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What You Should Already Know

Prerequisites

Before taking this course, you should have completed the first semester of physics. You should understand and know how to use the following concepts prior to taking this course:

1. Kinematics (the study of motion: position, velocity, and acceleration)
2. Newton's Laws of Motion (forces, $\text{force} = \text{mass} \times \text{acceleration}$)
3. Conservation of energy (initial energy = final energy; kinetic energy, potential energy, gravitational energy)
4. Universal gravitation
5. Scientific notation, and how to use scientific notation on your calculator
6. You should have successfully completed a first year algebra course before taking this course.

I am sure that you will do very well in this half of physics. There is much to learn that can be applied to your everyday life.

Learning Outcomes

Upon successful completion of this course, you will be able to do the following:

1. Explain the interaction of electric charges.
2. Describe how electrical power is generated and transported to your homes.
3. Distinguish between different types of waves and provide examples of each.
4. Describe the different parts that make up the electromagnetic spectrum and give unique characteristics of each.
5. Explain where nuclear energy comes from and how it is used productively.

Course Materials

Physics 43 involves the use of at home laboratory exercises. As such, there are certain materials that will be required to complete these labs. A scientific calculator (one that can do scientific notation) is required.

Lab Materials

- common household items (paper, clear tape, aluminum foil, glass jar)
- 9 volt battery
- electrical wire
- three flashlight bulbs
- stopwatch
- flashlight
- magnifying glass
- candle
- bag of mini M&M's or 100 pennies
- the will and motivation to succeed!

There is no separate textbook for this course. Each unit contains discussion material that will teach you the important concepts of physics. The first page of each unit contains a brief introduction to that unit, an advance outline of the subtopics found within the unit, a list of objectives, and important equations/vocabulary that will be found within the unit. You should refer back to this page often as you review the material contained within the unit.

Please note: Any first person references (I, me, my, etc.) in the course content refer to the author of the course, not your instructor.

Assignments

Physics 43 contains six units. Each unit will teach you about a different aspect of physics. Each unit, also contains a laboratory exercise that you should complete. You may be asked to write down observations, thoughts, and impressions as a part of the lab. You may also need to answer certain questions throughout the lab. These lab notes will not be submitted. They are for your personal benefit.

There will be questions on the unit quizzes and on the final exam that ensure you have understood the lab exercises. Each unit gives you Self Check questions to help you prepare for the unit quizzes. There is a unit quiz assignment for each of the six units. After you have completed and submitted the six quizzes, you may request to take the final exam.

Exams

Some students who tend to do well on the unit quiz assignments find that they do not do as well on the final exam. This is often a result of doing the quizzes quickly, looking back through the unit to search for the answers. I recommend that you study each unit carefully, and treat the quizzes like a test. Try to complete them without looking back at the unit first. Pay close attention to those questions that you need to look up. Those may be some concepts you will want to review before taking the final exam. Then go back and look up those answers that you need to. This practice will help prepare you for the final exam, in which you will not be allowed to look back at the units.

Grading

Assignment or Exam	Grading	Percent of Total Grade
6 Labs	Instructor	15%
6 Unit Quizzes	Computer	60%
1 Final Exam	Computer	25%

Grading Scale

A	100-93	C	76-73
A-	92-90	C-	72-70
B+	89-87	D+	69-67
B	86-83	D	66-63
B-	82-80	D-	62-60
C+	79-77	E (fail)	59 or below