

## Guidelines for Phys 322 Lab Notebooks and Participation

Data notebooks are diaries of the work done in the lab. They should contain a record of experimental setup, all parameters used on the equipment, and all data taken. Since they are the only source of original data, all notebooks should be sufficiently neat and detailed that a similarly qualified researcher can reproduce the results from the notebook alone and arrive at conclusions similar to yours. These notebooks can be digital documents, such as a google doc, or a traditional paper notebook. Regardless of form, they should contain relevant equations, calculations, tables, and figures. Talk to an instructor if you are using a digital document and you are unsure how to digitize information.

The notebooks should be updated as you are conducting the experiment, not compiled after the fact. Each student will keep their own notebook and turn it in for evaluation. Data, charts, and notes may be similar for different students working on the same experiment, but kept separately in case a student misses class due to illness and needs to make up the work by themselves.

Notebook grades will be determined as follows:

1. Evidence of critical analysis - 25 pts  
This includes relevant notes during the experiment and brief summary of results at the end of each day.
2. Reproducibility of procedure - 25 pts  
Your notebook in the form of a journal, with an entry for each day you are in the lab, even if not much happened. You should write your notes assuming that someone is going to repeat your work with the same apparatus. Be sure to note everything that could have affected your results or caused problems.
3. Proper presentation of data - 20 pts  
This includes clear presentation of tables, as well as reporting units and error estimates on all data. If you are calculating a quantity or converting measured values to something else, show an example of the full calculation once.
4. Error Analysis - 20 pts  
This includes both physical estimates and quantitative results when applicable. Some experiments will require a propagation of error calculation, and some will rely on physical estimates such as averaging or noting the spread in measurements. In either case, clearly show the relevant calculations.
5. Clarity of work - 10 pts  
Your work should be legible and well organized. Always use a pen, rather than a pencil. Just cross out, highlight or strike through mistakes so that they are still legible. It may be useful to see what the mistake was, or it may not be a mistake after all. For digital lab books, you can use a program that tracks your changes if it allows you to see the edit history.

Total: 100 points

Each student will receive a grade for class preparation, attendance and for their demonstration of independence and ingenuity in their work carried out in the laboratory.

For the remote project, students are expected to be working independently on their projects during the full class period. They will check in with their [assigned instructor](#) by Zoom at a designated time once per class to give an update on their progress and receive feedback.

For the in-class experiments, students are expected to be in the lab from 1:00-4:50 pm. If illness or other issues prevent a student from attending class, they should notify the instructors by email and make up the missed time outside of class. All students have after hours access to the lab.

Participation grades will be determined as follows:

1. Preparation for experiment - 30 pts  
Read the lab write-up and other relevant documents before starting the experiment. Revisit the literature as questions arise.
2. Quality, ingenuity, and independence of the experimental work - 30 pts  
The instructors will offer guidance on the experiments, but you are encouraged to pursue your own ideas and control the direction of the experiment and analysis. The emphasis of these experiments is not just in reproducing a literature value, but in probing the underlying physics and understanding the capabilities and limitations of the apparatus
3. Presence in the lab during class time or equivalent independent work - 30 pts  
Students are expected to spend approximately 8 hours per week on this class. If you must miss class due to illness or other excused absence, communicating progress with instructors is essential to receive credit for your work.
4. Experimental work space must be left in a tidy state - 10 pts (In-class only)  
Make sure the area is clean when you are finished with an experiment and put away unused tools or equipment at the end of each class period.
4. Preparation and engagement in instructor meetings - 10 pts (Remote only)  
Students should be on time for their Zoom check-in meetings and prepared to give an update on progress and plans. They should be prepared to engage with instructors on the material or ask questions and seek feedback.

Total: 100 points