

PHYSICS 133

Intermediate Laboratory

"Life isn't about waiting for the storm to pass,
it's about learning to dance in the rain."

INSTRUCTOR: Joseph Connell UC Santa Cruz
Email: jomaconn@ucsc.edu Summer 2023
Office Hours: ISB 314, after class or by appt June 27 – Aug 31

CHERISHED TEACHING ASSISTANTS: Nolan Smyth – nwsmyth@ucsc.edu

CLASS MEETINGS: TuTh 1:30 – 5:15 PM in Nat Sci 2 110. You are required to attend all sessions (except if you finish collecting data early). If you will be late or miss a meeting, you *must* send me an email in advance. You can only use data that you were present to collect, no sharing of data is allowed.

DISCORD: Ask me, the TA's, and classmates questions, join link: <https://discord.gg/hw5uu9uXH>

LAB MANUAL: Posted on Canvas Files, you must read it ahead of time to keep up with the course. We will focus on statistics during the first few weeks, so please preview that material. I encourage you to supplement the lab manual's statistics sections with other resources.

GRADING: Please submit your work to Canvas before midnight on the due dates.

- Three Statistics Homeworks – 30%
- Three Lab Reports – 70%

COURSE GOALS: We will learn to:

- Study statistics topics and calculations essential to work in physics
- Understand the importance of uncertainty on all measurements
- Make measurements with common physics laboratory equipment
- Analyze data, always with uncertainties (Excel and Python), and draw conclusions
- Present our findings in convincing and detailed yet concise lab reports with plots

INCLUSIVITY & CONDUCT:

- All students work at different paces. It is OK if an experiment or analysis takes you longer than your classmates', but be careful to not fall too far behind. This course is a huge time commitment; keep up!
- Ask questions and clarify often; it is a small class and we have time to talk. If something is unclear, other students could also benefit from a discussion.
- You will collect data with a partner and may talk with other students when you are stuck, but you must collect your own data, produce your own analyses, and write your own reports.
- If you are having trouble with your partner or a classmate, please inform me or the TA.

DRC: There are no exams or timed assignments in this course, so the DRC accommodation process is not necessary unless you require a unique accommodation. Please talk to me if you are concerned about accessing this course.

SCHEDULE

Winter 2023: June 27 – Aug 31

WEEK	DATE	TOPIC	DUE midnight
1	6/27	Welcome! Intro Lectures	
	6/29	Statistics, Radiation Safety	
2	7/4	Independence Day, NO CLASS (makeup 7/3?)	
	7/6	Statistics, Lab Equipment	HW1
3	7/11	Statistics, Lab 1	Joseph away
	7/13	Lab 1	HW2
4	7/18	Lab 1	
	7/20	Lab 1	HW3
5	7/25	Lab 1	Rough Draft
	7/27	Lab 1	
6	8/1	Lab 2	Report 1
	8/3	Lab 2	
7	8/8	Lab 2	
	8/10	Lab 2	
8	8/15	Lab 2	
	8/17	Lab 3	Report 2
9	8/22	Lab 3	
	8/24	Lab 3	
10	8/29	Lab 3	
	8/31	Lab 3 – due end of finals week	Report 3