Physics 2125 - Technical Physics 1 LAB
Fall 2023 - Room 301 STEM Building

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Office Hours: Mondays and Wednesdays 12pm-1pm, Tuesdays 1-3pm, or by appointment
Class Meetings: Monday 1:00 PM-3:50 PM or 4:00PM-6:50PM or Tuesday 1:00 PM-3:50 PM
Course Home Page: https://D2L.sfasu.edu

Course Description
Technical Physics I Laboratory (PHYS 2125) - 1 semester hour, 3 hours lab per week. Computation of lecture and laboratory grades into one grade; same grade recorded for both lecture and laboratory. Co-requisite: PHYS 2325. Lab fee required

Lab Exercises

<table>
<thead>
<tr>
<th>Week</th>
<th>Laboratory</th>
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<tbody>
<tr>
<td>1</td>
<td>Graphical Analysis of Experimental Data</td>
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<tr>
<td>2</td>
<td>Motion in a Straight Line</td>
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<tr>
<td>3</td>
<td>Motion Down an Inclined Plane</td>
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<td>4</td>
<td>Trajectory</td>
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<td>5</td>
<td>Addition of Vectors</td>
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<td>6</td>
<td>The Newton's 2nd Law Project</td>
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<tr>
<td>7</td>
<td>Conservation of Energy</td>
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<td>8</td>
<td>Conservation of Momentum</td>
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<td>9</td>
<td>Centripetal Force</td>
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<tr>
<td>10</td>
<td>Archimedes’ Principle</td>
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<td>11</td>
<td>Phase Changes in Water</td>
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<tr>
<td>12</td>
<td>Thermal Expansion</td>
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<tr>
<td>13</td>
<td>Lab Final Exam in Room 301</td>
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</table>

Grading

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Quizzes (Part of your Lab Report Grade)</td>
<td>75%</td>
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<tr>
<td>Lab Reports</td>
<td>75%</td>
</tr>
<tr>
<td>Final</td>
<td>25%</td>
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The laboratory score is combined with the lecture grade and the same grade assigned for lecture and grade. Students are required to bring his/her textbook, lab manual, and lab notebook to every laboratory session. Much of the lab experiment background will be taken from the textbook by the student.

Quizzes
Quizzes may be given at the beginning or end of each lab period. Quiz grades are important and can help your overall grade so do your best.

Lab Notebook
Each student is required to bring his/her own lab notebook to every lab session. The purpose of the lab notebook is for recording notes about the experiment, data collected during the experiment, drawings, formulas, or anything that is needed to help the student write their lab report that is due the following week. A small loose-leaf binder is preferred. Each experiment should have its own sheet of paper including experiment title and date. Lab notebooks will be turned in for a grade at the end of the semester as part of your overall lab grade. Lab notebooks, ONLY, may be used by the student on the lab final, so take good notes.
Lab Reports
Lab reports will be required from each lab experiment. Lab reports are due at the beginning of the following lab period (the next week). Every person is responsible for turning in his/her own individual lab report even if there is group work involved. Lab reports should include the following sections:

1. **Title page.** The title and the following are Centered on the page: the name of the student, PHYS 2125 Laboratory, and the date the experiment was performed.

2. **Purpose.** Includes the reason why you conducted the experiment i.e. what laws or methods you studied.

3. **Materials Used.** List of all apparatus and equipment used in the experiment.

4. **Procedure.** Detailed step by step description of the procedure that was used for the experiment. Use paragraph form. This is what was done in the experiment, not copied directly from the lab sheet. Make sure to include enough detail so that the experiment would be repeatable with similar results. Put it in your own words.

5. **Formulas and Sample Calculations.** Include all formulas used during the experiment including sample calculations for each calculation made. Use the data from the experiment for each sample calculation including units. Show derivations if necessary.

6. **Data Tables.** Data are constructed during the experiment. Must be in table format. Use grid lines for every table. Show all the results from any calculations done. Do **not** put lab manual pages in the lab report.

7. **Graphs.** Each graph shall take up the whole sheet of graph paper and only one graph per page. Graphs must include the title of the graph, labels on the x & y axes including units, and draw a best-fit line not a connect-the-dot line. Show tangent lines on graph for calculating slope when required. Use a ruler with a mm scale and protractor! The scale must be indicated on each graph.

8. **Answers to Questions.** Write out any questions asked and then answer them.

9. **Conclusion.** The Conclusion is a brief description of the results of the experiment. Include errors and error analysis. State whether the experiment confirms the tested hypothesis.

Reports must be typed. Do not put any lab manual sheets in your lab report. Use headings above for each section of your report. Do not write on the back of the page. Use superscripts and subscripts in your word processor. It is also recommended to use Equation Editor in Microsoft Word for your equations. Check your grammar and spelling.

Lab Final
The lab final is a comprehensive exam covering all the lab experiments. If you miss a lab, you are responsible for finding out any information needed to answer questions on the lab final before the day of the final.

Attendance Policy
Attendance will be taken each lab period. Make sure to come to class on time because quizzes will be given during the first five minutes of the class period. All unexcused absences will result in a zero for the lab report and quiz for that day. Excused absences must be approved by the instructor list on this syllabus within one week of the missed lab.

Email Communication
All official course communication will be made using your SFA titan account. You must use your SFA email account for all communications. You will be notified via your SFA titan email account about grades and attendance. You can look up your SFA email account or setup email forwarding using this link: [https://apache.sfasu.edu/accountman/](https://apache.sfasu.edu/accountman/)
Classroom Policies
For the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regard to all course interactions. For example:

- Be considerate toward your classmates and instructor and arrive to class on time.
- Do not leave class early and do not rustle papers in preparation to leave before class is dismissed.
- Avoid classroom distractions. Be attentive in class: stay awake, do not read newspapers, etc.
- If you are late to class or must leave early please inform your instructor in advance (enter or leave quietly, don’t walk across the front of the classroom (use the side aisles) and don’t walk in front of the projector).
- Cell phones, pagers and other communication devices must be turned off during class.
- Play well with others. Be kind and respectful to your fellow students and your teachers.

Use of cell phones in class or causing other classroom distractions will count as one unexcused absence.

Academic Integrity (A-9.1)
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit. Please read the complete policy at http://www.sfasu.edu/policies

Withheld Grades Semester Grades Policy (A-54)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

Mental Health and Wellness
SFASU values students’ mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:
SFASU Counseling Services
www.sfasu.edu/counselingservices
3rd Floor Rusk Building
936-468-2401
Acceptable Student Behavior
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.
Please read the complete policy at http://www.sfasu.edu/policies

Student Learning Outcomes
By the end of the course, a successful student will be able to:
• Demonstrate the ability to apply Newton’s laws to the study of mechanical systems.
• Describe the laws of thermodynamics.
• Solve mechanics and thermodynamics problems using conservation principles.

Program Learning Outcomes
• The student will demonstrate proficiency in the basic and applied fields of physics.
• The student will develop good experimental technique, including proper setup and care of equipment, conducting experiments, and analyzing results in order to observe physical phenomena, assess experimental uncertainty, and make meaningful comparisons between experiment and theory.
• The student will develop effective written and oral communications skills, especially the ability to transmit complex technical information in a clear and concise manner.