

PHYS 1302.03 – General Physics – Sound, Light, Electricity and Magnetism

Credit Hours: 3

Spring, 2017

Farrington Building, Room 101

TR – 12:30 pm - 1:50 pm

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Office Location: Farrington Building, Room 312

Office Hours: 8:00-9:15 and 2:30 pm – 3:45 pm TR or by appointments
These office hours are subject to change during the semester for a variety of university-related functions or instructor illness.

Course Description: General Physics – Sound, Light, Electricity and Magnetism:
This course is a continuation of PHYS 1301, covering the subjects of waves, sound, light and optics, electricity and magnetism. The same emphasis is placed on derivations and problem solving as in PHYS 1301. Derivations are carefully done using non-calculus approach and considerable problem work is required. Prerequisites: PHYS 1301 and MATH 1316 or equivalent. Credit: 3. The course consists of the following parts: lectures, homework, and exams.

Course Objectives: The objective of this course is to introduce many key concepts of waves, light, electricity and magnetism to students and apply these concepts and related laws of physics to solve real-world problems. The following topics will be covered in this course:

- ❖ Describing vibrations and sound waves
- ❖ Electric forces and electric fields
- ❖ Electric energy and capacitance
- ❖ Electric current, Ohm's law and direct-current circuit
- ❖ Magnetic force and magnetic fields
- ❖ Faraday's law of induction and Inductance
- ❖ The laws of reflection and refraction of light

Required Textbook: The required book for this class is James S. Walker, “Physics”, 5th ed. (Pearson, San Francisco CA, 2016 ISBN: 978-0-321-97644-4). Students are required to acquire a copy of the textbook prior to the third class meeting.

Required Supplies: The following supplies are required for this course:

- (1) Writing instrument such as a pen or pencil
- (2) Scientific calculator with the following functions: sine, cosine, square root, exponentiation, scientific notation. The calculator on your smart phone is generally not adequate for this course.
- (3) Notebook or ring binder with appropriate paper.
- (4) Textbook
- (5) Stapler

Optional Textbook: None

Assignments: Three homework assignments will be given throughout the semester. Late assignments will not receive full credit. All homeworks will consist of five to ten problems that must be solved. Homeworks are due before the class starts on the due days as solutions will be given during the class and posted on blackboard. The full grade for each homework is 10 points and will be credited as bonus points to the final grade of the class.

Exams: There will be three exams for this course. All exams will consist of five to ten problems that must be solved. Full grade for each exam is 100 points. Because of the nature of the subject, all exams are cumulative, although recent material will be emphasized. The final exam will be held on the final week of the semester. The scheduled dates for the exams are given in the tentative schedule at the end of the syllabus. Make-up exams will not be given without a good excuse, such as a valid medical excuse signed by a licensed physician or one that is in compliance with the School’s Religious Holy Day policy. Student is responsible for knowing the final exam schedule. Unless advised differently by instructor all exams will be closed book and closed notes.

Grading Plan: The official grades and calculations are maintained off-line. Only the official grades are used to calculate the final course grade. The average course grade is calculated as a simple unweighted average of the exam grades: $\text{Avg} = 1/3(\text{Exam1} + \text{Exam2} + \text{Exam3}) + \text{HW}$ (as bonus 3x10). After obtaining the average, letter grades will be assigned according to the following scale without a curve:

$85 \leq A$
 $70 \leq B < 85$
 $55 \leq C < 70$
 $45 \leq D < 55$
 $F < 45$

Attendance Policy: Attendance at lectures is required. Excessive (more than three times) absences may result in a serious lowering of the final grade. The instructor will check the class attendance no less than eight times during the semester. Attendance will be used to calculate your final grade of this course. If there is a good reason for each absence, this must be submitted in writing to the instructor. Attendance at exams is mandatory.

Religious Holy Days:

Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuses a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Section 11.20, United States Tax Code. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). The instructor will complete a form notifying the student of a reasonable timeframe in which the missed assignments and/or examinations are to be completed.

Academic Dishonesty:

All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including but not limited to, cheating on an examination

or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.

Classroom Rules of Conduct:

Students are expected to maintaining a classroom environment that is conducive to learning. Students are to treat faculty and students with respect. Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and thus impedes the mission of the university. Cellular telephones and pagers must be turned off before class begins. Students are prohibited from eating in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class.

Visitors in the Classroom:

Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.

Students with Disabilities Policy:

It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance are expected to visit with the Office of Services for Students with Disabilities located in the Counseling Center. They should then make arrangements with their individual instructors so that appropriate strategies can be considered and helpful procedures can be developed to ensure that participation and achievement opportunities are not impaired.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center and to

talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: No accommodation can be made until you register with the Counseling Center.

Dropping Course: It is the student's responsibility to be aware of the final drop date and to drop if he or she deems it is necessary. Should you encounter any course difficulties during the term and need help, do not hesitate to ask and do not wait too late.

Grievances: Students should express grievances outside of class to your instructor first then to others in the following order, Department Head, and Dean.

Some Study Tips: Much of academics is devoted to abstract thinking, which is an important part of developing some new ideas. It is, however, not very useful to the students if they do not learn how to apply it to real-life physical situations. Physics is the most fundamental course that attempts to connect abstract ideas with physical applications.

General Problem Solving is one ability that physics students can acquire that can help them in any field. They learn that sometimes certain mathematical solutions imply a physical impossibility and therefore are not solutions at all. This knowledge is important when applying formulas, rules, or criteria developed under one specific set of circumstances to another. In physics, students are taught to observe and analyze new situations and derive their own solutions to associated problems. This is in contrast to some other fields in which specific formulas or rules are memorized as solutions to specific problems. This ability can be applied to almost any work environment and can help when conventional solutions do not work.

Content of the Textbook to be Covered:

Chapters 13-14, 19-24, and 26 will be covered. For some chapters, only selected sections will be covered. Additional material of the textbook could be covered at the discretion of the instructor.

Tentative Course Outline:

Week	Date	Material/Homeworks/Exams
1	January 19	Chapter 13
2	January 24	Chapter 13 (continued)
	January 26	Chapter 13 (continued)
3	January 31	Chapter 14
	February 2	Chapter 14 (continued)
4	February 7	Chapter 14 (continued)
	February 9	Chapter 19
5	February 14	Chapter 19 (continued)
	February 16	Review of Ch. 13-14 & 19
6	February 21	Homework #1 due
	February 23	Exam #1 (Ch. 13-14 & 19)
7	February 28	Chapter 20
	March 2	Chapter 20 (continued)
8	March 7	Chapter 21
	March 9	Chapter 21 (continued)
9	March 13-17	Spring Recess for Students and Faculty
10	March 21	Chapter 21 (continued)
	March 23	Chapter 22
11	March 28	Chapter 22 (continued)
	March 30	Chapter 22 (continued)
12	April 4	Review of Ch. 20-22
	April 6	Homework #2 due
13	April 11	Exam #2 Ch. 20-22
	April 13	Chapter 23
14	April 18	Chapter 23 (continued)
	April 20	Chapter 24
15	April 25	Chapter 26
	April 27	Chapter 26 (continued)
16	May 2	Review of Ch. 23, 24, and 26
	May 4	Homework #3 due
17	May 8-11	Exam #3 (Final Exam: Ch. 23, 24, and 26)