

Guideline for Teaching Laboratory Courses - Fall 2020

Each lab may consist of several components such as pre-lab (calculations, simulations, etc.), conducting the experiment, gathering data, interpret and analyzing data, and writing a report. The focus of the lab on these components can vary and some of these tasks can be performed in-person, while others can be done remotely. The potential goals of labs are to enhance and deepen understanding of concepts, gain experience in working collaboratively in a team setting, develop experimental and data analysis skills, and improve communication skills. The overarching principle is to make sure lab learning outcomes are achieved while taking into account safety considerations.

Below are some guidelines and suggestions that lab instructors may consider:

Boundary conditions on labs:

- 1) Lab sections can be taught between the hours of 8AM and 8PM, seven days a week.
- 2) At the discretion of the lab manager/instructor, equipment from labs may be checked out to students for use at home, etc.
- 3) Labs may be reorganized such that students are required to purchase equipment and perform experiments at home.
- 4) Some departments may provide funds for inexpensive home kits of hardware required for a lab. With the approval of the department chair, these kits could be direct billed to a cost object set up for that lab course.

Examples:

- 1) At the beginning of the semester and during subsequent weeks, instructor will explain and emphasize the learning outcomes of the course and how each lab may be related to specific learning outcome(s).
- 2) A course that typically has 5 lab sections scheduled between the hours of 10AM and 4PM Monday-Friday is expanded to include 15 lab sections scheduled between the hours of 8AM and 8PM Monday-Sunday. The instructor triples the number of TAs to cover the additional sections.
- 3) The instructor of a lab reserves 2 adjacent classrooms to enable social distancing. Students transport the measurement equipment to the adjacent classroom to perform experiments.
- 4) A lab manager/instructor puts together an inexpensive hardware kit for students to take (paid for by the department or students) to perform experiments at home. Selected labs are restructured to accommodate the at-home use of hardware (asynchronously). It is suggested to indicate a due date for each lab at the beginning of the semester to encourage students to not let it pile up at the end. Students can schedule a Zoom meeting with the TA or instructor to demonstrate the working project.
- 5) Instructor will provide video demonstration or online simulation of lab activities as a pre-lab activity. The instructor may require students to complete online quizzes based on pre-lab activities.
- 6) If the focus of the lab experiment is on data analysis and/or reporting skills, instructor or TA can perform the lab and the experiment will be captured as a video which will be demonstrated to students prior to lab. Necessary data will be generated for labs, which require data analysis.
- 7) Each student in a team will be assigned to perform a part of the lab while others will observe either in the lab or remotely.