MATH-GA.2840-004: Written and Oral Presentation
Lecture 2: Tips for Teaching

Aleks Donev & Tia Sondjaja
Exercise: Elevator Talks

Prepare a 3-minute elevator talk for one of the scenarios below.

Topic:
1. Your current research project
2. What is [your favorite mathematical field/topic]?
   (For example: What is “Linear Algebra”?)

Audience:
(a) An expert in your field
(b) A researcher whose expertise is not in your field
(c) A first-year graduate student in your dept.
(d) An undergraduate student in a Calculus 1 class
(e) Your neighbor
Today: Tips for Teaching

1. Practical Tips

2. Pedagogical Considerations

3. Managing a Course, etc.

Recommended reference: Peter Filene, The Joy of Teaching, 2005
Today: Tips for Teaching

1. Practical Tips ("How to deliver an effective lecture")

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1. Practical Tips

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1. Know your audience
2. Be prepared
3. Convey enthusiasm

4. “Own” the classroom
   - Speak clearly and confidently
   - Make eye contact with students

5. Use blackboards/slides effectively
6. “Listen” and adjust
   - If students seem confused, slow down and solicit questions
   - Periodically stop and ask questions
   - Do not assume that something is “obvious” or “easy”

7. Answering questions:
   - When audience is large, repeat the question for others to hear
   - Do your best to answer, but don’t be afraid to postpone
   - Be honest if you don’t know the answer
   - Verify if you have answered the question

8. Incorporate elements of active learning
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Using blackboards effectively
Using slides effectively
Blackboard vs. Slides?
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1. What are the goals and learning objectives of the course?
   ▶ Bloom’s Taxonomy

2. How do we get there?
   ▶ Lectures
   ▶ Active learning methods

3. How do we evaluate students’ learning?
Bloom’s Taxonomy

A framework for classifying “educational learning objectives into levels of complexity and specificity”.

1. Remembering

2. Comprehending

3. Applying

4. Analyzing

5. Synthesizing

6. Evaluating

7. Creating
Bloom’s Taxonomy

Other examples in university-level math:
https://www.math.toronto.edu/writing/BloomsTaxonomy.pdf
Active Learning Methods

Benjamin Braun, Priscilla Bremser, Art M. Duval, Elise Lockwood, and Diana White, *What Does Active Learning Mean For Mathematicians?*, Notices of the AMS, Vol 64, No 2
Active Learning Methods

“Active learning [refers] to classroom practices that engage students in activities, such as reading, writing, discussion, or problem solving, that promote higher-order thinking.” [CBMS]
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Examples:
1. In-class examples and questions
2. Think-pair-share
3. Clickers
4. Flipped classrooms
5. Inquiry-based-learning methods
Active Learning Methods

“Active learning [refers] to classroom practices that engage students in activities, such as reading, writing, discussion, or problem solving, that promote higher-order thinking.” [CBMS]

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Video: Eric Mazur Shows Interactive Learning
https://www.youtube.com/watch?v=wont2v_LZ1E
Lectures vs. Active Learning
More Resources: Workshops at NYU

Friday, February 9 — Active Learning Workshop
Featuring Anton Borst, Robert DiYanni, and Trace Jordan, Center for the Advancement of Teaching
Global Center for Academic and Spiritual Life, 238 Thompson Street, Room 461, 9:30-11:30 a.m.
(Breakfast will be offered beginning at 9:00 a.m.)

Friday, March 9 — Collaborative Learning Workshop
Featuring Anton Borst and Robert DiYanni, Center for the Advancement of Teaching
Global Center for Academic and Spiritual Life, 238 Thompson Street, Room 461, 9:30-11:30 a.m.
(Breakfast will be offered beginning at 9:00 a.m.)
More Resources: MAA Instructional Practices Guide