### GENERAL PHYSICS II (PHYSICS 1307)

#### PHYSICS 102 SEC.01

**SPRING 2020**

INSTRUCTOR: Ali A. Piran, Tel: 468-2391  apiran@sfasu.edu

OFFICE: Room 207 J- STEM BUILDING

STUDENT HOURS: M 8-9 am, M 2-3 pm T 3:30-4:30 p.m. W 9-10 am, W 3-4 pm. TH 8-9 am or by appointment

DEPARTMENT OF PHYSICS, ENGINEERING & ASTRONOMY

MEETING TIME: 5:00 pm-7:30 pm T, Room 103 STEM BUILDING

TEXT: *Conceptual Physics* (12th or 11th edition) Paul G. Hewitt

LAB MANUAL: Physics 102 lab manual (spring 2020)

The objective of this course is to introduce the basic concepts of the properties of matter, heat, electricity and magnetism, and modern physics with a minimum of mathematics utilized.

All exams are multiple choices and require Scantron 882-ES. The total possible points are 800. The Grading Scale is below:

- 150 points- Lecture Exam #1 (Ch 11, 12, 13, and 14)
- 150 points- Lecture Exam #2 (Ch 15, 16, 17, and 18)
- 150 points- Lecture Exam #3 (Ch 22, 23, 24, and 25)
- 150 points Final Lecture Exam (Ch 32, 33, 34.)
- 200 points- Lab Experiments + Lab Exam Final

800 Total Points + bonus points to determine semester grade

**Physics 102 Lecture and Laboratory Exam will be given on May 5 in Room 103 at 4:15-6:45 pm**

Lecture and laboratory grades are computed into one grade, and the same grade is recorded for both lecture and laboratory.

The final grade will be assigned according to the following scale:

- 720-800 A
- 480-559 D
- 640-719 B
- 000-479 F
- 560-639 C

Possible errors made in examination scoring must be discussed within one week of the date the result of the examination is posted. No corrections will be made to the examination grade after that period of time.

No make-up exams will be offered; however, with a written excused absence, a make-up exam may be given (with the instructor’s discretion) or the final exam may substitute for one missed exam. You must discuss this method with your instructor within one week of the missed exam.

The date and the time of the Final Exam cannot be altered. The Final Exam must be taken at the Same Date and Same Time as indicated in class Syllabus (University Calendar).

GOOD LUCK!
DEPARTMENT OF PHYSICS AND ASTRONOMY
GENERAL PHYSICS II (PHYSICS 1307)
PHYSICS 102 LECTURE SYLLABUS - SPRING 2020

Lecture Instructor:  Mr. Ali A Piran.
Office: Room 207 J STEM BUILDING
Office Hours:  M 8-9 am, M 2-3 pm T 3:30-4:30 p.m. W 9-10 am,  
              W 3-4 pm. TH 8-9 am or by appointment
Phone/Fax/E-mail:  468-2391 or 468-3001/ Fax: 468-4448 Email: apiran@sfasu.edu

                                and PHY 102 Lab Manual (Spring 2020-sold only in local bookstores)

Course Description
General Physics II (PHY 1307) or Physics 102
General Physics II - (PHYS 1307) - Continuation of PHY 101 presenting with a minimum of mathematics the basic concepts of  
heat, electricity, magnetism and certain aspects of modern physics. This course may not be used to meet graduation requirements  
by students majoring in the College of Sciences and Mathematics. Computation of lecture and laboratory grades into one grade;  
same grade recorded for both lecture and laboratory. Co-requisite: PHY 102L.

This course presents a broad survey of the principles and basic concepts of the properties of matter, heat, electricity and  
magnetism, and modern physics and will illustrate the logic and reasoning upon which these principles are based. A great  
deal of emphasis is placed on the understanding of these concepts. Students should become more aware of the fantastic  
natural phenomena that are occurring around them everyday.

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 General Physics II (PHY 1307) or Physics 102, you are also enrolling in a Core Curriculum Course  
that fulfills the CORE OBJECTIVE requirement.

The following Core Objectives will be covered periodically in Physics 102 Lecture.

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)

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, 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, you will upload the assignment to both the General Physics II (PHY 1307) or Physics 102 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.

Include only the core objectives taught in this course and indicate which objectives are being formally assessed in this semester.

<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</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
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<tr>
<td>Communication Skills</td>
<td>To include effective development, interpretation and expression of ideas through written, oral, and visual communication.</td>
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<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>
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<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>
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<tr>
<td>Personal Responsibility</td>
<td>To include the ability to connect choices, actions and consequences to ethical decision-making.</td>
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<tr>
<td>Social Responsibility</td>
<td>To include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities.</td>
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</table>
The Simulation of Radioactivity 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 upload in D2L dropbox. 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 Simulation of Radioactivity Project will allow students to demonstrate their critical thinking skills through the design of a simple experiment (inquiry) to determine the half – life of a number of simulation blocks, 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.

General Education Core Curriculum

This course has been selected to be part of Stephen F. Austin State University’s core curriculum. The Texas Higher Education Coordinating Board has identified six objectives for all core courses: 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. Assessment of these objectives at SFA will be based on student work from all core curriculum courses. This student work will be collected in D2L, the assessment management system selected by SFA to collect student work for core assessment.

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 in D2L. Not every assignment will be collected for assessment every semester. Your instructor will notify you which assignment(s) must be submitted for assessment.

The following Core Objectives will be covered periodically in Physics 102 Lecture.

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 States of Matter, temperature, Heat, Electromagnetism, and Nuclear Physics, (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) [http://www.sfasu.edu/assessment/index.asp]
Course Requirements:
Students are required to study the following chapters from the course text: 11-14 (Exam 1), 15-18 (Exam 2), 22-25 (Exam 3), 32-34 (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 (Outside 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.)

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

<table>
<thead>
<tr>
<th>Chapters/Exams</th>
<th>Topics Covered</th>
<th>Times/Dates</th>
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<tbody>
<tr>
<td>Chapter 11</td>
<td>Course Introduction</td>
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<td></td>
<td>* Lecture and assigned reading on critical thinking in physics (CO 1)</td>
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<td></td>
<td>* Discuss the Atomic Nature of Matter</td>
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<td>Chapter 12</td>
<td>Instructor led discussion on critical thinking (CO 1)</td>
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<td></td>
<td>* Discuss Solids and their properties</td>
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<td>Chapter 13</td>
<td>Lecture and instructor led discussion on written and visual communications (CO 2)</td>
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<td></td>
<td>* Discuss Liquids and their properties</td>
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<td>Chapter 14</td>
<td>Discuss Gases and their properties</td>
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<td>Exam I</td>
<td>Outside Assignment 1 (Dark Matter) (Chapters 11-14)</td>
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<td>Feb 12</td>
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<td>Chapter 15</td>
<td>Lecture and assigned reading on teamwork (CO 4)</td>
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<td></td>
<td>* Discuss Temperature, Heat and their effects on our Earth</td>
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<td>Chapter 16</td>
<td>Heat Transfer</td>
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<td></td>
<td>* Instructor led discussion on teamwork (CO 4)</td>
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<td>Chapter 17</td>
<td>Discuss the Change of Phases of Matter</td>
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<td>Chapter 18</td>
<td>Discuss Thermodynamics and its laws</td>
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<td>Exam II</td>
<td>Outside Assignment 2 (Greenhouse Effect) (Chapters 15-18)</td>
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<td>Mar 17</td>
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<tr>
<td>Chapter 22</td>
<td>Discuss Electrostatics</td>
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<td>Chapter 23</td>
<td>Discuss Electric Current</td>
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<td>Chapter 24</td>
<td>Discuss Magnetism</td>
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<td>Chapter 25</td>
<td>Discuss Electromagnetic Induction</td>
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<td>***The Radioactivity Simulation Project begins in lab (SLO 4 and COs 1, 2, 3, 4)</td>
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<td>Exam III</td>
<td>outside Assignment 3 (Maglev The Train of the future) (Chapters 22-25)</td>
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<td>Apr 14</td>
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<td>Chapter 32</td>
<td>Discuss Atomic and Nuclear Physics</td>
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<td>Chapter 33</td>
<td>Discuss The Atomic Nucleus, Radioactivity</td>
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<td>Chapter 34</td>
<td>Outside Assignment 4 (Course Evaluation)</td>
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<td>Discuss Nuclear Fission and Fusion</td>
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<td>Final Exam</td>
<td>(Chapters 32-34)</td>
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<td>May 5 (4:15-6:45pm)</td>
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Physics 102 Lab Exam Final will be given with the lecture final exam on May 5
Lab Exam Final will cover lab 1 through lab 12 (Density, Thermometer, Specific Heat, Linear Expansion, Phase Change Instrument, Ohm’s Law, Series and Parallel, Magnetic Fields, Simulation of Radioactivity, Radiation Counting, and Radiation Shielding).
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 Simulation of Radioactivity 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 102. Each student will then receive this overall grade for both lecture and lab.) The outside assignments, 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:
The class attendance is the responsibility of each student. All students are expected to attend class regularly. Poor attendance may affect your understanding of the materials and ultimately your grade in course. Since this course meets once a week, therefore the penalty for missing five lecture period (unexcused absent) will result in lowering the final grade in the course by one letter grade (Instructor’s decision) in the course. Those who attend each class period will be rewarded two bonus points which is added to the 800 points scale.

If you are late to class or must leave early, please inform your instructor in advance (via email).
Use of personal computer is permitted only for classroom lecture note taking.
Cell phones, pagers and other communication devices must be turned off during class.
Calculators that store a fair amount of information are not permitted during the examination.
Cell Phone can not be used as a calculator.
Students are not to hold private side conversations.
Reading unrelated publications is not allowed.
Students who exhibit unacceptable classroom behavior will be dismissed from class and counted as absent.
Make sure you always use your SFA e-mail account for network correspondence.

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/.

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.

Student Counseling Center

Rusk Building 3rd Floor (936) 468 -2401    Email: counseling@sfasu.edu
The Student Counseling Center is available free of charge to students and is staffed with professional therapists to meet a variety of needs. All interactions with the Student Counseling Center are guaranteed confidential. Licensed Counselors are available from 8:00a.m.-5:00p.m. Monday -Friday. The department is closed on certain holidays, Spring Break and Winter Break when the university is closed. If you are in need of assistance after hours or on the weekend please call: University Police: (936)468-2608 or MHMR Crisis Line: (800)392 -8343. If the situation is life threatening please dial 911.