Lecturing

Lecturing is one of the oldest and most persistent modes of teaching. An effective lecture can help motivate students and provide clear explanations to difficult concepts. However, talking to students for 50-90 minutes is not an effective way for students to learn [Freeman et.al., 2014]. By breaking up lectures with active learning activities that help to reinforce concepts, students are able to gain a better understanding of class concepts and engage in higher-order thinking. The tips in this section help make lectures more engaging and effective.

Here are some additional tips for making **lectures more engaging:**

- **Establish a purpose for learning.** For example:
  - Begin with a problem that students need the class material to solve. Let the students attempt it for a few minutes (maybe in pairs or groups), then say that what they'll be learning today will help them solve it. You may conclude the class by returning to the introductory problem, or it could be homework.
  - Emphasize relevance. Connecting your material to current events, pop culture, or student interests enhances student motivation (motivation has been shown to be particularly difficult and important for students in remote-learning settings during COVID-19).
- **Break up your in-person lecture into smaller sections and intersperse active learning.** Consider lecturing in chunks that are 15 minutes or less and facilitate active learning techniques in between. Lectures for remote courses should be about 5-10 minutes.
  - For examples of CoE instructors describing how they use active learning in in-person classes visit this site.
  - For examples of how to adapt active learning techniques in remote settings visit this site.
- **When explaining concepts:**
  - Make connections to what students already know, the larger picture and/or what they value
  - Start with a specific example, then move to general principles
  - Use multiple modes of representations (e.g. graphs, diagrams, text, equations, etc)
- **When explaining a laboratory introduction:**
  - Begin with a question (what is the main question students will answer in this lab)

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Here are some tips for making your **lectures more effective**:

- **Begin with learning objectives** (by the end of the lesson you will be able to …)
- **When solving sample problems** or doing derivations:
    - Make sure you don't cover the board with your body
    - Turn around face the students when you talk
    - Give students some time to engage with the solution. For example, say "take 30 sec to think what the step might be, then discuss it with your neighbor. Prompt for responses. Encourage students' efforts even if the response is wrong (for example, "thanks for your input. Here is why that is not quite right." Students learn more from mistakes than getting the answers right all the time.)
    - Model Critical Thinking - think aloud: let students know not only what you're doing, but why you're doing what you're doing - what goes through your mind when you encounter this example for the first time,
- **When writing on the board:**
    - Organize your writing from top left to bottom right of each board
    - Clearly separate each topic (e.g. with a line)
    - Check with students in the back row - can you read this clearly? Use dark ink (black, blue, purple, brown) for writing, and light colors for accents (red, green, orange)
    - Make sure you write a title and label your graphs.