

SYLLABUS

PHYSICS 276 - Fall 2004

INSTRUCTOR : Richard Ellis
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Office Hours : TBA

TEXTS: *Physics 276 Laboratory Manual*
An Introduction to Error Analysis by J.R. Taylor

CLASS TIME and PLACE: Room 3120, Sect 0101 Mon 2 – 6 pm, Sect 0301 Fri 12 – 4 pm

COURSE DESCRIPTION:

Physics 276 is a two credit laboratory course for the physics major sequence dealing with electricity and magnetism and electric circuits. The prerequisites are PHYS 272 and 275 and the associated mathematics courses. Students will conduct seven experiments during the semester (one requires two weeks) and write up lab reports for each. Some class sessions will focus on discussion and analysis of previous and upcoming experiments as well as lectures on the basic material.

REQUIREMENTS:

1. Students are required to do ALL the experiments and complete a lab report for each. Failure to do this will result in a failing grade in the course.
2. Lab reports are due in class one week after the completion of the experiments. For each day late the lab reports will automatically lose **10% of the maximum points per day (2pts for 20 pt labs, 4pts for 40 pt lab)** . Please see me about extensions in the case of sickness, etc. **For this purpose a day ends at 5pm. All late reports are to be turned in to my office in the Energy Research Building, which is locked after 5PM.** See the Laboratory Manual concerning the format for lab reports.
3. Discussions: There will be a few discussion periods during the semester to review the results, etc. Students will be expected to contribute, often by giving short presentations to the class about some aspect of the experiment.
4. Final Exam: There will be a final exam on the last day of class. The exam will deal with items directly related to the experiments and experimental techniques, including error analysis. Taking the final exam is required for passing the course.

GRADE: Your grade will be calculated using the following scale:

Lab Reports	75%
Final Exam	25%

LAB REPORTS : ADDENDUM TO LABORATORY MANUAL

- a. Late Report deadlines - See above #2
- b. Lab Reports (Pages 2-3)

Please be brief in sections B and C and do not repeat details provided in the lab manual. Your report will be graded primarily on sections D - G. Neatness, organization, clarity of presentation is important in a lab report.

- c. Analysis, fitting, etc.

You may use any computer package you choose to plot and fit your data. Whatever you use must be capable of producing plots with axes labeled, error bars, legends, etc. EXCEL is recommended and is installed on the computers in the lab and WAM rooms. We will provide least square fitting routines in EXCEL for this course. In addition, students might want to experiment with fitting methods outside the ones we provide.

COMMUNICATION :

The syllabus is posted on the Physics Department website but this will not be maintained as a general means of communication. Announcements will be made in class and by email but **you must attend class to guarantee you receive all relevant information.**

SCHEDULE :

The schedule follows. Please be careful to note whether you are in the Friday or Monday section. In general the Friday section will have a particular activity first but due to holidays this is not always true. If you need to attend one of the sessions you are not assigned to please let me know by email. This is the preferred way to make up (or pre-make up) an experiment. Also note there is a make up session at the end of the semester.

PHYSICS 276 FALL 2004 SCHEDULE : SECTIONS 0101, 0301 (R F ELLIS)		
DATES	ACTIVITY	REPORT DUE
30-Aug	INTRODUCTION, ERROR ANALYSIS DISCUSSION	
3-Sep		
6-Sep	NO CLASS	
10-Sep	EXPERIMENT I : OHM'S LAW	17-Sep
13-Sep		20-Sep
17-Sep	DISCUSSION	
20-Sep		
24-Sep	EXPERIMENT II : MAGNETIC FIELDS	1-Oct
27-Sep		4-Oct
1-Oct	EXPERIMENT III : ELECTRON BEAM	8-Oct
4-Oct		11-Oct
8-Oct	DISCUSSION	
11-Oct		
15-Oct	EXPERIMENT IV : RC AND RL CIRCUITS STEP INPUT	22-Oct
18-Oct		25-Oct
22-Oct	EXPERIMENT V : RC CIRCUIT SINUSOIDAL INPUT	29-Oct
25-Oct		1-Nov
29-Oct	EXPERIMENT VIa : LRC CIRCUITS 1	12-Nov
1-Nov		15-Nov
5-Nov	EXPERIMENT VIb : LRC CIRCUITS 2	12-Nov
8-Nov		15-Nov
12-Nov	EXPERIMENT VII : DIODES AND RECTIFIER CIRCUITS	19-Nov
15-Nov		22-Nov
19-Nov	DISCUSSION AND REVIEW	
22-Nov		
26-Nov	NO CLASS	
29-Nov	MAKE UP	
3-Dec		
6-Dec	FINAL EXAM	
10-Dec		