General Physics I Laboratory
PHYSICS 101 – Spring 2020
Laboratory Syllabus

Laboratory Instructor/Supervisor: Dr. Harry Downing, Professor/Regents Scholar, PHY, EGR & AST Dept.
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Student/Office Hours: M(2-3), T(9:30-10:30, 12:30-1:30), W(10-11), R(10:30-11:30), F(10-11) or by appt.
Co-Laboratory Instructor/Supervisor: Mr. Ali Piran, Physics & Astronomy Dept.
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Student/Office Hours/Office: 8-9, 2-3 M; 3:30-4:30 T, 9-10 & 3-4 W; 8-9 R, or by appointment

Physics Homepage: www.physics.sfasu.edu
Lab Course Home Page: http://www.faculty.sfasu.edu/downingharry/101LabSyllabus.htm
Text: PHY 101 Laboratory Manual (only sold in local bookstores)

Lab meets in Room 214 Ed and Gwen Cole STEM Bldg. at the following times:
Mondays – Sec 20 (12:00-1:50), Sec 21 (2:00-3:50), Sec 22 (4:00-5:50), Sec 23 (6:00-7:50)
Tuesdays – Sec 24 (12:30-2:20), Sec 25 (2:30-4:20), Sec 26 (4:30-6:20), Sec 27 (6:30-8:20)
Wednesdays – Sec 28 (12:00-1:50), Sec 29 (2:00-3:50), Sec 30 (4:00-5:50), Sec 31 (6:00-7:50)
Thursdays – Sec 32 (12:30-2:20), Sec 33 (2:30-4:20), Sec 34 (2:00-3:50), Sec 35 (6:30-8:20)

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: PHY 101. Lab fee required.

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.

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.

By enrolling in PHY 101 Lab you are also enrolling in a Core Curriculum Course that fulfills the Empirical and Quantitative Skills requirement. You will see this course on your D2L list. At one point during the semester, you will receive an assignment that fulfills both the requirements of this course and the needs of Stephen F. Austin State University’s Core Curriculum Assessment Plan with the Texas Higher Education Coordinating Board. When you complete this one assignment, you need to upload the assignment to both your standard course Dropbox determined by your Instructor and the “Core Curriculum” Dropbox. The Core Curriculum Dropbox will be identified by the Objective for which work is being collected. (Examples: Critical Thinking, Teamwork, Social Responsibility Empirical & Quantitative Skills, Personal Responsibility, Communication Skills-Written, Communication Skills-Written & Visual, and Communication Skills- Oral & Visual.) Please note that this only applies to the approved assignment. All other assignments should be submitted according to regular class operations. If you have any questions, please see your Instructor or the Office of Student Learning and Institutional Assessment.
When you complete the assignment mentioned above (if required), you will upload the assignment to both the PHY 101 Lab dropbox and the Empirical and Quantitative Skills dropbox.

Please note that this only applies to the specific assignment listed in the matrix below. All other assignments should be submitted according to regular class operations.

If you have any questions, please see your instructor or contact the Institutional Effectiveness Office at (936) 468-1130.

The chart below indicates the core objectives addressed by this course, the assignment(s) that will be used to assess the objectives in this course and uploaded to the D2L Empirical and Quantitative Skills dropbox this semester, and the date the assignment(s) should be uploaded to the D2L Empirical and Quantitative Skills dropbox. Not every assignment will be submitted for core assessment every semester. Your instructor will notify you which assignment(s) must be submitted for assessment in the D2L Empirical and Quantitative Skills dropbox.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Title</th>
<th>Date Due in D2L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking Skills (CO 1)</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>The Simple Pendulum Project</td>
<td>For Spring 2020 No University Assessment</td>
</tr>
<tr>
<td>Communication Skills (CO 2)</td>
<td>To include effective development, interpretation and expression of ideas through written, oral, and visual communication.</td>
<td>The Simple Pendulum Project</td>
<td></td>
</tr>
<tr>
<td>Empirical and Quantitative Skills (CO 3)</td>
<td>To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
<td>The Simple Pendulum Project</td>
<td></td>
</tr>
<tr>
<td>Teamwork (CO 4)</td>
<td>To include the ability to consider different points of view and to work</td>
<td>The Simple Pendulum Project</td>
<td></td>
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</tbody>
</table>

The following core objectives will be covered periodically in PHY 101 laboratory:

**Critical Thinking:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information, (CO 1)

**Communication Skills:** to include effective development, interpretation and expression of ideas through written, oral and visual communication, (CO 2)

**Empirical and Quantitative Skills:** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions, (CO 3)

**Teamwork:** to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal, (CO 4)
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. Includes COs 1, 2, 3, 4)

TEXT: PHY 101 Laboratory Manual (only sold in local bookstores)

MATERIALS
Each student MUST bring the following supplies to every lab session.
1. Pencil and eraser
2. Laboratory Manual (PHY 101 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!)

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 the following: 3 times the grade for lab 9 plus your 9 highest grades from the other 11 labs. The other half of this 25% will come from your lab final which you will take with your lecture final. This lab final constitutes a major portion of your overall grade in PHY 101. (See lecture syllabus for further information.)
2. Each experiment grade will be based on the experiment and a possible pop quiz. Pop quizzes can include questions over the present as well as the most recent laboratory exercise.
3. Your experiment average will be drastically affected if you have three or more absences and any of them are unexcused or if you fail to do Experiment #9, The Simple Pendulum Project.
4. Experiment grades and absences will be posted in D2L on a regular basis. It is your responsibility to check these postings in order to identify errors in the most recently posted grades or absence designations. You have 10 days (2 days in the summer) from the day of each posting to correct any such errors. Email notifications will be sent after each new posting.
5. If you have obtained a permit from the chair of the Department of Physics, Engineering and Astronomy to take the lab only, then your PHY 101 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 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 (Room 207A, Ed and Gwen Cole STEM Building). 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.

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/academic_integrity.asp

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/

Credit Hour Justification
Physics 101 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. The lecture portion will receive 3 hours of credit and the co-requisite lab will receive 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 and lab (literature and concepts), attend lab hours (conduct experiments), 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 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 27</td>
<td>Superposition of Waves (CO 3)*</td>
<td>Mar 16</td>
<td>Telescopes</td>
</tr>
<tr>
<td>Feb 3</td>
<td>The Vibrating String</td>
<td>23</td>
<td>Graphing</td>
</tr>
<tr>
<td>10</td>
<td>The Organ Pipe</td>
<td>30</td>
<td>The Simple Pendulum Project†</td>
</tr>
<tr>
<td>17</td>
<td>Types of Spectra</td>
<td></td>
<td>(COs 1-4)</td>
</tr>
<tr>
<td>28</td>
<td>The Ray Box: Part One</td>
<td>Apr 6</td>
<td>Addition of Vectors **</td>
</tr>
<tr>
<td>Mar 2</td>
<td>The Ray Box: Part Two</td>
<td>13</td>
<td>Linear Momentum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>Centripetal Force</td>
</tr>
</tbody>
</table>

*Instruction on how to correctly collect and analyze scientific data will begin here and will continue throughout the laboratory experience. By the time you get to The Simple Pendulum Project you will have adequate development of empirical and quantitative skills to satisfactorily complete the project.

†This experiment is more comprehensive than the others and may count as 25% of the lab experiment grade (your lab assistant will provide more information). It is designed to allow students to demonstrate their skills in critical thinking, communication, empirical and quantitative analyses, and teamwork. Students will have two weeks to complete a formal report using word processors and spreadsheets, and the formal report (hardcopy) must submitted to the lab assistant for grading. More instructions will be given by the laboratory assistant.

**The Thursday lab will do this experiment on April 30.

Note: Your lab final exam will be given during your last lecture class.

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 online PowerPoint show associated with each day’s lab at http://www.physics.sfasu.edu/downing/101LabSyllabus.htm.
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 except for The Simple Pendulum Project.
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 Mr. Timmons, Mr. Piran, and Dr. Downing can approve transfers.)
8. No food or drink allowed in lab.
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.