

Physics 349, Optics Lab

Fall 2007, Thursdays 9-12am and 2-5pm

Instructor: Milton From

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Reference Materials: The laboratory guide sheets for this course were originally written by Rich Atneosen. We will be doing 7 or 8 labs during the quarter. I will post each lab's PDF files on the course website a few days before the lab. Please download these files and look them over *before* the lab period. In some cases they will contain pre-lab exercises that must be handed in *at the start* of the lab period.

Approximate Schedule :

Wk	Date	Topic
1	Sept 27	–
2	Oct 4	Spectrometers , alignment procedure , data tables
3	Oct 11	Reflection and Transmission of light , pre-lab , data tables
4	Oct 18	Thin Lenses , data tables
5	Oct 25	Thick Lenses , data tables
6	Nov 1	Optical systems , data tables
7	Nov 8	Interference Fringes , pre-lab , data tables
8	Nov 15	Michelson Interferometers , pre-lab , data tables
9	Nov 23 (RF are Holidays)	–
10	Nov 29	Diffraction , pre-lab , data tables
11	Dec 6	practical test

A Few details

- **LAB NOTEBOOK:** Please purchase an Ampad “**Computation Book**” at the bookstore for use as a lab notebook. (This lab notebook may also be used in the Junior Lab course if/when you take it.) The notebook is primarily a place for you to record pertinent details about the experiments that you do in the course. Examples of things you might put in the notebook are: rough sketches/photographs of apparatus, hints on how to align equipment, important experimental procedures, etc. The notebook is a hand-written record; **photocopies and/or other printed material may not be included.** The notebook will be important to you when it comes time to do the practical test at the end of the year. The notebook will not be graded.

- PRE-LAB EXERCISES: Some of the lab write ups are preceded by exercises that are to be performed before you come to the laboratory. They will receive credit only if they are turned in at the very beginning of the laboratory. These exercises will generally be worth 10-20% of the report grade.
- REPORTS: Formal laboratory reports will **not** be required in this course. At the end of each lab write up, you will find a “Data and Analysis” section, which is the place where all of your data should be recorded. In addition, analysis of the data along with various questions about the results will appear. These sheets along with any graphs requested are all that will be turned in for your report.
- “OPTIONAL” LAB EXERCISES: Some of the lab write ups will contain optional exercises that are relevant to the experiment being performed. The write ups for these should accompany your report. In them you should briefly explain what you did, how you did it, and what you accomplished. In general these exercises will be worth an additional 10% in your report grade.
- GRAPHS: Whenever requested or appropriate, graphs of the results should be added on to the report that you submit. Your graphs need to be large enough that the details can easily be seen and both axes should be clearly labeled and include units. The data points should be large enough so that they still show up even when a smooth curve is drawn through them. Sloppy, small graphs that are not completely annotated will result in lost points on your report.
- ACCURATE DATA AND CALCULATIONS: In this course the emphasis will be on accurate data taking and analysis of the same. Your data should be taken to the highest accuracy that the equipment will allow—do not round off raw data. Likewise, your calculations should be to the same accuracy as the input data—you will lose points if you do not take data as accurately as is humanly possible. **Your final values should be quoted to the correct number of significant figures (see the separate [hand out](#))**. I will take off points if a stated result has less digits or if it has more digits than is appropriate. I am not asking for formal error analysis as that topic is not a prerequisite for this course.
- PRACTICAL TEST: During the last week of class there will be an hour-long practical test in which you are required to set up an apparatus and/or complete a laboratory procedure. You will be allowed to use your lab notebook during the test provided it does not contain extensive photocopies and/or other printed material. Lab guide sheets, pre-lab exercises, “optional exercises”, etc, will not be allowed in the test.

Grades:

Reports	80%
Lab practical test	20%

LETTER GRADE SCALE

Percentage	90-100	85-89	80-84	77-79	73-76	70-72	67-69	63-66	60-62	57-59	53-56	<53
Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F