

Phys 133: Intermediate Lab

Fall 2018

Instructor: Joe Schindler

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TA: Neil Hardy

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Lab Sections: Nat Sci 2 110, (01A) TuTh 8:30–11:30a, (01B) TuTh 12:45–3:45p

Lecture Section: Nat Sci Annex 103, TuTh 11:40a–12:40p

Laboratory Manager: Prof. George Brown, Nat Sci 2 Rm. 176

At least one staff member will be present in the lab at all times.

Course Website

UCSC Canvas. Check Files section for course materials, and Announcements section for announcements.

Course Description

This course will introduce you to intermediate level methods in experimental physics, including computerized data analysis and plotting, statistical analysis, and scientific writing. You will perform three experiments:

- (1) Electronic Circuits and AC Impedance,
- (2) Atomic Spectroscopy,
- (3) Absorption of Gamma Rays by Lead.

For each experiment, you will write a lab report in the style of a scientific research paper. Each experiment will take up about one third of the quarter, students will rotate through the different experiments.

Lab Attendance

Lab period attendance policy:

- Attendance for the entire lab period is mandatory for class dates which are ***BOLD*** in the schedule (below).
- For other class dates, you must coordinate with your lab partners if you need to miss all or part of lab.

Lecture Attendance

We will only be using the lecture section for special occasions: look out for announcements of lecture dates. Attendance is mandatory whenever the lecture period occurs.

What To Bring

Please bring:

- If one is available to you, a laptop COMPUTER.
- A LAB NOTEBOOK (any type is fine).
- Physics 133 LAB MANUAL.
- NO FOOD OR DRINK.

Due to RADIATION SAFETY STANDARDS, no food or drink is permitted in the lab room. Any food or drink must be left on the table outside the room. Water is permitted in the spectroscopy satellite rooms only.

Assignments and Grading

There are three in-class/homework assignments, three lab reports, and a lab notebook assignment.

- Lab Notebook (5%)
- IC/HW 1: Reading Assignment (10%)
- IC/HW 2: Statistics (10%)
- IC/HW 3: Programming (10%)
- Three Lab Reports (65% total)

Your lowest scoring lab report counts for 15%. Your other two lab reports count for 25% each.

This is meant to encourage improvement based on first report feedback.

Course Schedule

The course schedule is as follows:

| Wk # | Week of (Sun) | Tu | Th |
|--------|---------------|---------------------------------|-------------------------------------|
| 0 | 9/23 | NO CLASS | READING |
| 1 | 9/30 | STATISTICS (Reading Due) | PROGRAMMING (Statistics Due) |
| 2 | 10/7 | LAB 1 | Lab 1 (Programming Due) |
| 3 | 10/14 | Lab 1 | Lab 1 |
| 4 | 10/21 | Lab 1 | Lab 1 |
| 5 | 10/28 | LAB 2 (Report 1 Due) | Lab 2 |
| 6 | 11/4 | Lab 2 | Lab 2 |
| 7 | 11/11 | Lab 2 | Lab 2 |
| 8 | 11/18 | LAB 3 (Report 2 Due) | NO CLASS |
| 9 | 11/25 | Lab 3 | Lab 3 |
| 10 | 12/2 | Lab 3 | Lab 3 |
| FINALS | 12/9 | FINALS (Report 3 Due) | FINALS |

- Lab section is mandatory on **BOLD** class dates.
- **All due dates are at 12:01a on the date shown** — that means the night before.
- Assignments should be turned in to the SCHINDLER mailbox in the ISB Physics Mailroom.
- Late work may be penalized up to 5% per day late.

Lab Partners

You will be working on lab experiments with one or more lab partners. Here are some important guidelines:

- Treat your lab partners with respect.
- Help your lab partners by teaching them what you know.
- All lab partners must have access to lab equipment.
(Do not discourage your partners from trying something because you already have done it.)
- All lab partners must know how to perform all parts of the experiment.
(You may not delegate different parts to different partners.)
- Each lab partner must produce their own analysis, programs, and graphs.
- Each lab partner must produce their own, unique, lab report.

Lab Report Plagiarism Policy

All work submitted must be your own writing, analysis, and content.

You MAY NOT:

- Paraphrase or copy prose from any source.
(Including your partner, the lab manual, lab handouts, your peers, or the internet.)

You MUST:

- Cite the source of any outside plot or figure used, or any content you did not personally generate.
- Cite the source of any reference material being referred to in your report.

Work found to violate these rules may be subject to an academic misconduct report or a grade of zero.