Mission and Objectives
The goal of this project was to examine how the transition to online and alternative teaching methods during the coronavirus pandemic has affected students’ learning and faculty's teaching in laboratory courses.

Survey
We sent our survey out to the following classes, and grouped them as shown to protect the identity of professors who were involved in our project.

Chemistry
- CH 1020

Physics
- PH 1120
- PH 1140

Engineering
- ME 1800 • BME 3111
- ECE 2010 • ME 3902

General Survey Results
N = 195
Students hold a slightly negative opinion on the transition to online classes with 51% responding "Somewhat Negative" or "Extremely Negative". When asked more specifically about remote labs, 55% responded negatively and more than twice as many students responded, "Extremely Negative".

Interviews
We interviewed six professors to gain a perspective of what changes they have had to make and challenges they have faced to transition their classes to the remote delivery.

Interview Takeaways
- More time to review concepts
- Lacking in-person connection
- Higher quality lab reports
- Difficult to communicate
- Online simulations are safe for students and equipment
- Missing experimental process

Comparative Analysis
Variables we investigated in our student survey included the ability to learn material, work in a team, focus, and the motivation to complete assignments. We found that the chemistry and physics classes we investigated had an average result that was more positive than that of the engineering classes for our performance variables. However, while chemistry and physics were more positive, they still had an overall negative response to the variables. This information is shown in the graphic above.

Final Conclusions and Recommendations
- Students are dissatisfied but they are doing their best
  - They are missing out on the experimental process
- Professors are missing connections with their students
  - Communication is more difficult between professors and students
- Higher level engineering classes are struggling the most
  - For a phased reopening of campus, higher level laboratory courses could benefit more from being a priority