

Physics 22 – Introductory Physics II Laboratory

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Please record...

Lab instructor and
section number:

Their contact information:

Required materials: 1) Our local Physics 22 lab manual (available at the bookstore). 2) The assigned laboratory notebook from the bookstore (#77648 or equivalent sewn binding). 3) Scientific calculator. 4) Metric ruler.

Reading Assignments are essential! You must read the lab manual for that week's experiment **BEFORE** arriving to lab.

Attendance at all laboratory periods is required for continued enrollment in the course under University policy (see section 3 of Rules and Procedures). Please contact your lab instructor as soon as possible about any absences. Makeup laboratories after the scheduled week are extremely difficult to arrange and in nearly all circumstances you will be required to obtain an official makeup privileges form signed by the Dean of Students office.

Your lab notebook will be a record of your step-by-step procedures, observations, error analysis, and conclusions. You will pick it up from your instructor at the beginning of the lab period and return it at the end of the lab period, after restoring your lab bench to be ready for the next students. You will NOT be writing "lab reports" with background, material, hypotheses, etc. Your lab notebook will be your only reference during the Special Project.

Grading is based on the accuracy, clarity, level of detail, and quality of your error analysis and conclusions in your written lab notebook AND the effort and quality of your work during the three-hour lab period.

Special Project: In week 14 of the semester, you will be randomly assigned to perform an experiment that is a subset of one of the experiments from the first thirteen weeks of the course. This will be an individual exercise, not with a partner. You will NOT be able to use the laboratory manual or any other reference books. You may use ONLY your laboratory notebook, a calculator and drawing equipment. Therefore, we re-emphasize that your notebook must have complete enough information to re-create the experiment without the printed lab manual. This Special Project counts slightly more than a standard weekly lab. For your planning purposes, here is a list of typical projects:

- 1) Measure the period of a standing wave with an oscilloscope.
- 2) Measure the charge to mass ratio of an electron.
- 3) Measure the focal length of a diverging lens.
- 4) Measure the focal length of a converging lens.
- 5) Measure a spectrum using a grating.
- 6) Use a computer to measure capacitance.
- 7) Measure Planck's constant.
- 8) Transistor amplifier.
- 9) Interference and diffraction of light.
- 10) Measure a magnetic field using a computer.
- 11) Speed of a wave using a computer.
- 12) Electric fields and electric potential.
- 13) Measure voltages and frequencies with an oscilloscope.

CONTENTS:

Physics 22 “Introductory Physics II Laboratory” is the one-credit laboratory portion of the second semester of Lehigh University’s two-semester introductory physics sequence. In Physics 22, we cover three broad subject areas, electromagnetic phenomena, waves, and optics. Specific experiments include Electric Fields; Capacitor; Oscilloscope; AC Circuits; Amplifier; Converging Lens; Virtual Images; 2-Lens System; Prism; Grating; Mass of electron; Waves; Photoelectric Effect; and 2-slit/grating.

Prerequisites/Corequisites: Physics 22 requires prior credit for Physics 12 Lab and typically requires simultaneous enrollment in an accompanying lecture course for second semester introductory physics, Physics 21 or Physics 13.

Structure: During the first 13 weeks of the semester, we meet for one three-hour laboratory. During the final week of the semester, each student performs an 80-minute randomly-assigned laboratory experiment based solely on their laboratory notebook.

FINAL COMPETENCIES:

- 1) Introduce students to laboratory procedures and keeping an accurate record of their experiments and results.
- 2) Develop laboratory techniques and skills to perform experiments as accurately as possible.
- 3) Analyze the data to understand its significance and application to the phenomena under investigation.

Accommodations for Students with Disabilities:

If you have a disability for which you are or may be requesting accommodations, please contact both your instructor and the Office of Academic Support Services, Williams Hall, Suite 301 (610-758-4152) as early as possible in the semester. You must have documentation from the Academic Support Services office before accommodations can be granted.

The Principles of Our Equitable Community:

Lehigh University endorses The Principles of Our Equitable Community (http://www.lehigh.edu/~inprv/initiatives/PrinciplesEquity_Sheet_v2_032212.pdf). We expect each member of this class to acknowledge and practice these Principles. Respect for each other and for differing viewpoints is a vital component of the learning environment inside and outside the classroom.

Religious holidays: (<https://chaplain.lehigh.edu/node/6>)

1. Inform your instructor that you will be absent from class due to observance of religious holidays.
 2. Arrange with the instructor to complete assignments or any required make-up work.
- (Dates for many religious holidays are posted on the Chaplain's web page listed above.)

Student Senate Statement on Academic Integrity: We, the Lehigh University Student Senate, as the standing representative body of all undergraduates, reaffirm the duty and obligation of students to meet and uphold the highest principles and values of personal, moral and ethical conduct. As partners in our educational community, both students and faculty share the responsibility for promoting and helping to ensure an environment of academic integrity. As such, each student is expected to complete all academic course work in accordance to the standards set forth by the faculty and in compliance with the University's Code of Conduct.

WE FULLY ENFORCE ALL UNIVERSITY STANDARDS FOR ACADEMIC INTEGRITY.