

# Syllabus: Effective Scientific Presentation and Public Speaking

Geophysics 205, Fall Quarter 2016, Stanford University

Thursdays, 3:00-6:00 pm

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*Everyone will come away a more skilled and confident presenter than they were before*

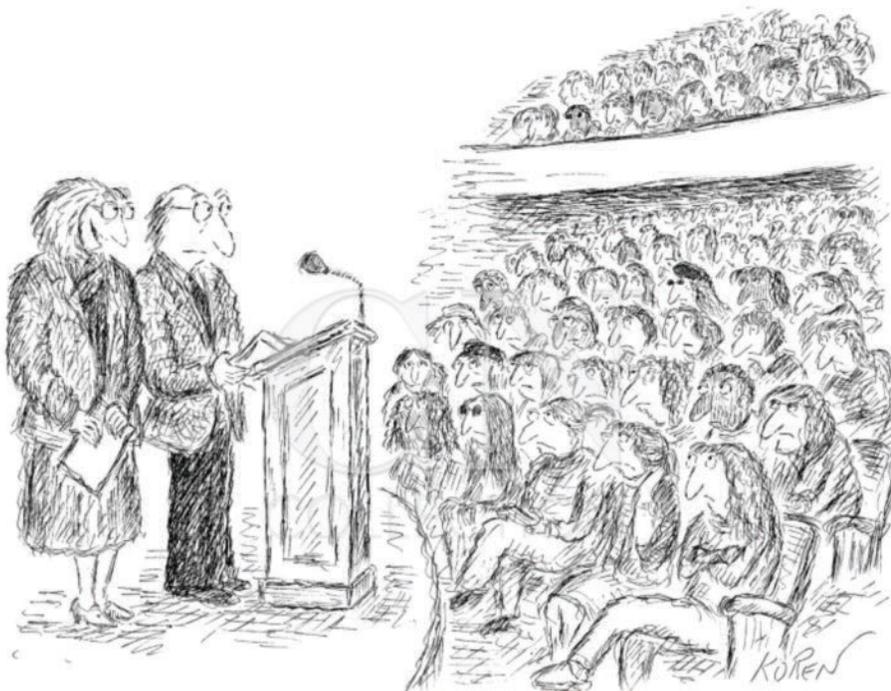
## Keys to the City

- The three best openings: Pick a fight, tell a story, or do a demo
- The first 3 min of the talk are the most important: Make your case
- Scientific public speaking resembles good dinner-table conversation
- People want to be intrigued, inspired, and moved—not just informed
- You have to earn the audience's interest; they do not owe you their attention
- Rehearse: The more you rehearse, the more spontaneous and natural it will feel to the audience, and crucially, you won't rush because you'll know how long the talk runs.

Date	Topic ( <i>italicized items are in-class exercises</i> )
9/29/16	Ross demos three types of talk openings: A story, a fight, and a demo. The importance of making your case in the first 2 min. Pauses, voice modulation, and lectern dynamics.
10/6/16	<i>Exercise on talk openings (2-3 min per student without slides, with audience feedback)</i>
10/13/16	Design of slides, with a focus on builder slides. <i>Exercise on enhancing a single slide.</i>
10/20/16	<i>Exercise in which students give a 3-min portion of a talk with slides</i>
10/27/16	<i>Exercise on closing a talk, and building a great question and answer session</i>
11/3/16	Discussion & display of effective poster designs: Unlike talks, posters are reader-driven
11/10/16	<i>Exercise on posters; everyone displays their poster or section of a poster</i>
11/17/16	<i>Exercise on job interview questions and answers.</i> Discussion of job talks and interviews.
12/1/16	<i>Exercise on press interviews (at the USGS Press Center, professionally videoed)</i>
12/8/16	<i>Exercise on funding pitches: How to ask for money and how to read the room</i>
12/9/16	<i>Final presentations, oral or poster (3:00pm - 6:30pm on <b>Friday</b>, as 12/12-16 is AGU)</i>

## Grading criteria

Students need not take the course for a grade. For those who do, you will be assessed largely on the improvement in your presentation skills by the end of the quarter. Half the grade comes from the seven in-class exercises (your presentations and your feedback to the other students), and half from your final project (the Dec 10 presentation, and the one-on-one coaching session with me). For your final project, you would choose your upcoming conference talk or poster (e.g., Fall AGU), Stanford Affiliates presentation, upcoming job interview, job talk, or funding pitch.



*“Good luck with your lecture, Eric—they’re loaded for white male.”*

## Class Participation is key

I will email everyone the Class Notes (typically 2-4 pages) for the coming class about 4-5 days beforehand, and all are expected to have read them before we meet. Because the course is centered on the in-class exercises, students who have to miss more than one class for fieldwork or travel are strongly discouraged from taking the course. Enrollment is held to 15 students because of presentation time, but is open to all from the School of Earth, Energy & Environmental Sciences.

Here are the topics that will be covered in our group discussions and the Class Notes:

### Designing and titling the talk

The title should make a pledge to the audience about content: A short, playful title signals that you will not snow the audience with a highly technical delivery. For example, there is a famous TED talk about what a neurologist's stroke taught her about the brain, entitled "My stroke of insight." To the extent possible, the talk title should make your argument, just as the title of a Nature or Science paper would.

### Opening the talk

In a several sentences, say what the problem is, what you found out or will argue for, and why it's important—in simple language. This could be as short as a sentence, or as long as about 125 words. You are forecasting the arc of the story. It's best to do this without slides, because you are establishing a personal connection between yourself and the audience. For this, slides get in the way. Good dinner conversation needs no slides.



*"I'm sorry, dear. I wasn't listening. Could you repeat what you've said since we've been married?"*

### The body of the talk

Here, you are building an argument, solving a problem, explaining the two sides of a debate, making a confession, proving something wrong, testing a proposal, or falsifying an hypothesis. You are not disgorging knowledge. You are not showing how much work you did, or how much you know.

### Closing the talk

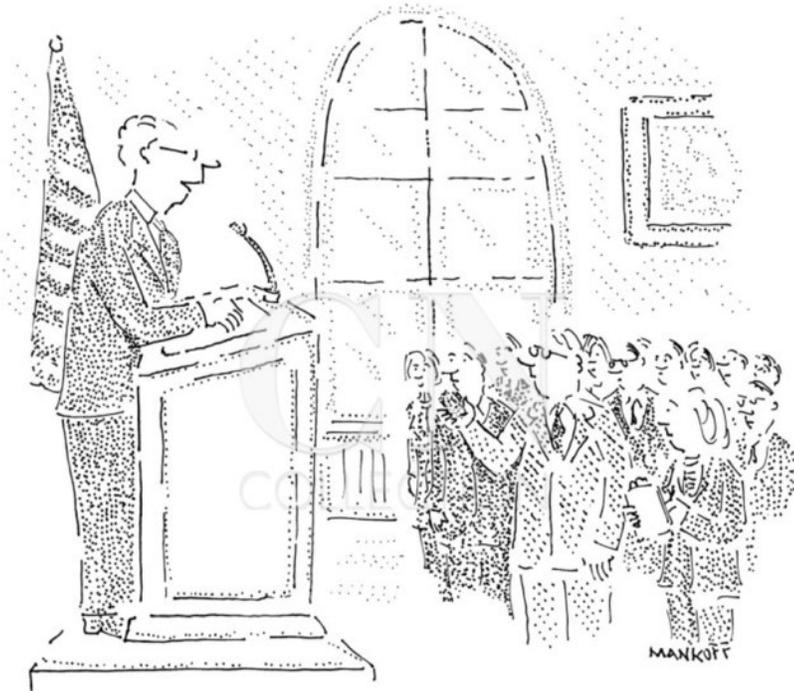
A talk should feel to the audience that you are building to the culmination, not that you are running out of time. You are closing the circle, returning to the beginning, but the audience now feels wiser than before.

### Preparing slides for the talk

The slides should be beautiful and uncluttered. Each slide should be titled, not with what is shown, but with the main point of the slide. There should be no sentences and definitely no paragraphs. Label every axis, avoid jargon. Only the simplest of tables (4 x 5) should ever be used. Never read the text in your slides; you will be competing with yourself, and you will lose.

### The importance of pacing and voice

Pauses are the secret of good speakers; they allow the audience to reflect, to catch their breath, to formulate a question, to hang on the edge of their seats. Don't rush. Rushing kills talks. Most people speak much too fast. Smile, pause, and modulate your voice to give people cues about what is important. Speaking in a monotone does not work in dinner conversation either.



*"That's a very good question, which is why we're going to move on to the next question."*

### Questions and Answers

Every question is a good question, but every question does not need to have an answer from you. Reward the audience for asking questions by responding crisply. Most speakers give answers that are much too long. Never interrupt the questioner to begin your answer, and never say, "I'll get to that later." Get to it now. Every question tells you what others are thinking, particularly clarification questions while you are giving your talk.

### **Poster presentations**

Talks are speaker-driven, but posters are reader-driven. Do not force the reader to start at the beginning and follow your sequence. Make it easy for them to glean the key point with a banner headline and a dramatic central graphic, and then let them move in any direction. Don't number figures or put boxes around them. Keep fonts huge and words to about 300 in total. Do not give a set poster spiel; instead, respond to reader questions.

### **Speaker Introductions**

Introductions set the stage, build expectations, and elevate the exchange. Tell us something important about the speaker you are introducing, especially if it's something the audience does not know. Reading their CV is deadly. Unless the speaker is very young, talk about what they have accomplished, not their affiliations.

### **Preflight check-out**

Well before you give your talk, always check your slides at the lectern with the actual computer that will be used such as first thing in the morning, or at the coffee break before you speak. Always restart your computer before presenting with it; this frees the cache and minimizes the likelihood of a freeze. Always have the presentation on a memory stick as a backup. This is your responsibility, not the moderator's.

### **Job talks**

A job talk differs slightly from a typical 40-min institution talk. You are not just presenting a piece of research, you are also showing what's in your tool box. So, you display a bit more about your range of skills, interests, and scientific experiences. If you are applying for a teaching position, show how well you can explain complex concepts. A key element of the job talk visit is how to handle the dozen or so 30-min faculty meetings you will have—a grueling form of speed-dating.

### **Talking to the press**

Here it is in a nutshell: Tell them what you know, and tell them what you don't know—in language that your mother's friends will understand. Speak with passion, conviction, simplicity, metaphors, and humor. Pause frequently to give the reporter a chance to speak. Unless it's a live interview, rephrase your answer as many times as you need to make it crisper; reporters will adore this, but are too intimidated to ask for it.

### **Fundraising**

This is the most difficult of all. Unless the process is formalized, the key to pitches is that 50% of the talk must come from the people you are trying to influence: It must be a

conversation, not a presentation, and they must feel they have been heard. It's not about you, its about them, so do not suck up all the oxygen with your urgency to win them over. Listening, conversing, and most importantly, reading their body language is your job. In most cases, they must hear themselves say something very positive about your proposal while you are in the room, or you will lose.

