Physics 195 Laboratory – Survey of Physics
Lab Syllabus - Spring 2019

Thursday Lab Instructor
Prof. Viva Horowitz
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Office hours: M 1:30-2:30 (in G050)
T 3:00-6:00 (in G047)

Friday Lab Instructor
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Description

In this laboratory, theoretical concepts that are presented in lecture and in the textbook meet the real world. Seeing the material applied in a real setting will help you to better understand the theoretical treatments, and recognize their broad applicability. You will also learn to appreciate that theory sometimes only approximately describes what takes place in the laboratory because of annoying realities such as frictional forces. Besides reinforcing the lecture material, the lab also teaches skills related to acquiring and analyzing data, and reporting results.

Lab Meeting Times: Thursday / Friday: 1:00-4:00 pm

Lab Schedule: (subject to change)

LAB DATE	WEEK	LAB #	LAB TOPIC	WEEKLY EVENT
24/25 - JAN	Week 1	1	Simple Oscillations	M: MLK Day
31-JAN/1-FEB	Week 2	2	Exploring Pendula	
7/8 - FEB	Week 3	3	Measuring g	
14/15 - FEB	Week 4	4	Resonance	
21/22 - FEB	Week 5		NO LAB	Exam 1
28-FEB/1-MAR	Week 6	5	Waves on a string	
7/8 - MAR	Week 7	6	Speed of Sound	
14/15 - MAR	Week 8	7	Coulomb's Law	
22 - MAR			NO LAB	Spring Break
4/5 - APR	Week 9	8	Electroscopes	
11/12 - APR	Week 10		NO LAB	Exam 2
18/19 - APR	Week 11	9	B-Field Mapping	
25/26 - APR	Week 12	10	$q\,\vec{v} \times \vec{B}$	
2/3 - MAY	Week 13	11	Snell's Law	
9/10 - MAY	Week 14	12	Interference	
16/17 - MAY	Week 15		No LAB	Final Exam

Final Grade

Your final grade in lab will be submitted to your Physics 195 course instructor at the end of the semester and be worth 20% of your final grade for the course. Your final grade in lab is comprised of the following elements:

Pre-Labs	20%
Post-Labs	80%

Pre-Lab & Post-Lab: Most weeks there will be a pre-lab and post-lab exercise that will be posted on blackboard. The pre-lab will be uploaded Monday at 5:00 PM the week before lab and the post-lab will be uploaded at 6:00 PM Friday the week of the lab. Pre-labs are due at the beginning of the lab and will be marked off 10% for each day late. Post-labs are due at the end of the day on Monday and may be turned in using the folder/basket outside of your lab instructor's office. Late post-labs (those turned in after Monday) should be delivered to the same location outside your instructor's office. They will also be marked off 10% for each day late.

The pre-lab exercise will be a short reading and some calculations that will prepare you for the physics and uncertainty techniques that we will be using in lab that week. The post-lab exercise will be a much more comprehensive set of questions regarding the lab from the previous week. For the post-lab, you will be expected to use your lab notebook and your physics knowledge to answers questions about any of the previous labs in the semester. Since you won't know the questions during the lab, you will have to make sure you write down all relevant calculations, diagrams, synopsis and conclusions in your lab notebook so that you will be ready to answer any questions that we throw at you!

As for any physics assignments, show your work and be sure your reasoning is clear. For pre-lab exercises. you may collaborate with other students or ask the instructor for help as needed. Post-lab exercises should be treated like a take-home quiz, meant to be completed by yourself, abiding by the full Hamilton college honor code. You may seek help from your instructor, but they are there to help you interpret the questions, not give you answers.

Lab Notebook: As part of your lab experiments you will be composing a lab notebook every week in lab. Lab notebooks are primary records of experiments, with entries created at the time of data collection. They should include procedures, schematics, raw data, calculations, data analysis, and conclusion drawn from each experiment. Ideally, these notes should be sufficient for someone else familiar with the equipment to reproduce that experiment and achieve similar results.

Each week, a few students will be asked to turn in their lab notebook for the purposes of grading those notebooks. Through this process, your notebooks will be graded a total of two times during the semester. If your notebook is collected you are exempt from having to do the post-lab for that week. In this case, your lab notebook grade will replace your post-lab grade.

If you would like to know more about how to create a lab notebook, see an example, or understand how we grade the lab notebook, see the "Anatomy of a Lab Notebook" document on blackboard.

Groups

New group will be randomly assigned every two or three weeks through the semester. You can find your group number, as well as the other students in your lab group in the *group* tab on blackboard. Each station inside of lab has a number on it, which is associated with your group number. As you arrive at lab, find your group, your station, and report any missing students, so the groups can be rebalanced if needed.

Missing Lab

The make-up policy for labs is straightforward. If you know ahead of time that you cannot come to lab one week, then you speak with your lab instructor as soon as you are aware of the conflict. If the instructor agrees that the conflict is legitimate, then you can arrange to do the lab on a different day of the week than your assigned day. It will normally not be possible for you to do the lab the next week. If you miss a lab and have not communicated ahead of time with the instructor, there are 2 possibilities. 1) You bring a written medical excuse and 2) You do not. In the first case your lab grade will be calculated based on (N-1) lab grades instead of N. In the second a zero will be factored into your final lab grade for the missed week. In either case you will not be submitting pre-lab and post-lab exercises for credit, however you may submit them to get feedback from your instructor.