Welcome to Phys 128AL, Advanced Lab!

Lab website for W26:

https://www.deepspace.ucsb.edu/classes/physics-128-senior-lab-winter-2026

In the physics department, we strive to provide an inclusive and welcoming climate to all students. That can be even more important in a lab setting, when you will be working with lab partners and sharing equipment with others. If you have any questions or concerns, please refer to the department statement on an Inclusive and Respectful ClimateLinks to an external site., and don't hesitate to contact me.

We'll divide the quarter into an introduction (week 1 and 2) followed by two week blocks for everyone to perform four labs.

In week 1, we'll also have an introductory lecture on safety and a brief description of the lab possibilities. You'll fill out a survey to decide which labs you are interested in doing, and learn how to use LaTeX, which is a type-setting program that is used throughout physics for writing papers and proposals. You'll also do an introductory lab as part of the "radiation environment lab" to learn some basics of statistics and uncertainties.

Radiation environment lab (weeks 1 and 2). Each student will be loaned a gamma ray spectrometer (GRS) that you will use to explore the radioactivity around you. Depending on the number of stuents there may be some sharing required. **You will be responsible for the careful handling of this spectrometer. It must be returned at the end of week 2. See the class website for much more information.**

Professor: Philip Lubin - lubin@ucsb.edu

TAs:

June Muhlenkamp jam75@ucsb.edu

Vivek Dhande vivekdhande@ucsb.edu

Mara Niesy mniesyt@ucsb.edu

Yu-Tse Lee yutselee@ucsb.edu

Lab manager: Anatoliy Dovbnya (anatoliydovbnya@ucsb.edu)

Lab Weeks

Each of the two-week blocks will consist of four class days per student.

You are responsible for (a) keeping a running lab notebook and (b) writing a lab report (max 4 pages) at the end of each lab, with due dates given in the Assignments section. You will be graded on the notebook and general lab conduct (40%) and your lab reports (60%).

A list of the possible labs is here: https://ilg.physics.ucsb.edu/Courses/Upper/128A/index.htmlLinks to an external site. . In the first week, you will fill out a survey to sign up for your desired labs. We will attempt to accommodate you as best we can.

Lab Guidelines and Grading Rubric

A guide to writing lab reports and lab notebooks is contained in this pdf Download pdf. Read it all, please. That also includes the grading rubric for how we will grade the notebooks and reports, and your final grade will be determined 60% on the reports and 40% on the notebooks. The final page provides clarification on what exercises from the lab manuals ("Lab Manual Work") you will be required to complete in your notebook. Your notebook grades will include grading on these exercises.

- Links to two example lab reports can be found here Download here and in the section below on Overleaf/LaTeX. Log into Canvas to see this. You can also find this as a PDF on the course website.
- Everyone will turn in a lab report, but you will share the notebook with your lab partner.
- Lab notebooks should be in Google Docs. (Submit a pdf copy to Canvas after the 4th lab day and email a link to your lab notebook to your TA. If you do not do this, they will not be able to grade your work, and you will therefore get a zero).
    - Lab notebooks are really intended to be a log.
        - 07:35: I ground coffee beans and started the coffee maker.
        - 07:45: I had coffee.
        - 07:50: I ate a bagel and headed to class.
        - 07:55: I realized that I left my keys and had to go back to get them.
    - The best lab notebook records every step you took. We all get lazy and/or excited to take the next steps in the middle of working on an experiment, so it can be hard to have the discipline to write everything down, but best practice really is to write everything down. At the minimum, someone should be able to retrace all of your steps to know what you did. It's not good to have an hour gap in the middle where you did a bunch of things and then say at the end: Problem solved! If all we know is that you solved the problem, but not how you got there, that is not a repeatable experiment.

Late Work

- Late work must be excused by the professor in advance, no exceptions. All late work is subject to penalties, even when excused:
    - up to 1 week late: -15%
    - 1-2 weeks late: -30%
    - >2 weeks late: not accepted

Overleaf/LaTeX for lab reports (see Canvas)

Almost all physics papers are written in LaTeX or tex (pronounced "lay-tek" or "tek"), a program that does typesetting of equations and figures in a relatively simple way. In 128AL, we will use LaTeX for reports. Nowadays, most people use Overleaf, a web-based text editor, that contains most of the commonly used LaTeX packages. It is great for sharing writing with other people and lets you use tex without having to figure out how to install everything yourself. Some useful resources:

- A generic Overleaf example tex file, showing how to use sections and subsections, include figures, and math: linkLinks to an external site.
- An example lab report written in latex on Overleaf: linkLinks to an external site.

Feel free to use these as templates to start your own reports.

Some Useful Links

- Latex Table Generator: https://www.tablesgenerator.com/Links to an external site.
- Online diagram maker: https://app.diagrams.net/Links to an external site.
- Lab website: https://www.deepspace.ucsb.edu/classes/physics-128-senior-lab-winter-2026

Schedule

WEEK	Dates	Activity
1		General Course and radioactivity Lecture – GRS discussion
2		Continue on GRS work
3		Lab 1 start – GRS “lab” report due
4		Lab 1 Continue lab
5		Lab 2 start – Lab 1 report due
6		Lab 2 continue

7	**Lab 3 start – Lab 2 report due**
8	**Lab 3 continue**
9	**Lab 4 start – Lab 3 report due**
10	**Lab 4 continue – turn in lab report at end**