Course: Experimental Physics 1 . . . . . . . . 1017-421
Semester: Winter 2007
Lecture: W: 11:00-12:00 in 8-3130
Lab:
Section 1: W: 9:00-11:00, F: 14:00-17:00 in 8-3107
Section 2: M: 14:00-17:00, W: 14:00-16:00 in 8-3107
Instructor: Prof. Seth M. Hubbard
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Support: Mr. William VanDerveer, Prof. Ryne P. Raffaelle
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Course Description: This is a senior laboratory offering experience on a variety of research projects in physics. The elements of advanced laboratory work, including the importance of detailed experiment planning, are presented. Effective communication of results is also part of the course. Experiments are chosen from various areas of physics compatible with department facilities.

Format: Approximately 1 hour per week will be devoted to covering new material, introducing new concepts and definitions, giving demonstrations and derivations, and working through examples from the text; the remaining time will be spent in the lab working on a physics research project.

Grading:

Exam #1: 15%
Exam #2: 15%
Proposal: 20%
Final Paper: 20%
Oral Presentation: 20%
Participation: 10%

Homework: Finding and reading the background material and current literature is an essential part of any research project. This work will be expected to be performed outside of the scheduled class meetings. The majority of data regression and analysis will also be done outside the classroom.
**Proposal and Final Paper:** During Week 3 you will submit a research proposal giving details of your project. The proposal must include the following sections: Abstract (500 words maximum), Introduction, Description of the Work, References. During Week 10 you will submit a Final Research Paper. This paper must include the following sections: Abstract (500 words maximum), Introduction, Experimental Procedure, Results and Discussion, Conclusion, References.

**Presentation and Participation:** During Week 10 you will present your research project in oral format. Your talk will be 10 min long with 2 min for audience questions. The presentation grade will depend on both my evaluation and also the evaluations of the class. Attendance at lecture, weekly labs and the oral presentations will be taken. You will lose 2% for each lecture or lab missed and 5% for each oral presentation. You are expected to be an equal and fully participating member of your research team. The participation grade will also be based on your team contributions.

**Reference Texts:**


**Projects:**

1) High TC Superconductivity

2) Transmission Line and 4-Point Measurement of contact and sheet resistance

3) Solar Cell Fabrication and Calibration

4) Hall Effect Measurements

5) Schottky Diode Fabrication and Characterization