Conceptual Physics I (General Physics I) Laboratory

PHYSICS 1105L – Spring 2024

Laboratory Syllabus

GENERAL COURSE INFORMATION

Name and Department: Dr. Harry D. Downing, Professor of Physics and Regents Scholar, Department of Physics, Engineering and Astronomy, PHYS 1105 Lab Supervisor
Ms. Katie Bailey, Visiting Lecturer, Department of Physics, Engineering and Astronomy, PHYS 1105 Co-Lab Supervisor

Instructor Homepage: http://faculty.sfasu.edu/downingharry/downing.htm

Office: Room 207M Cole STEM Building

Student/Office Hours: 2-3 M, 12-1 T, 3-4 W&F, or by appointment/207M Cole STEM Bldg (Make an Appointment)

Phone, Fax, E-mail: 468-2290 or 468-3001, Fax: 468-4448, hdowning@sfasu.edu

Class Meeting Times and Place/Modality: See full listing below, STEM 214/TRSFA

Physics Homepage: http://www.sfasu.edu/academics/colleges/sciences-math/physics-engineering-astronomy/academics/physics

TEXT: PHYS 1105 Laboratory Manual (only sold in local bookstores)

Lab meets in Room 214, Ed and Gwen Cole STEM Bldg. at the following times:
Mondays – Sec 21 (1:00-2:50)
Tuesdays – Sec 24 (12:30-2:20), Sec 25 (2:30-4:20)
Wednesdays – Sec 28 (1:00-2:50), Sec 29 (3:00-4:50)

COURSE DESCRIPTION

1 semester hour, 2 hours lab per week. Lecture and laboratory grades are computed into one grade and the same grade is recorded for both lecture and lab. Co-requisite: PHYS 1305.

The laboratory exercises and material covered in the associated lectures warrant this lecture and lab as being worthy of 4 semester hours credit.

PROGRAM LEARNING OUTCOMES

This is a general education core curriculum course and no specific program learning outcomes for the physics program are addressed in this course.

STUDENT LEARNING OUTCOMES:

By the end of the course, successful students will be able to:

1. Recognize that the world in which they exist can be described by a few natural laws, (SLO 1)
2. Demonstrate a basic familiarity with concepts of waves, sound, light, and mechanics, (SLO 2)
3. Describe natural phenomena in a conceptual manner rather than mathematically, (SLO 3)
4. Demonstrate skills developed in critical thinking, communication (written and visual), empirical and quantitative analysis, and teamwork, (SLO 4)

MATERIALS

Each student MUST bring the following supplies to every lab session.
1. Pencil and eraser
2. Laboratory Manual (PHYS 1105 only sold in local bookstores)
3. Calculator (bring to every lab!)

(If you do not bring the required supplies for a particular lab, you will not be able to complete the lab. Please don’t forget to bring them!)
Laboratory Safety Quiz
All students enrolled in this lab must pass the Lab Safety Quiz that is available on D2L. At the beginning of the second week of lab, any student who has not completed and passed the Lab Safety Quiz will be prohibited from performing the lab.

General Education Core Curriculum
The Texas Higher Education Coordinating Board has identified six core learning objectives: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives. Four will be covered in this course.

By enrolling in PHYSICS 1105L you are also enrolling in a Core Curriculum Course that fulfills the core objectives 1-4 requirement.
The chart below indicates: (a) The core objectives that are required to be taught in this course per the Texas Higher Education Coordinating Board (THECB), (b) How the required core objectives will be addressed.

Core Curriculum Objective Table

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>How the Core Objective Will be Addressed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking Skills</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation, and synthesis of information.</td>
<td>In the experiment The Simple Pendulum</td>
</tr>
<tr>
<td>Communication Skills</td>
<td>To include effective development, interpretation, and expression of ideas through written, oral, and visual communication.</td>
<td>In the experiment The Simple Pendulum</td>
</tr>
<tr>
<td>Empirical and Quantitative Skills</td>
<td>To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
<td>In the experiment The Simple Pendulum</td>
</tr>
<tr>
<td>Teamwork</td>
<td>To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.</td>
<td>In the experiment The Simple Pendulum</td>
</tr>
</tbody>
</table>

COURSE REQUIREMENTS AND GRADING POLICY
1. As mentioned in the General Bulletin and in your lecture syllabus, your lecture and laboratory grades are computed into one grade, and the same grade is recorded both for your lecture credit (3 hours) and for your lab credit (1 hour). The lab accounts for 25% of this overall grade. Half of this 25% will come from the average of 10-12 lab exercises. The other half of this 25% will come from your lab final which you will take with your lecture final. (The time allowed for final exams is sufficient to take both of these exams. If you have concerns, contact
your lecture instructor.) This lab final constitutes a major portion of your overall grade in PHYS 1305 and 1105. (See lecture syllabus for further information.)

2. Graded lab reports will be returned to you in class. It is your responsibility to check your grades in order to identify errors. Upon the return of your graded reports, you have 10 days (2 days in the summer) from then to bring any errors noted to the attention of your laboratory assistant.

3. If you have obtained a permit from the chair of the Department of Physics, Engineering and Astronomy to take the lab only, then your PHYS 1105 lab grade (for one hour credit) will be determined thusly: 50% of the grade will be based on the lab experiment average and 50% of the grade will come from the lab final. (To qualify for taking the lab without the co-requisite lecture, one must already have credit for the lecture and permission of the department chair.)

ATTENDANCE POLICY/LAB ABSENCES

We realize that occasionally there are legitimate reasons for missing a lab such as illness, family emergency and participation in certain university-sponsored events. Please read the following absence policy carefully.

1. If you will be missing lab because of an approved university-sponsored event, you must inform the laboratory supervisor (Dr. Downing) at least one week before the absence.

2. Students are responsible for providing timely documentation satisfactory to the laboratory supervisor for each absence. You have one week after missing a lab to bring a written excuse for an absence to Dr. Downing (STEM Building 207M). If you do not bring a written excuse within one week, the absence cannot be excused.

3. Students will receive a grade of zero for each UNEXCUSED lab absence. Students with five unexcused lab absences or more will receive a WH or F in both the lecture course and the lab course.

4. Whether an absence is excused or unexcused, a student is still responsible for all course content that will be covered on the lab final.

Academic Integrity

The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.
Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

**Withheld Grades Semester Grades Policy (5.5)**
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 coursework 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 to compute the grade point average. For additional information, go to https://www.sfasu.edu/policies/course-grades-5.5.pdf.

**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 promptly may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

**Student Wellness and Well-Being**
SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, 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:**
The Dean of Students Office (Rusk Building, 3rd floor lobby)
www.sfasu.edu/deanofstudents
936.468.7249
dos@sfasu.edu

SFA Human Services Counseling Clinic Human Services, Room 202
www.sfasu.edu/humanservices/139.asp
936.468.1041

The Health and Wellness Hub “The Hub”
Location: corner of E. College and Raguet St.

To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:
- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

www.sfasu.edu/thehub
936.468.4008
thehub@sfasu.edu

Crisis Resources:
- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
- johCrisis Text Line: Text HELLO to 741-741

Student Code of Conduct: Policy 10.4
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. 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 policy 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 iCare: Early Alert Program at SFA. Information regarding the iCare program is found at http://www.sfasu.edu/judicial/earlyalert.asp or call the office at 936-468-2703.

Course Contact Hours and Study Hours (Credit Hour Justification)
Physics 1305 lecture part carries 3 credits and meets for 150 minutes each week for 15 weeks. The co-requisite laboratory part of the lecture meets 1 hour and 50 minutes each week for 12 weeks plus meets for a 2-hour final examination. The lecture portion will earn you 3 hours of credit and the co-requisite lab will earn 1 hour of credit. The grades for the lecture and lab portions of the course are combined as one grade and the same grade is recorded for the lecture credit (3 hours) and the lab credit (1 hour). To enhance their critical thinking and quantitative reasoning, students are provided with the list of the reading materials which include outside assignments and a number of problems from each chapter throughout the semester. At the conclusion of each chapter (every week), every problem will be presented with feedback from students. Four exams (including final) are given to the students during the semester in order to measure their understanding of the covered materials. Students are expected to prepare prior to each lecture video and lab (literature and concepts), attend lab hours (conduct experiments/analyze data provided), and provide a finished lab report. These activities, inclusive of lab expectations, average at a minimum 10 hours of work each week beyond classroom lecture and laboratory hours.

Laboratory Safety Quiz
All students enrolled in this lab must pass the Lab Safety Quiz that is available on D2L. At the beginning of the second week of lab, any student who has not completed and passed the Lab Safety Quiz will be prohibited from performing the lab.
LABORATORY COURSE CALENDAR  
(All experiments relate to SLOs 1-4)

<table>
<thead>
<tr>
<th>Week of</th>
<th>Experiment</th>
<th>Week of</th>
<th>Experiment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 29</td>
<td>Superposition of Waves</td>
<td>Mar 18</td>
<td>Telescopes</td>
</tr>
<tr>
<td>Feb 5</td>
<td>The Vibrating String</td>
<td>25</td>
<td>Graphing</td>
</tr>
<tr>
<td>12</td>
<td>The Organ Pipe</td>
<td>Apr 1</td>
<td>The Simple Pendulum</td>
</tr>
<tr>
<td>19</td>
<td>Types of Spectra</td>
<td>8</td>
<td>Addition of Vectors</td>
</tr>
<tr>
<td>26</td>
<td>The Ray Box: Part One</td>
<td>15</td>
<td>Linear Momentum</td>
</tr>
<tr>
<td>Mar 4</td>
<td>The Ray Box: Part Two</td>
<td>22</td>
<td>Centripetal Force</td>
</tr>
</tbody>
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CLASSROOM POLICIES

Each day’s lab begins with a brief presentation by the teaching assistant (15-30 minutes). Important instructions, theory, and procedures for completing the lab exercise are given at that time. At the conclusion of the presentation students will then complete the lab exercise under the guidance of the lab assistant.

1. Come prepared! Read over the lab exercise before coming to class (see calendar above) and bring required materials.
2. Review the D2L PowerPoint show associated with each day’s lab.
3. Arrive on time to avoid missing important instructions and/or possible pop quizzes!
4. **All electronic communication devices must be turned off during class.**
5. Each lab must be completed during the lab period.
6. There will be no make-up labs.
7. Transfers are allowed for those with extenuating circumstances. (No transfers are possible in the summer.) (Only Dr. Downing can approve transfers.)
8. **No food or drink allowed in lab.**