

General Physics I

PHY 101.001 Syllabus – Fall 2018



Instructor: Dr. Harry D. Downing, Professor and Chair of the Department of PHY, EGR, & AST

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Office Hours: 10-10:40 M-F; 2:30-3:30 T-R, or by appointment

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Class Meeting Times and Place: 11:00-11:50 MWF, Room 334 Miller Science Building

Physics Homepage: www.physics.sfasu.edu

Course Home Page: <http://www.physics.sfasu.edu/downing/101HomePage.htm>

Texts and Accessories/Materials: Conceptual Physics 12th Edition by Paul G. Hewitt and PHY 101 Lab Manual (sold only in local bookstores)

Course Description

Presentation with a minimum of mathematics of the basic concepts of mechanics, light and sound. May not be used to meet graduation requirements by students majoring in the College of Sciences and Mathematics (except for students majoring in Computer Information Systems or Information Technology). Lecture and laboratory grades are computed into one grade and the same grade is recorded for both lecture and lab. Co-requisite: PHY 101L.

Program Learning Outcomes

This is a general education core curriculum course and no specific program learning outcomes for this major 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 101.001 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 may 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 (if it is required), 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.

When you complete the assignment mentioned above (if required), you will upload the assignment to both the PHY 101.001 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 Office of Student Learning and Institutional Assessment 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.

Core Objective	Definition	Course Assignment Title	Date Due in LiveText
Critical Thinking Skills (CO 1)	To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.		
Communication Skills (CO 2)	To include effective development, interpretation and expression of ideas through written, oral, and visual communication.		
Empirical and Quantitative Skills (CO 3)	To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.	The Simple Pendulum Project	For Fall 2018 No University Assessment
Teamwork (CO 4)	To include the ability to consider different points of view and to work		

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)

Course Requirements:

- ◆ Students are required to study the following chapters from the course text: 19-21 (Exam 1), 26, 30, 27-29 (Exam 2), 2-5 (Exam 3), 6-10 (Final Exam). (SLOs 1-3 supported here.)
- ◆ Students will complete 12 laboratory exercises in the co-requisite lab and take a final exam over them at the end of the semester. (SLOs 1-4 supported here [4 includes COs 1-4]).
- ◆ Homework assignments will be given four times during the semester and each will be due prior to a major exam. These assignments will reinforce the material to be covered on each exam and will serve as bonus points in the course. Class attendance and participation will provide bonus points as well. (SLOs 1-3 supported here.)
- ◆ There will be four major tests including the final (about 40-50 multiple choice questions per exam). **Each student must provide a SCANTRON form number 882-E in order to take each test**

including the final. Students should become familiar with the policies on cheating and plagiarism at <http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf>.

- ◆ Make-up of major exams will be available to those students who have excused absences as defined by Policy 6.7, <http://www.sfasu.edu/policies/class-attendance-and-excused-absence-6.7.pdf>
- ◆ Students will have one week after exam scores are posted to discuss possible errors in the grading.
- ◆ For each student, lecture and lab scores will be combined to determine an overall grade in PHY 101. Each student will then receive this overall grade for both lecture and lab.
- ◆ A maximum of 40 **bonus points** will come from attendance, classroom exercises, and the homework.
- ◆ PHY 101L is a co-requisite to PHY 101. (New editions of the lab manual are available in local bookstores.)

The Simple Pendulum Project

This project is a specially designed experiment in the co-requisite lab that will allow students to demonstrate their mastery of **critical thinking skills, communication skills, empirical and quantitative skills**, and **teamwork skills**. Unlike other experiments performed during the semester, students will (1) design part of this experiment and will (2) be given two weeks to submit a formal, detailed write-up of the experiment. They will make use of word documents and spreadsheets to complete the project. Prior to this project students will be doing experiments in the lab as members of teams of no less than three students and no more than five. They will have experienced **teamwork** practice for at least 6-8 weeks prior to this project. These earlier experiments will allow students to also hone their skills in **critical thinking, communication, and empirical and quantitative analyses**. **The Simple Pendulum Project** will allow students to demonstrate their **critical thinking skills** through the design of a simple experiment (inquiry) to determine the acceleration due to gravity, through the collection of relevant data, and through the drawing of conclusions (evaluation and synthesis) from the results. They will do this during their regular scheduled lab time which is one hour and fifty minutes in length. The formal lab write-up associated with this project will require each student to write results and draw conclusions (**written communications**) based on data tables and graphs (**visual communications**) produced in the exercise. Students' **empirical and quantitative skills** will be demonstrated by accuracy of measurements, manipulation and analysis of numerical data, needed calculations, error analyses and informed conclusions. This project involves an experiment where successful **teamwork** is required to set-up and conduct the experiment. Each team member must be willing to consider other's points of view and to work effectively with other members of the team to develop a proper experimental procedure to accomplish their goal. Data will be collected as a team. Each team member must complete the take-home part of this project independently of his/her teammates.

Grading Policy:

Each student's grade is based on an 800 point scale. These points come from four major exams worth 150 points each for a total of 600 points. The lab experiment average is worth 100 points. (25% of these points will come from **The Simple Pendulum Project**.) The lab final (given with the lecture final) is worth 100 points. This gives a total of 800 points possible in the course. (For each student, lecture and lab scores will be combined to determine an overall grade in PHY 101. Each student will then receive this overall grade for both lecture and lab.) The homework, class attendance and participation combine for a total of about 40 bonus points. The grading scale is

720-800 – A
640-719 – B
560-639 – C
480-559 – D
0-479 – F

Attendance Policy:

Students are expected to attend all lectures and all laboratory exercises. In general, absences can be excused for reasons including illness, family emergency or participation in certain university-sponsored events. Absences from exams and laboratory exercises are the only absences that require documentation. Bonus points are used to encourage class attendance. Make-up exams will be given to those who have excused absences.

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/>.

Course Calendar (Lecture) (All text material covered relates to SLOs 1-3) (COs are individually noted):

Week	Topics Covered
Week 1	Course Introduction Lecture and assigned reading on critical thinking in physics (CO 1) Vibrations and Waves Instructor led discussion on critical thinking (CO 1)
Week 2	Vibrations and Waves Sound
Week 3	Sound Lecture and instructor led discussion on written and visual communications (CO 2) Musical Sounds
Week 4	Musical Sounds Homework Assignment 1 Due Exam 1
Week 5	Properties of Light Light Emission
Week 6	Light Emission Lecture and assigned reading on teamwork (CO 4) Color Instructor led discussion on teamwork (CO 4)
Week 7	Reflection and Refraction
Week 8	Light Waves
Week 9	Homework Assignment 2 Due Exam 2 Newton's First Law of Motion - Inertia
Week 10	Linear Motion Newton's Second Law of Motion The Vibrating String Project begins in lab (SLO 4 and COs 1, 2, 3, 4)
Week 11	Newton's Second Law of Motion Newton's Third Law of Motion Momentum
Week 12	Momentum Energy Homework Assignment 3 Due Exam 3
Week 13	Energy
Week 14	Rotational Motion
Week 15	Gravity Homework Assignment 4 Due Projectile and Satellite Motion
Week 16	Final Exam Week – Exam 4

Each week you should spend about 6 hours reading the text before the lecture, taking notes in class and improving those notes by reading the text again. You should also study the review questions and exercises at the end of each chapter. A general “rule of thumb” is to study two hours outside of class for every hour spent in class.

Course Calendar (Laboratory):

LABORATORY COURSE CALENDAR (All experiments relate to SLOs 1-4)

<u>Week of</u>	<u>Experiment</u>	<u>Week of</u>	<u>Experiment</u>
Sep 3	Superposition of Waves (CO 3)*	Oct 15	Telescopes
10	The Vibrating String	22	Graphing
17	The Organ Pipe	29	The Simple Pendulum Project[†]
24	Types of Spectra		(COs 1-4)
Oct 1	The Ray Box: Part One	Nov 5	Addition of Vectors
8	The Ray Box: Part Two	12	Linear Momentum
		26	Centripetal Force

*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 will count as 25% of the lab experiment grade. 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 be submitted to the lab assistant for grading. **More instructions will be given by the laboratory assistant.**

Note: Your lab final exam will be given with your lecture final exam.

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, and 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. Failure to do so could result in confiscation and loss of bonus points.
- Be kind and respectful to your fellow students and your teachers.

EMAIL COMMUNICATIONS

Make sure you always use your SFA e-mail account for network correspondence. Messages from your instructor will be sent to your SFA email account periodically. You may forward e-mail from your SFA e-mail address to another address of your choice. To do this, use this link: <http://development.sfasu.edu/mysfa/o365/student/forwarding-email/>

Variations Across Different Sections

Only minor variations exist across different sections of PHY 101. Some sections:

- Cover Chapter 2 and Chapter 10 together.
- Vary in the number of bonus points possible. The variation is from 40-60.

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.

Hints for Success in Physics 101

- ✓ You will benefit much more from lecture if you **read the text** material before coming to class.
- ✓ Attend class and take notes. Don't try to copy everything I say, write on the board, or show in slides or video. Leave enough space in your notes to complement them through a thorough **reading of the text** material. I generally present material in class in the same order as the text. This makes it easier for you to augment your notes.
- ✓ Make use of the material at the end of each chapter.
- ✓ As a test draws near, **read** the applicable chapters again a few days prior to the exam. On the night before an exam rely on your notes and the material at the ends of the chapters and try to attend the review session that I conduct.
- ✓ If you have problems trying to comprehend this material, please do not hesitate to come and visit with me. I have truly enjoyed working with students, and often I have found that I am most effective with them when they have brought their questions and problems to me in my office.
- ✓ **The most important things you can do are read the book and attend class and be attentive.**

Bring a copy of this syllabus to every class meeting.