General Physics II
PHY 102 Section ___

Name:
Email:
Phone:
Office:
Office Hours:
Department: Department of Physics and Astronomy
Class meeting time and place:

Course Description:
(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.

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 Objectives/Outcomes:
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 matter, heat, electricity, magnetism, and modern 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)

Text and Materials:

Conceptual Physics 11th Edition by Paul G. Hewitt
PHY 102 Lab Manual (produced by the Department of Physics and Astronomy and sold only in local bookstores)

Course Requirements:

- Students are required to study the following chapters from the course text: 11-14 (Exam I), 15-18 (Exam II), 22-25 (Exam III), 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 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.

The Radioactivity Simulation 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 weeks prior to this project. These earlier experiments will allow students to also sharpen their skills in **critical thinking**, **communication**, and **empirical and quantitative** analyses. **The Radioactivity Simulation Project** will allow students to demonstrate their **critical thinking skills** through the design of a simple experiment (inquiry) to simulate radioactive decay, 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 Radioactive Simulation 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 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.

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):

Chapters/Exams	***Topics Covered***	***Times/Dates***
Chapter 11	*Course Introduction* ***Lecture and assigned reading on critical thinking in physics (CO 1)*** *Atomic Nature of Matter*	*(one week)*
Chapter 12	***Instructor led discussion on critical thinking (CO 1)*** *Solids*	*(one week)*
Chapter 13	***Lecture and instructor led discussion on written and visual communications (CO 2)*** *Liquids*	*(one week)*
Chapter 14	*Gases*	*(one week)*
Exam I	*Homework Assignment 1 Due* ***(Chapters 11-14)***	***Feb 16***
Chapter 15	***Lecture and assigned reading on teamwork (CO 4)*** *Temperature, Heat*	*(one half week)*
Chapter 16	*Heat Transfer* ***Instructor led discussion on teamwork (CO 4)***	*(one week)*
Chapter 17	*Change of Phases of Matter*	*(one half week)*
Chapter 18	*Thermodynamics*	*(one half week)*
Exam II	*Homework Assignment 2 Due* ***(Chapters 15-18)***	***Mar 8***
Chapter 22	*Electrostatics*	*(one week)*
Chapter 23	*Electric Current*	*(one week)*
Chapter 24	*Magnetism*	*(one half week)*
Chapter 25	*Electromagnetic Induction* ***The Radioactivity Simulation Project begins in lab (SLO 4 and COs 1, 2, 3, 4)***	*(one half week)*
Exam III	*Homework Assignment 3 Due* ***(Chapters 22-25)***	***Apr 12***
Chapter 32	*Atomic and Nuclear Physics*	*(one week)*
Chapter 33	*The Atomic Nucleus, Radioactivity*	*(one week)*
Chapter 34	*Nuclear Fission and Fusion*	*(one half week)*
Final Exam	***(Chapters 32-34)***	***May 9 (8-10 am)***

Course Calendar (Laboratory):

LABORATORY COURSE CALENDAR

Week of	**Experiment** (All experiments relate to SLOs 1-4)
Jan 23	**Density (CO 3)***
30	Thermometer
Feb 6	Linear Expansion
13	Specific Heat
20	Phase Change
27	Instrument Lab
Mar 6	Ohm's Law
20	Series and Parallel
27	Magnetic Fields
Apr 9	**The Radioactivity Simulation Project** (COs 1-4)**
16	Linear Momentum
23	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 students get to **The Radioactivity Simulation Project** they 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.