

PHY271: Electronics and Instrumentation I Lab

Gustavus Adolphus College

Spring 2009

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1. **Laboratory:** The laboratory meets once each week for three hours in Olin 113.
2. **Lab Notebooks:** Each student's primary responsibility will be to maintain lab notebooks detailing his/her lab experiments. Two such books will need to be purchased, because they will be handed-in on a rotating basis. The books should be bound, laboratory notebooks (available at the Book Mark). The purpose of the lab notebook is to detail completely the theory, procedures, data, analysis and conclusions for every experiment. The lab notebook must be handed-in to the instructor at the completion of each experiment. Reports are due at the beginning of the lab period one week after the lab is performed.
3. **Notebook Grading:** Notebooks will be graded on a 10 point basis. All of the following will be important in determining the grade: successful completion of the experimental measurements and data analysis; documentation, appropriateness and accuracy of procedures and data analysis used for the experiment. Errors in grammar, spelling and proper English usage may adversely affect the lab grade
4. **Laboratory Reports:** Written laboratory reports will be required for some experiments. The format for the reports and the method of evaluation are described in a separate sheet. Reports are due at the beginning of the lab period one week after the lab is performed.
5. **Attendance:** Students are expected to attend all laboratories during the scheduled hours. Students may arrange to switch lab sections with permission of the instructor. Students are responsible for informing themselves of material and assignments covered during absences. Students must advise the instructor in writing during the first week of class of any scheduled athletic, music, or other college activities that will require their absence during the semester. Such written notice does not imply a waiver of course requirements or an agreement to reschedule lab periods or exams.
6. **Missed Labs:** Missed labs must be made up. Permission to perform a lab at other than the scheduled time must be scheduled with the instructor.
7. **Preparation for Laboratory:** Students are expected to be thoroughly familiar with the purpose and general procedures of the laboratory experiment before coming to the lab. Advance preparation is an absolute requirement for the efficient use of the limited lab time, and failure to prepare can be (painfully) obvious. A short pre-lab assignment is to be turned in at the beginning of the lab period for most experiments. The pre-lab assignment becomes part of the grade for that experiment. Please bring a calculator to lab (in case any calculations need to be performed). It is recommended that the course textbook is available for reference purposes during the lab period.
8. **Report Grading:** Reports are due in lab one week after the last week that the lab is performed. A penalty of 1 point per day will be deducted for late reports. For work that is turned in significantly late, there will be a 50% reduction of the grade on that assignment as a maximum late penalty. No lab reports will be accepted after 5:00 PM on Reading Day. A grade of F for PHY271 will be assigned if any lab reports are not turned in by this deadline. **DON'T PUT OFF WRITING UP YOUR LABS. THAT WAY LIES DOOM!**
9. **Open Lab:** Unsupervised weekday use of the lab room may sometimes be arranged by contacting the instructor. This will be granted mainly if the experiment was not completed during the lab period due to equipment failure. Permission will not be granted if the experiment was not completed due to inadequate preparation on the part of the student. The lab is not available on evenings or weekends for security reasons.

10. **Lab Final Project:** During the final week of the course, there will be a final project. This project will integrate components and techniques from the entire course. Students will be required to demonstrate their project to the instructor, and write a short report describing their project.

11. **Academic Honesty:** In all academic exercises, examinations, papers, and reports, students shall submit their own work. Footnotes, or some other acceptable form of citation must accompany any use of another's words or ideas. (The full text of the Gustavus Academic Honesty Policy may be found in the Gustavus Adolphus College Academic Catalog).

12. **Incompletes:** A grade of incomplete will only be given for work not completed due to circumstances beyond the control of the student. (This is the college policy).

13. **Evaluation:**

Lab Notebook and Reports 70%
Lab Final 20%
Pre-lab & Technique 10%

Final course grades will be assigned using the following scale as a guide:

96-100 A	80-84 B-	64-68 D+
92-96 A-	76-80 C+	60-64 D
88-92 B+	72-76 C	0-60 F
84-88 B	68-72 C-	

Assignment of the final letter grades will also take into account other factors including the instructor's subjective evaluation of the student's attendance, initiative, evidence of improvement, laboratory technique, laboratory notebook and the quality of independent work.

<u>WEEK OF</u>	<u>PRELIMINARY LABORATORY SCHEDULE</u>
Feb. 9	Lab I: Introduction to Test Equipment [Two-week Notebook; week one]
Feb. 16	Lab II: Passive RC Filters [Two-week notebook; week two]
Feb. 23	Lab III: Investigation of RLC Circuits in Black Boxes [Written report]
Mar. 2	Lab IV: Diodes and Power Supplies [One-week notebook]
Mar. 9	Lab V: Operational Amplifier Characteristics [Two-week notebook]
Mar. 16	Lab VI: Operational Amplifier Applications [Two-week notebook]
Mar. 25	Spring Break
Mar. 30	Lab VII: Comparators and Schmitt Triggers [Written report]
April 6	Lab VIII: Transistors, Phototransistors, and Relays [One-week notebook]
April 14	Easter Break (Monday)
April 20	Lab IX: Transistor Amplifiers [Written report]
April 27	Lab X: Properties of Digital Logic Gates [One-week notebook]
May 4	Lab XI: Introduction to Sequential Logic Circuits [One-week notebook]
May 11	Lab XII: Waveshaping, Timing, and Counter Circuits [Demo notebook]
May 18	LAB FINAL PROJECT