

## Teaching a Lab

### Before the semester even begins

There are a number of things you will need to know to ensure your lab goes smoothly and successfully: administrative details for the course, your and other people's responsibilities related to the lab, expectations and policies, grading criteria, and safety measures. You can find a checklist at [Things To Do Before Classes Begin: Checklists](#), from CRLT.

You should also have handy contact information for other course instructors, lab technicians, and emergency service personnel. An example [Laboratory Course Contacts List](#), from CRLT.

Finally, it is important to decide on the main objectives for each lab as well as the criteria for assessment before the start of class. Tips for how to set up assessment criteria are found at: [Best Practices for Grading Lab Reports](#), from CRLT, and example rubrics for grading can be found at: [Sample Laboratory Report Rubrics](#), from CRLT.

### Preparation and planning during the semester:

- ❑ Ahead of the lab, **perform the lab assignment** (give the full lab time for this), thinking about it from your student's perspective. **Anticipate** and plan for what students may have trouble with, or anything that may go wrong.
- ❑ Determine and review what **prior knowledge** and skills students need to succeed in the lab. Are there any common misconceptions or issues? Do they need a demonstration of equipment or software features to get them all started on the same page?
- ❑ Determine **how the lab connects** to lecture, to the big picture, and/or the real world.
- ❑ Determine the **learning objectives** (the main 2-4 things students are going to learn or practice in the lab).
- ❑ Write down **potential questions** that you can ask your students to gauge whether they are ready for the lab, or are understanding the lab.
- ❑ Think about **time management** (how long to allow for each task).
- ❑ Determine any **security concerns** and decide how you will make students aware of them.

**When you are finally in the classroom**, you should plan to spend your time walking around to the various individuals or groups of students. Telling students they can come ask you questions rarely works as well as setting the expectation that you will be circling, stopping at each group, and asking them questions to help gauge their understanding and progress. Getting students talking, especially in groups, is not always easy. Tips for developing strong questioning skills are available at: [Strategies for Managing Discussions With Groups in the Laboratory Class](#).

**After students finish** an experimental or computational lab, they are usually graded on their performance. Assessments can range from checking that a program executed correctly to grading a written report. Tips for grading lab reports, including how to set up criteria, can be found at "[Finally, it is important to decide on the main objectives for each lab as well as the criteria](#)" section.

## 2.2a - Experimental Labs

**If you will be teaching hybrid or fully remote labs, these resources may be helpful:**

- How can you engage students with the lab experiments, when they cannot be in the lab setting? Some options include:
  - Provide videos of you running the experiment
  - Use simulations
  - Broadcast yourself running the lab via video conferencing - pros and cons
  - Provide students with data
  - Consider what the main objectives of the lab are (eg. Do you want students to learn to analyze data? Or learn how to use certain equipment?) and focus on finding strategies that work in a remote environment for those objectives.
- [See here](#) for a list of suggestions from the College of Engineering for adjusting labs to hybrid, or fully remote participation (in-person and remote teaching considerations).
- [A list of online lab simulation resources](#) (across science and engineering topics) started by Melissa Gold, the Science Librarian at Millersville University, collaboratively edited by members of the Science & Technology Section (Association of College & Research Libraries).