

LABORATORY SYLLABUS

PHY 245 – Introduction to Physics

Credit Hours: 1

Farrington Building, Room 205

Lab Instructor: _____ (fill in name and email for future reference)

Email: _____

Physics Office: (936) 294-1601
Office Location: Farrington, room 204 D

Required Textbook: Physics 245 Lab Manual (available at Bookstore)

Required Supplies: Pencils, Notebook, Scantron “Quiz Strips” (15 question) and a calculator with trigonometric functions.

Lab Description and Goals: The PHY 245 Laboratory is designed to complement and enhance your classroom experience. A single grade is assigned for both components as a whole. The percentage contribution to this final grade from the laboratory will be announced by your primary instructor. Many concepts discussed in a theoretical or problem solving context during the main course will be experienced and tested here by firsthand contact. You will begin to develop the careful observational skills required for scientific lab work, and learn to correctly glean useful information and generalizations from those results. You will practice techniques for the reduction of systematic observing errors, and learn to properly account for the manner in which unavoidable random or statistical errors limit the applicability of your conclusions. You will practice effective communication of your procedure, observations, and conclusions by the construction of a detailed lab report for each session.

Attendance: Attendance is mandatory for each laboratory meeting. Makeup labs are not offered, and all missed work will result in a grade of zero. In extenuating circumstances, an excuse may be granted at the discretion of your lab supervisor (not instructor). No student should leave any lab meeting prior to being excused by their instructor.

Role of Lab Instructor: Your lab instructor's role is to facilitate the efficient and productive operation of the lab meeting. Although the lab is designed to work in tandem with your main course, the distinct objectives of each setting will cause certain subjects to be emphasized more or less strongly, or be presented in a different order. Your instructor will open each meeting (following the quiz) with a sufficiently detailed introduction or review to keep that day's material self contained. During operation of the lab, the instructor is available to aid in setup, clarify procedures, and provide general assistance. They will not however serve as a quick handy reference of packaged answers. It is intended that each student should develop a high degree of independence in their work. The lab instructor has no responsibility to meet with students outside of officially schedule meeting times. If disputes arise, the student should first attempt to resolve their complaint directly with their instructor. If this becomes impossible, or if external mediation is required, the matter should be taken for consultation with the lab supervisor.

Lab Schedule

Date	Laboratory Title
Week 1	Simple Harmonic Motion
Week 2	Standing Waves on Strings
Week 3	Air Resonance and Speed of Sound
Week 4	Measuring the Coefficient of Linear Expansion
Week 5	Laws of Reflection and Refraction
Week 6	Thin Lenses and Optical Instruments
Week 7	Double-Slit Interference and Single-Slit Diffraction
Week 8	The Diffraction Grating
Week 9	Boyle's law and The Ideal Gas Law
Week 10	Specific Heat and Calorimetry
Week 11	Change of Phase and Latent Heat
Week 12	Laboratory Final Exam

Lab Reports:

The largest portion of your grade (60%) will be determined by the completion and quality of your written lab reports. Each report will be graded for features of content such as effective communication, accuracy in details, calculational soundness, and legitimacy of conclusions. Points may be deducted for reports which are unclear visually, which do not adhere to the provided format, or which contain excessive grammar or spelling errors. Each report should be type written on standard paper. Bundle your report with any “fill in the blank” type pages from your lab manual, data sheets, and any required graphs or supplementary material. Graphs may be printed or hand drawn neatly, and must include captions, units and numerical scales. Reports are to be written INDIVIDUALLY by each group member, and excessive similarity between reports will result in a grade of zero. Reports are due at the start of the next lab meeting. Late work will not be accepted. The required format for the primary report is as follows:

- 1) Introduction – This section should consist of 1-2 paragraphs describing the intention and goals of the current lab exercise. Focus on the concepts to be tested, and the motivation for their study.
- 2) Procedure – This section should describe the experimental process in sufficient detail that the entire sequence would be clear to an outsider who had no participation in the experiment or access to the lab manual. It should be written in paragraph prose however, rather than the terse instructional format of the lab manual.
- 3) Data and Results – Provide here the results of your measurements. Choose a presentation format which is appropriate to the type of data presented. For example, if repeated measurements of a single or similar quantity have been made, a table may fit well. Avoid using this section to perform calculations. If such work is relevant to the report, it may be attached as an appendix.
- 4) Conclusions and Discussion – Present here the conclusions which you can draw from interpretation of the data presented in section 3. It is essential that all assertions made follow in a direct and logically consistent manner from the actual content of your own experiment. If you feel that some procedural error has clouded your results, then this may be discussed. However, you must not substitute a “desired conclusion” for actual results.
- 5) Questions – Provide your answers to any numbered questions appearing in the lab manual.

Quizzes:

A quiz will be given at the beginning of each lab meeting. This may cover any content from the previous lab meeting, and/or the pre-lab content of the current meeting. The quiz average, after dropping one low score, will account for 25% of the lab grade.

Final Exam:

A final exam covering material encountered during the semester’s experiments will be given as the last lab meeting. It is worth 15%.

Lab Rules:

All class members are expected to respect the proceedings of this laboratory, and the learning environment of their fellow students. This principle has several practical implications, some of which are enumerated below.

- 1) Do not cheat. Violators are subject to dismissal on a 1st offence.
- 2) Regular punctual attendance is expected of all class members.
- 3) **There is to be absolutely no use of Cellular phones** in the classroom, for either voice or text communication. Parents of young children and professionals who may reasonably expect some chance of an emergency contact should silence their phones, and discreetly excuse themselves if it becomes necessary to take a call. All others should turn their phones off entirely.

The following are university-wide official policies which apply to this course. Additional details are available at the web address: <http://www.shsu.edu/syllabus/>

Academic Dishonesty: Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom.

Classroom Rules of Conduct: Students are expected to assist in maintaining a classroom environment that is conducive to learning. Students are to treat faculty and students with respect. Students are to turn off all cell phones while in the classroom. Under no circumstances are cell phones or any electronic devices to be used or seen during times of examination. Students may tape record lectures provided they do not disturb other students in the process.

Student Absences on Religious Holy Days: Students are allowed to miss class and other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Students remain responsible for all work.

Students with Disabilities Policy: It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should visit with the Office of Services for Students with Disabilities located in the Counseling Center.

Visitors in the Classroom: Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.