2016

PHYS 163 College Physics Lab II

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College Physics Lab II

Phys 163 Summer 2016

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Office hours: M-F 9:00-9:30, and by appointment.

You will need access to Canvas for this course, at canvas.xavier.edu. The login information is the same as your Xavier email. Presumably you have this, since you are reading it now.

You will need a lab book. This can be any type of notebook. You will put all data and work in this book, and can use it for portions of the lab exams.

This goals of this laboratory course are to

A. supplement the lecture material, as well as learn topics not covered in the lecture.
B. utilize analytical and quantitative skills to design experiments and test theories.
C. practice presenting data in written form.

Grading:
midterm & final - 30% (goals A & B)
lab reports & other assignments - 70% (goals A, B & C)

Grading Scale: 93 A, 90 A-, 87 B+, 83 B, 80 B-, 77 C+, 73 C, 70 C-, 60 D

Both the point values and grading scale are subject to change.
Lab Assignments - See the individual assignments online for more details.

	Experiment	Assignment
1	SHM	
2	Strings	
3	Sound	
4	Current	
5	Ohm's Law	
6	Magnetic Force	
7	E/m	
8	Halflife	
9	Lenses	
10	DNA 1	
11	DNA 2	

Lab Exams
The lab exams will test your understanding of both the experiments and the theory underneath. Treat these like you would any other test. Make a study guide, and review the material carefully. The handouts and your lab reports should be your primary sources; a well written abstract is a very good study guide.
Some exams will allow you to use lab data in your notebook for part of the test, so be sure to bring this data with you. This will be limited to one fairly permanent notebook of reasonable size. You may not use the lab handouts themselves, nor your reports. You may paste graphs in your lab book.

Lab Reports
Your lab report should tell a good story. This is not just about getting the right answers, it is about clearly expressing them in an organized, cohesive way. Your lab report should not be too long; a paragraph for the abstract, another for error sources, and data tables and calculations along the way usually suffice.

A report should **not** be a procedural list of what you did in order. The procedure is a useful part the report, but should not be the extent of it. Avoid use of phrases like "and then we." It should also not include long discussion of the physics topics, devoid of reference to this particular experiment. You should not have multiple sentences with no mention of your experiment.
While first person is acceptable, avoid telling *your* story. You want to tell the story of the *experiment*. Explicit notes on the details of your experiment are great in the error sources, but the abstract should focus on the bigger picture of your experiment as a whole.
Lab reports should include good tables, which are easily readable. Many small tables can scatter your data and make comparisons difficult, so try to combine tables when possible. While you do not want your table to be too busy, you are usually better off putting more in than less. If there are numbers which are the same for every element in the table, put them above or below the table, rather than listing them many times. (Particularly if you only measured this value once.) Like almost every number, your table needs units. Put them in the heading for each row or column instead of listing for each variable, unless of course they are different for different values.
Near your table you need to explain where every number comes from. Many of these are simply measurements (i.e., we measured r with a ruler), while others will be calculations. A simple formula can suffice very well, but always be sure to indicate which values you are using. F=mg doesn't tell much if there are several masses in the experiment.
Combine multiple parts in the lab when appropriate, and avoid repeating. The reader does not want to wade through paragraphs of repetition. Do not cut and paste large sections of text; instead combine these parts or refer to earlier explanations.
You may want to highlight important results and numbers of your lab with **bold** or *italic* text. Also, feel free to use **c**o**l**o**r** in your reports. Color coding data can make it much easier to read, and this is easy to do since you will usually not be printing.
Most lab reports will be submitted through Blackboard under the Assignments tab. This should include your report, with all data and calculations, as well as any post-lab questions, all in one file. Most simple sketches, such as force diagrams, are easily created in most word processors. (If you do not have access to an adequate word processor, a great one can be downloaded from LibreOffice.org, and can save in MSWord's .doc format, as well as pdf.) Lab reports will need to be submitted in pdf form, which you can easily Export To or Save As.
Feel free to bring your lab report by ahead of time and I will look it over with you. I can easily point out subtle points, and make suggestions more easily in person than I can in written form. Come either at office hours or make an appointment. Please do so at least one day before the report is due.
Lab reports are to be your own work. Nothing should come from any other student, including your lab partner. Please do not share your report with anyone else. Reports containing duplicate or similar material will be considered academic dishonesty. The report will be given a zero and notification will be made to the appropriate dean.
Lab assignments have definite due dates, usually the at lab time the next week. Assignments turned in late will be penalized by half. **No assignments will be accepted more than one day late; a zero will be given for the assignment.**

Graded Assignments
Graded assignments are available with comments on Canvas. Look at these comments so you do not make the same mistakes; as the semester progresses I will be less lenient with small errors in the lab reports.
Minor grammatical and typographical mistakes will not change your grade unless they distract form the reading of the report, but you should make every effort to write as well as possible. Structure of your writing will affect your grade, as writing logically helps you think logically.
If I say to you "I would do this…" it means just that, not that you should necessarily do the same. This is not a criticism, but a suggestion of another way to present. Often this is a style issue.

Statements on the Core:
The natural science extend beyond an exploration of the natural world - they also inform us about our interrelationship to it. In this science elective course, you will improve your understanding of the scientific method and your ability to analyze claims and information regarding science through experiences in lectures and labs. In addition to knowing more

about a specific scientific discipline, you will be better able to evaluate the use of science in society and everyday life in an informed manner.

This course is part of the Xavier Core Curriculum, which aims to develop people of learning and reflection, integrity and achievement, in solidarity for and with others. It addresses the following core learning objectives at the intermediate level:

-Students recognize and cogently discuss significant questions in natural sciences

And it includes the following core learning objective(s) at the introductory level:

-Students examine the interconnections between humans and the natural environment.