

## ESM 556/ESR 656: Advanced Science Communication Skills

### 1-2:05 Fridays Winter 2021 via Zoom

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

#### Overview

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 and images 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

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compare elements of proposals to papers. As the lessons apply to papers as well, you have the choice of workshoping a paper or grant proposal during the last part of the course.

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

1. (1/8) 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 what makes it good and how to could improve it (and the rubric) – see assignment on d2l.
2. (1/15) Review talks & rubric; Storyboarding; Advance/detail your research  
*Assignment:* prepare Storyboard
3. (1/22) Share storyboards; Elements of a sticky story; finding those elements; word at a time proverb  
*Assignment:* add sticky story (SUCCES) elements to your Storyboard  
*Assignment:* Read *Baron pp 18-25* on role of scientists
4. (1/29) Discuss Baron reading; Elements & guidelines for talks; ‘What I like about that AND...’  
*Assignment:* 12-minute talk outline
5. (2/5) Mantra; 12-minute talk presentations & constructive critique; Intro to concept maps  
*Assignment:* create concept map  
*Assignment:* Read *Schimel pp 35-42* on openings; bring first sentence of your proposal or paper
6. (2/12) Share concept maps; workshop first sentences, titles; Grant & paper intros  
*Assignment:* Read *Schimel pp 42-47* on openings; work on first paragraph of your proposal or paper
7. (2/19) Workshop first paragraphs; Grant components overview; jargon discussion  
*Assignment:* Read *Schimel pp 32-33; 50-57* (opening to challenge); improve your proposal/paper Intro
8. (2/26) Workshop proposal/paper Intro; Writing beyond the Intro  
*Assignment:* revise and continue proposal/paper; read a *Nature* or *Science...* paper
9. (3/5) 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. (3/12) Discussion of reading; Rewrite 1<sup>st</sup> sentences for journalist; Final workshoping of writing.

**Assignments:** Complete assignments by the next class meeting. Assignments are posted on d2l.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)

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

Schimel, 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 Friday classes if you can; if you can't just watch the recorded zoom meeting from that week's class and do its activities as much as you can on your own. Everyone should look through the

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resources I share on d2l and also do the assignment for each week and then put your work into the associated d2l 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 as long as you submit them by 3/17.

#### Resources and code of conduct

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.

If you are a Veteran and have questions about University services or need assistance with your transition from military to campus life, please contact Chris Goodrich, Coordinator of Veterans Services at the Office of Veterans' Services, SMSU room 425.

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>.

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.

#### 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.

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.

#### Grammar & Style

Strunk & White. [The Elements of Style](#)

Joseph M. Williams. [Style. Ten Lessons in Clarity and Grace](#)