) – see assignment on Canvas.
2. (1/20) Review thoughts on your TED talks & rubric; Conceptual Models & Concept maps;
Advance/detail your research
Assignment: create Concept Map
Assignment: Read *Baron pp 18-25* on role of scientists
3. (1/27) Discuss Baron reading; Share concept map; Talk goals; Story Boards; word at a time
Assignment: prepare Storyboard
4. (2/3) Elements of a sticky story; Elements & guidelines for talks; ‘What I like about that AND...’ Quick talks with story boards (green, yellow, red);
***Assignment:* add sticky story (SUCCES) elements to your Storyboard**
Assignment: 12-minute talk outline
5. (2/10) Mantra; 12-minute talk presentations (2-3) & constructive critique;
Assignment: Read *Schimmel pp 35-42* on openings; bring first sentence of your proposal or paper
6. (2/17) workshop first sentences, titles; Grant & paper intros
Assignment: Read *Schimmel pp 42-47* on openings; work on first paragraph of your proposal or paper
7. (2/24) Workshop first paragraphs; Grant components overview; jargon discussion
Assignment: Read *Schimmel pp 32-33; 50-57* (opening to challenge); improve your proposal/paper Intro
8. (3/3) Workshop proposal/paper Intro; Writing beyond the Intro
Assignment: revise and continue proposal/paper; read a *Nature* or *Science...* paper
9. (3/10) Workshop revised intros and another section of paper/proposal; Discussion of what got papers into *Nature/Science*
Assignment: continue proposal/paper;
Assignment: Read *Baron pp 29-35* on talking to journalists
10. (3/17) Discussion of reading; Rewrite 1st sentence for journalist; Final workshopping of writing.

Assignments: Complete assignments by the next class meeting. Assignments are posted on Canvas.pdx.edu. If you don't have an Odin ID, go to <http://oit.pdx.edu/set-up-odinacct>

Readings (available at library or for purchase; required selections on Canvas)

Baron, Nancy (2010) *Escape from the Ivory Tower: A Guide to Making Your Science Matter*, Island Press.

Schimmel, Joshua (2011) *Writing Science: How To Write Papers That Get Cited And Proposals That Get Funded*. Oxford University Press

Grade: This course can be taken as pass/no pass (which I encourage) or with letter grades. Please attend and participate in the classes if you can, ideally in person; if you can't (please stay home if sick or if you need to take care of someone) then watch the recorded zoom meeting from that week's class and do its

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activities as much as you can on your own. Everyone should look through the resources I share on Canvas, do the assignment for each week, then put your work into the associated Canvas assignment box.

If you are going for a letter grade, to earn an A, you must complete all assignments and demonstrate that you are applying the lessons to your work. Aim to complete all assignments by the class meeting after they are assigned, though I will not count assignments turned in late against you if submit all by 3/17.

Instructor Mindset: I am committed to growing as a teacher and person as I teach. Please let me know how I can better help you learn, including making you feel safe, included, and valued. Different aspects of this course can be challenging. I believe you are capable of growing your abilities as you put time and effort in to learn the course material and use the course resources and other campus resources (see below) to support your success. I am one of those resources: I am here to support you in your growth.

Instructor Inclusivity Statement: It is my intent that students from all backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be realized as a resource and strength. I aim to present materials and activities that are respectful of diversity including of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, culture, and religion. I encourage and appreciate your suggestions to help me or the course better realize these ideals: If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me. Similarly, please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, let me know of any religious or other events that may conflict with any of our class meetings so we can make arrangements for you. My goal is to create a learning environment that is equitable, inclusive, and welcoming and that fosters mutual respect and full participation for all students.

Land Acknowledgement: I respectfully acknowledge the land where Portland State University is located is the unceded territory and ancestral lands of the Multnomah, Kathlamet, Clackamas, Tumwater, Watlala bands of the Chinook, the Tualatin Kalapuya and other Indigenous nations of the Columbia River. I pay my respects to their elders past and present. Please take a moment to consider the many legacies and *ongoing* violence, displacement, migration, and settlement of this land where we gather for class. Please use this course to empower you to better communicate about research that helps heal and respect the land and its people.

A few useful books on writing in general and on writing science

**Joshua Schimel Writing Science: How To Write Papers That Get Cited And Proposals That Get Funded. I find this to be a useful book with effective advice and clear lessons. If you are a PhD or MS student, I recommend buying this book.

Paul J. Silvia How to Write a Lot: A Practical Guide to Academic Writing
This quick read offers many tips for great writing habits.

Jan A. Pechenik A Short Guide To Writing About Biology
This book is useful for undergrads (lab reports)... but also for grad students. It has sections on rules (including '11 major rules for preparing a first draft'), revisions, developing a thesis, writing research proposals... I still refer to it.

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Wendy L. Belcher Writing your Journal Article in Twelve Weeks: A Guide to Academic Publishing Success. This book isn't geared towards scientists but has helpful tips and is very affirmative. A fine book to consult when you're feeling down about your writing or the peer review process.

*Karen Kelsky The Professor is In: The Essential Guide to Turning Your PhD into a Job.

Obviously not just about writing but there are some good parts for writing in it (and the other advice is also important). I think this one is especially helpful, especially for students of social science (but really all of us)

Peter J Feibelman A PhD Is Not Enough.

Ditto.

... **and on Grammar & Style**

Strunk & White. The Elements of Style

Joseph M. Williams. Style. Ten Lessons in Clarity and Grace

Resources, Policies, and code of conduct

Academic Honesty: As members of the Portland State University faculty, we "strive to ensure that the highest ethical standards of professional behavior are realized within the University," as established in the Faculty Code of Conduct. As a member of the PSU student body, you are bound by a Student Code of Conduct. It is your responsibility to be familiar with the code of conduct, which can be read at the Dean of Students website <http://www.pdx.edu/dos/codeofconduct>.

Resources: <https://www.pdx.edu/liberal-arts-sciences/clas-student-success> and <https://www.pdx.edu/dos/student-resources>

DRC: If you are a student with a documented disability and are registered with the Disability Resource Center, please contact me so that we can arrange whatever academic accommodations you need.

Title IX. You may report any incident of discrimination or discriminatory harassment, including sexual harassment, to either the Office of Equity and Compliance or the Office of the Dean of Student Life. Please be aware that, as a faculty member, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. Women's Resource Center (503-725-5672). If you or someone you know has been harassed or assaulted, you can find resources on PSU's Enrollment Management & Student Affairs: Sexual Prevention & Response website at <http://www.pdx.edu/sexual-assault>. PSU's Student Code of Conduct makes it clear that violence and harassment based on sex and gender are strictly prohibited and offenses are subject to the full realm of sanctions, up to and including suspension and expulsion. If you have not yet done so, also go through the on-line training for creating a safe, respectful campus: <https://www.pdx.edu/diversity/understanding-sexual-misconduct-and-resources-student-module>

Students' Right to Privacy: The Family Educational Rights and Privacy Act (FERPA) is a Federal law that protects the privacy of student education records. You have the right to: privacy (but we can disclose directory information without consent unless you direct us not to), to inspect and review your education records, and to request the school correct inaccurate records.