

H) Laboratory Notebook (only for lab classes)

Laboratory experience is critical for any person entering a scientific or technical field. All lab reports should be written by each individual student even if the lab is done with other students. Lab reports will emphasize error analyses; an experiment without error analysis is essentially worthless. You will be taught how to do proper error analysis using a variety of techniques.

Students must be ontime for lab. If you are late then you lose points proportionately for the time you are late. You are not allowed to receive credit for a lab if you are more than 30 minutes late.

Students are only allowed a certain number of latenesses and absences. (See below).

Each lab that is missed results in a 5 % deduction of the grade of the lab part of the class and counts toward the total number of absences in the class.

For each lab you will have two sections: (this will be explained in lab)

a) **10 points.** Lab Notes/Skills Section (called section "0")

Here you keep notes for the lab given by the instructor during the first 15 - 40 minutes of lab.

b) **90 Points.** Lab Report Section

Here you will write a formal lab report including any or all of the following: introduction, theory, hypothesis, raw data, presentation of error of each raw data measurement, data analysis, graphs, error analysis, discrepancy, presentation of result with error for calculated quantities, specific conclusion and any 1D graphs, and general reflection (see webpage for more lab report details). Your lab reports will be written in the lab and your lab notebooks will be graded. Lab notebooks stay in the lab. No extra time will be allowed to write the lab report; the report must be finished in class. Occasionally a problem is given as a supplement to lab work and is done in the lab notebook.

There will be 10 labs (unless holidays). 2 lab reports will be graded for content. 8 more lab reports will be graded for effort. You will not be told which ones will be graded for content before they are graded. There are no makeup labs. If you miss a lab that is graded and it is excused (see below for definition of "excused"), then the instructor will choose the lab prior to the one being graded as a substitute lab to grade for you. If you miss a lab and it is not excused then your score for that lab is a zero.

Lab Final: you will be given a lab final on the last lab day. You can use any equipment, and lab notebook, including a calculator and ruler.

Grading of Lab part of class)

35 % Lab final written test

20% Lab final physical equipment test

45 % Lab Reports (all will be graded but not equally weighted: 2 labs will account for 25% and the remaining 8 will count for 20 percent)

Student Learning Outcome(s):

- Examine new, previously un-encountered problems by critically analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of mechanics.
- Acquire skill and confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

Office Hours:

M	10:30 AM	12:00 PM	In-Person	S43 Tutorial Center or Village Space
W	10:30 AM	12:00 PM	Zoom	
F	10:30 AM	11:30 AM	In-Person	