

Physics 253, Physics Laboratory for College Physics I

Sections 2 & 5, Fall 2008

Dr. Yost

Office:	216 Grimsley Hall	Textbook:	P. Briggs, Laboratory Manual for PHYS 253 – 254, 2008 – 2009 ed. (Tavenner Publishing Co., Anderson SC, 2008)
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Classes:	251 Grimsley Hall, 15:00 – 16:50: Monday (section 2) Tuesday (section 5)	Office Hours:	M Tu 14:00 - 15:00 or by appointment (except MWF 8:00 – 11:00 and Th PM)
Web Page:	www.vic.com/syost/phys253		

Welcome to Dr. Yost's sections of **Physics 221, Physics Laboratory for College Physics I!** In this laboratory, we will conduct a sequence of laboratory experiments to illustrate the mechanics concepts covered in College Physics I and introduce you to basic methods of data analysis used in physics. You will also get practice in the exposition of physical results, building your skills in scientific writing. You will learn what it means to compare a measurement to expectations and to make meaningful statements about the errors and precision of a measurement.

Grades

Your grade will be based on reports that you turn in on each laboratory experiment. Each report will be graded according to how well it communicates your results and understanding of them, including the degree to which it matches or does not match expectations. An ideal report should include a clear exposition of the methods and an analysis of the sources of error, written clearly but concisely, in good English. Each report will be assigned a letter grade based on these considerations, and the average of these grades will be your grade in the course. My impressions of your behavior and procedures in the laboratory will also be a factor in the grade assigned to a report.

Lab Notebooks

Each student will need to have a notebook in which to record the results and other notes relevant to an experiment. Notebooks may not be shared, but the type of notebook you use is up to you. It need not be dedicated to this course. The best notebooks have graph paper pages to facilitate making plots. You should always make at least a rough plot of your results to see how your experiment is progressing and to catch possible mistakes before you finish. The completeness and legibility of your notes will be a factor in your report grade. Leaving early with an incomplete notebook can result in a major grade reduction.

If you wish, you may record data in tables in the lab manual, where they are provided. However, you must still keep a notebook to record such details as what equipment you used, your estimate of its precision, sources of error, and your impressions of what happened during the experiment. Anything that may affect your analysis of the data should be noted.

Data in a lab notebook (or manual) must never be erased or rendered illegible. If it must be corrected, it should be done in a way that the original data remains legible. Changes must be made only in the laboratory. Falsification of data is an **honor violation**.

I will initial your lab notebook before you are dismissed from each laboratory session. If you leave without having this done, I will not grade your lab report until you show me your notebook, and will deduct one letter grade.

Lab Reports

Every laboratory will require a written report, and these will be the primary basis for your grade. The report is due at the beginning of the following laboratory, but may be returned the week of the experiment to a deposit box in Room 204 any time earlier. If the next laboratory is a Makeup Week, the report must be turned in to the deposit box before the normal class time. **Late reports will not be graded**, except in the event of a documented emergency. All reports will be graded and returned simultaneously, one week from the due date.

Module 11 in the Laboratory Manual specifies the style for the laboratory report. (This is on page 69, but note that there are two page 69s, and this is the second of them.) **Reports for this section must be typed to receive full credit.** Handwritten reports will be accepted as a last resort, but must be printed and legible, and legibility will be a significant factor in the grade. You may write equations by hand in any report, but they must be legible.

While you will work together in the laboratory, at its end, each student will have an individual record of the experiment, and will use this record to write a personal laboratory report. The lab report is absolutely **not** a team or joint project. You should have the same data as your partner, but its interpretation should be your own, and anything written about it must express your own ideas and be in your own words. Deviations from this will be treated as plagiarism, an **honor violation**. If you are in doubt, ask before turning in the report.

The manual gives good advice on what to do and to avoid when writing a report. A report should be complete, but not excessively wordy, and should avoid repetition and overgeneralization. When writing the discussion, be aware that it is impossible to prove anything using an experiment. You can only confirm agreement with a theory within the precision of your experiment. The discussion should show whether the agreement was within reason for your procedures, based on an estimate of the errors in the data you acquired. The sources of the errors should be discussed. If you do not agree with the theory, you should discuss possible reasons, and make suggestions for improving the measurements.

If your grades on laboratory reports are unsatisfactory and you do not understand why, be sure to schedule an appointment to discuss this in detail, and bring your reports to the meeting. If English skills are a problem, you may also wish to contact the Citadel Writing and Learning Center. See www.citadelwritingandlearning.com.

Missed Laboratories

Missing a laboratory is as serious as missing an exam, and should only happen under very special circumstances. If you know in advance that you will miss a laboratory, you must make arrangements to make it up in another section of this course – either mine or another instructor's. The laboratory must be made up during a scheduled session in **the same week**, and the report is due at the normal time. If you plan to make up a laboratory in another section, please make a request to the instructor of that section, so that you will be expected.

If you miss a laboratory and are unable to make it up at any session the same week, and have a valid excuse showing that you were not able to attend any session that week, then you may make up the lab during the next scheduled Makeup Week shown in the schedule below. You do not need to attend these weeks unless you have a laboratory to make up. Only one missed laboratory can be made up during a Makeup Week. Any missed laboratories not made up will receive an F.

Schedule

The following topics in the laboratory manual will be covered this semester. The modules listed by an experiment should be read before coming to the laboratory, except the first week. Parentheses indicate that a module may be partly beyond the scope of this course, and need not be read in detail. The module may contain useful equations, and can be used as a reference, but you are not expected to follow the derivations. The schedule may be subject to change. You will be notified of any changes.

Dates	Topic	Experiment	Modules
Aug. 25 - 26	No laboratories – classes start Wednesday		
Sept. 1 - 2	Orientation, Vector Analysis	2	1, 3
Sept. 8 - 9	Measurement and Analysis	1	1, 2, 3, 4, (5), 7, 8
Sept. 15 - 16	Projectile Motion	4	1, 2
Sept. 22 - 23	Atwood's Machine	5	
Sept. 29 - 30	Meter Stick Balance	8	2
Oct. 6 - 7	Simple Pendulum	9	2
Oct. 13 - 14	Makeup Week	TBA	
Oct. 20 - 21	Springs and Elasticity	6	2
Oct. 27 - 28	Archimedes' Principle	13	2, 7
Nov. 3 - 4	No laboratories – Election Week		
Nov. 10 - 15	Ideal Gases, Boyle's Law	20, 21	2, 6
Nov. 17 - 21	Newton's Law of Thermal Transfer	22	2
Nov. 24 - 28	No laboratories – Thanksgiving break		
Dec. 1 - 5	Makeup Week	TBA	
Dec. 8 - 12	No laboratories – last week of classes		