

Physics 248 Spring 2007 Laboratories

Lab Schedule

Laboratories meet in room 3136 Chamberlin on the following day/time:

Section	Day/Time
301	Monday 1:20-4:15
302	Tuesday 1:20-4:15
303	Wednesday 2:25-5:20

Laboratory attendance is required. If you must miss lab, talk with Jim beforehand and arrange a make-up time. A missed lab is penalized by 30% reduction in total lab grade. Missing a second lab will result in failing the course.

Week	Date	Title
1	Jan 22 - Jan 26	No lab
2	Jan 29 - Feb 2	Speed of Sound / Waves on a String
3	Feb 5 - Feb 9	Diffraction and Interference
4	Feb 12 - Feb 16	No Lab – Midterm 1
5	Feb 19 - Feb 23	Computer Generated Holograms
6	Feb 26 - Mar 2	Atomic Spectroscopy and the Balmer Series
7	Mar 5 - Mar 9	Wave-Particle Duality
8	Mar 12 - Mar 16	No Lab – Midterm 2
9	Mar 19 - Mar 23	Frank-Hertz Experiment
10	Mar 26 - Mar 30	Electric Fields
11	Apr 9 - Apr 13	Capacitors and RC Decay
12	Apr 16 - Apr 20	No Lab – Midterm 3
13	Apr 23 - Apr 27	Magnetism
14	Apr 30 - May 4	e/m_e Experiment
15	May 8 - May 12	No Lab

Lab Policies

- Please read the lab beforehand if you expect to do well! Most labs require the full period even if you know what you're doing.
- We will work in groups of ~ 3 and switch groups after each exam.
- You need a dedicated lab notebook which will remain in the lab at all times. Quadrule ruled notebooks are strongly recommended.
- Each group member must have all relevant notes, data, and analysis from the experiment in his or her own notebook.

More on Lab Notebooks

Lab notebooks are the most important tool of a physicist – here you will keep all notes, data, and analysis from each experiment, and your grade is based on its content. Here some general rules to follow:

- **Notes:** A student should be able to repeat exactly what you've done using only your notes. Explain what you're doing. This is the most important part of the lab.
- **Data:** Keep all your raw data. If you write something incorrectly, just cross it out. Don't erase. Printouts must be taped or glued into the notebook.
- **Analysis:** All measurements have uncertainties, so include them in your calculations and explain why you included them. Be sure to answer all the questions in the lab writeup. Do your results agree with the expected values within your error bars? If you had problems, what were they? What would you need to do to improve your data?

Grading

Jim will read lab notebooks and grade on a 10 point scale according to the following criteria:

- **3 points** Quality of the description of the experiment: The experiment should be reproducible by any other student based on your notes.
- **3 points** Execution of the experiment in the laboratory, including plots and tables of the data when required
- **3 points** Interpretation and discussion of the obtained results, including error estimates
- **1 point** Neatness and readability

The grade breakdown will be approximately:

8-9-10	A
6-7	B
4-5	C

Less than 4: You will be asked to fix your errors to receive credit for the lab. For a small number of labs, a short open-book quiz will be given in lieu of grading notebooks.