

Physics 253, Physics Laboratory for College Physics I

Sections 2, 8, & 11, Fall 2009

Dr. Yost

Office:	216 Grimsley Hall	Textbook:	P. Briggs, Laboratory Manual for PHYS 253 – 254, 2008 – 2009 ed. (Tavenner Publishing Co., Anderson SC, 2008)
Phone:	843-953-5475		
E-Mail:	scott.yost@citadel.edu		
Classes:	241/251 Grimsley Hall, Sec. 2: Monday 3:00 – 4:50 Sec. 8: Thursday 1:00 – 2:50 Sec. 11: Monday 1:00 – 2:50	Office Hours:	MWF 10:00 - 11:00 or by appointment
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. Five of these will be full laboratory reports. The remainder of the experiments will require only your data analysis sheets, which should be presented clearly, together with a brief analysis of the meaning of the results. My impressions of your behavior and procedures in the laboratory will also be a factor in the grade assigned. In addition to the reports, you will also have some homework to insure you are prepared for each laboratory, some follow-up questions to see if you have retained what you learned, and a laboratory final to test your understanding at the end of the course. The grading distribution is according to the table below.

Laboratory reports and data analysis sheets	70%
Pre-lab and Post-lab homework questions	15%
Laboratory final	15%

Laboratory Reports

Five of the laboratories will require a written report, to be submitted electronically in MS Word® format to my e-mail address, scott.yost@citadel.edu before the next week's laboratory. Use the file name shown in the schedule included with this syllabus. I will provide a sample report to clarify the structure, before the first report is assigned. Each report will have the following elements:

- a **cover page** showing the title, your name, and your partners' names
- a brief **Introduction** showing the goals and significance of the experiment
- a **Procedure** section showing what you did in the laboratory. Do not reproduce the instruction manual or write it in that format: explain specifically what **your** group did.
- a **Data Analysis** section showing a sampling of tables of the data collected, relevant graphs, and calculations needed to reach the desired conclusions in the laboratory.
- a **Discussion** section explaining how well your results agree with physical expectations, and whether the agreement is within the bounds you would expect based on the precision of your apparatus. Avoid generalities – be specific about any sources of error. Note that in physics, “error” does not, or should not, mean “mistakes”, but rather the uncertainty inherent in the measurement process, which is an element of every experiment.

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. If only one team member participated in producing tables or graphs included in your report, you must identify who made them, and should take turns in future reports. Deviations from this will be treated as plagiarism, an **honor violation**. See the attached statement on authorship of reports.

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.

Data Analysis

For laboratories that do not require a full report, you will need to turn in your data analysis. This should be turned in electronically in MS Excel format, by e-mail to scott.yost@citadel.edu. The analysis is due by the start of the following week's laboratory. This analysis will include tables made during the experiment, analysis based on these tables, and any graphs constructed from the data. You should show any final results clearly, and show to what extent they agree with expected calculations. Append a **brief discussion** of the following points:

- Did your results agree with the expected results within the bounds of experimental error? Justify your conclusion.
- What main sources of error influenced your result, and can you estimate the size of these errors? Could you have done anything better to reduce the errors?

The discussion must be your own, and not shared with partners. The tables and graphs may be shared, but you must show who made them. Failure to properly attribute the work of others is an honor violation. See the statement on report authorship attached to the syllabus.

Schedule

The attached page **Physics Laboratory for Liberal Arts Students** shows the schedule for **Sequence 2**, which everyone in my sections will be following. Experiments will be set up alternatively in rooms 241 and 251. Go to the room marked for Sequence 2, which will vary. The schedule shows which experiments will require a laboratory report (LR), and which will require only data analysis (DA). The required file name for each report is also shown. Substitute your last name for "Smith" and your partner's last name for "Jones". Your name always goes first, and you can add more partners as needed. The file name should not include spaces.

WebAssign

Pre-Laboratory and Post-Laboratory Questions will be turned in using WebAssign. You will need an access code purchased through the Cadet Store to use the system. This code should be included in your textbook for the accompanying course. If you do not have it at the beginning of class, the system gives you a two-week grace period to acquire it. To log in, go to www.webassign.net, and enter your log-in information under **Account Log In**. Your user-id is your first initial and last name, your institution is Citadel, and your password is the last four digits of your Citadel ID number. For example, if your name is John Smith and your ID number is CIT-07-1234, then your user-id is jsmith and your password is 1234.

Instructions for answering WebAssign questions are provided by the system. Please take the time to read them, because you normally only have five attempts to answer a questions, and errors in entering the answer count toward the total. WebAssign will understand answers only in a very specific format. Do not guess what this format is. The first problem set has some questions designed to illustrate some common answer types. WebAssign is particularly fussy about symbolic answers. In particular, remember that capitalization counts.

No submissions are accepted after 7:00 AM on the due date, by WebAssign's clock. After that, the answers are available on-line, and may be discussed in that morning's class. Extensions for known conflicts require previous approval, and are given only in rare cases. Emergency extensions are possible only if you have not viewed the set after it was due.

A preliminary set with two questions has been posted to check to see if you have an access key.

Laboratory Final

The laboratory final is listed as **End Semester Assessment** in the schedule. It is held during your last regular laboratory period, not during final exam period. It will consist of experimental tasks designed to see if you have retained what you learned by doing the laboratory experiments throughout the semester. For this reason, you should be certain to participate actively in each experiment, and never allow your partners to exclude you or do procedures you have not understood. More details on the structure of this assessment will be provided as the date approaches.

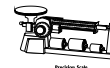
Physics Laboratory for Liberal Arts Students

1st Semester Schedule and Completion Check-Off

Sequence 2



Student Name _____ Section _____



At the end of each lab show your data to instructor to obtain initials.

Week	Number	Assignment	Report	File Name
1 st	DH1010	Data Handling Using MS Excel®; Laboratory Reports Using MS Word®	[Week1-DH1010-Smith-Jones] DA instructor initials <input style="width: 50px;" type="text"/>	
2 nd	DH1030	Vector Analysis	[Week2-DH1030-Smith&Jones] LR instructor initials <input style="width: 50px;" type="text"/>	
3 rd	DH1020	Measurement, Error and Graphical Analysis	[Week3-DH1020-Smith-Jones] DA instructor initials <input style="width: 50px;" type="text"/>	
4 th	CM1120	Atwood Machine	[Week4-CM1120-Smith-Jones] LR instructor initials <input style="width: 50px;" type="text"/>	
5 th	CM1110	Projectile Motion	[Week5-CM1110-Smith-Jones] DA instructor initials <input style="width: 50px;" type="text"/>	
6 th	CM1130	Simple Pendulum	[Week6-CM1130-Smith-Jones] LR instructor initials <input style="width: 50px;" type="text"/>	
7 th	Mid Term Break			Week7
8 th	CM1150	Meter Stick Balance	[Week8-CM1150-Smith-Jones] DA instructor initials <input style="width: 50px;" type="text"/>	
9 th	CM1140	Springs and Elasticity	[Week9-CM1140-Smith-Jones] LR instructor initials <input style="width: 50px;" type="text"/>	
10 th	FL1205	Archimedes Principle	[Week10- FL1205-Smith-Jones] DA instructor initials <input style="width: 50px;" type="text"/>	
11 th	CM1160	Collisions	[Week11-CM1160-Smith-Jones] LR instructor initials <input style="width: 50px;" type="text"/>	
12 th	TH1420	Newton's Law of Thermal Transfer	[Week12-TH1420- Smith-Jones] DA instructor initials <input style="width: 50px;" type="text"/>	
13 th	Thanksgiving Break			Week13
14 th	End Semester Assessment		[Exam due end of period-Week 14] instructor initials <input style="width: 50px;" type="text"/>	

LR = Laboratory Report submission; DA = Data Analysis submission

DA submissions should be in MS Excel® format (.xls, .xlsx), and LR submissions should be in MS Word® format (.doc, .docx). Submit a single file. Substitute your name for "Smith", your partner for "Jones".

Physics Department-Wide Policy

Concerning Due Dates of Lab Reports and Lab Data

For all laboratory sections the due date on the submission of Laboratory Reports or Data Submissions is one week from the scheduled laboratory experiment. The instructor expects that you will turn in your Laboratory Report or Data Submission no later than at the beginning of the lab period one week from the scheduled laboratory experiment. The instructor, at his discretion, may remind you that reports are due but it is your responsibility to remember and to meet the due time.

Late Laboratory Reports or Data Submissions will be accepted up to one week after the due date, but will have a 10% reduction in grade. To be considered at all the instructor expects that you will turn in your Laboratory Report or Data Submission no later than at the beginning of the lab period one week from the scheduled due date. The instructor at his discretion may remind you that late reports are due but it is your responsibility to remember and to meet the cutoff time.

Laboratory Reports or Data Submissions will not be accepted beyond two weeks from the scheduled laboratory experiment. This is a Department-wide Policy and therefore it is not left to the discretion of the laboratory instructor. Students failing more than one third of their Laboratory Reports or Data Submissions will automatically receive a failing grade in the course.

A scheduled absence from lab should be discussed with your instructor so that an earlier or later lab section during that week can be substituted. Obtain an absence form from the Physics Department Secretary, fill it out, obtain any necessary authorizing signature and present it to your instructor before the start of the week in which you plan to be absent.

Note: Standing guard or attending a military physical is not an excuse for missing lab.

An unanticipated but nonetheless authorized absence will, at the discretion of the instructor, be treated as a onetime drop grade or substituted by an experiment during once per semester make up week.

Extraordinary circumstances will be addressed by the Physics Department Head.

Physics Department-Wide Policy Concerning Authorship of Lab Reports and Lab Data

STATEMENT ON PLAGIARISM

Laboratory Experiment Reports and Data Analysis Sheets are submitted for grading and are therefore part of your laboratory course grade. Normally the laboratory experiment is performed with a partner. As such you are allowed to discuss the meaning, setup, implementation, data, and results of your experiment with your partner. However, the written report or analysis sheet, which you submit for a grade, must be your own work, written in your words, with calculations and spreadsheets worked out and understood by you. Copying or multiple printing of calculations, spreadsheets, graphs, explanations, diagrams, conclusions, and the like without giving proper credit to the source is an act of plagiarism.

STATEMENT ON CHEATING

Pre-lab and Post-lab questions, which you submit for a grade, must be your own work. The use of any means which would give you an unfair advantage, such as having assistance in answering the questions, would be an act of cheating.

In-lab exams will be taken by you without assistance from any source not authorized by your instructor which would give you an unfair advantage. Using a source which gives an unfair advantage would be an act of cheating.