Syllabus - PHY 4071 / SPS 4110
Senior Laboratory (2 cr.)

Goals

This course helps students learn advanced physics concepts, gain familiarity with more complex instruments and further develop laboratory and data analysis skills. These skills include learning to:

- Adjust equipment to optimize the quality and quantity of data.
- Take and display data in a neat, organized and logical manner in a logbook.
- Estimate the uncertainty in a measured quantity.
- Relate physical measurements to theoretical predictions.
- Utilize error analysis and formal error propagation.
- Determine whether an experiment was a success or failure.
- Troubleshoot for faulty readings and uncover the cause of incorrect results.
- Write a clear, concise laboratory report.

Lab Reports  You are required to submit three full lab reports and three abbreviated lab reports (data analysis only).

Grade  Your grade is computed from a weighted average: 10% derives from the instructor’s evaluation of your preparation for the experiment, 30% comes from the instructor’s evaluation of how well you perform the experiment, 30% from your data analysis, and 30% derives from the quality of your written lab report. In case of an abbreviated report, the data analysis is worth 60%.


Policies

1)  Record all your data in a logbook. If you generate computer printouts as part of the data, cut them out and tape them into your logbook. An inexpensive black and white composition book can serve as a logbook but then you must number all the pages by hand.

2)  Include a photocopy of all the raw data at the end of your report as an appendix.

3)  For each experiment, you work with one lab partner. You are expected to be present for all lab times. You will work in the advanced teaching labs in Rooms PS242/243. Each group will perform experiments every week. For the exact schedule please refer to the schedule hand out. The lab report is due at 2 PM seven days after you finish the experiment, i.e. on the Thursday one week after you finish the experiment. Instructors will deduct points from your report score at their discretion if the report is late. You will receive a report grade of
zero if you turn in a report that is more than one week late. Please turn in the reports with that instructor who tutored your experiment.

4) Scientific integrity and academic honesty are more than statements of values. These are the founding principle of science since science seeks to uncover the truth. You own your data. It is a form of intellectual property. All your analysis must be faithful to the data and we expect you will act in an ethical and honest manner. Plagiarism includes fabricating data, using another person’s data, using uncited information from the Web, or copying parts from another student’s report. It results in an automatic report grade of zero. A second occurrence results in an automatic course grade of F and reporting to the Dean of Students.

5) Collaboration is an important way to learn and we encourage you to discuss your data analysis with your partner. However, we expect each student to perform his or her own data analysis. Moreover, the report must reflect the capabilities of its single author. If collaboration results in two identical reports, each report will receive half its normal grade.