AP Physics-C: Summer Assignment **Dr. C**

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Course Text: Serway, R. and Beichner, R. (2000). Physics for Scientists and Engineers, fifth ed.

Your assigned reading for the summer is below. It is your responsibility to do this reading before class begins in September. The purpose of this assignment is to give you a head start on the considerable amount of material that you must learn and understand by your *AP* Exam, most likely the second week of May, 2022.*

I will share an *e-copy* of your textbook with you *via* your school email address by July 1. (*Note: It is your responsibility to contact me if you cannot access this e-copy*. *You will be given a hard-copy of the textbook in September*.) Please note that your textbook is an invaluable resource for this course, and reading assignments are intended to be studied throughout the year. If you want to be successful in this course you should study the example problems given in each chapter until you thoroughly understand them, and try all of the "quick quizzes" (the answers to these are provided at the very end of each chapter).

- **Ch. 1: Physics and Measurements** *(Assigned reading: Entire Chapter)*

This chapter reviews standards and units, dimensional analysis, and order of magnitude estimates, among other topics. Understanding these topics will help you be successful in AP Physics.

Units and dimensional analysis: Having the correct units with your numerical answers helps ensure that you understand the physics concepts for any given problem, *i.e.*, you understand what the numbers mean. In some cases, the correct answer to an AP multiple choice problem can be determined just by knowing what the appropriate units are and by applying dimensional analysis. You can lose points for having incorrect units on AP free response problems. For this class, you will not get full credit on any quiz or test problem if the units are not correct.

Order of magnitude estimates and scientific notation: Knowing what the correct order of magnitude should be for a given answer can help you eliminate incorrect multiple choice options, and also help ensure that you don't make calculator-related errors.

Significant figures: You may lose points if you show a total disregard for significant figures in your answers to AP free response problems, and I will do the same on quizzes and tests. For instance, an answer such as 7.53333 m/s may not be given full credit on a quiz or test. Do you know why?

Ch. 2: Motion in One Dimension *(Assigned reading:* Sections 2.1-2.6. Be sure to study the Example Problems*)*

This chapter, except for section 2.7, is a review of *1D Kinematics*. Make sure you review the graphical relationships among, ***x***, ***v*** and ***a*** presented in this chapter. You will need to become comfortable drawing and understanding graphs. Motion Diagrams (Ch. 2.4) are a very good conceptual representation of *1D Kinematics*. You will be applying the kinematic equations for constant acceleration (Ch. 2.5) throughout the year in various applications, so you will need to understand these very well. Study the *GOAL* problem solving steps (p. 47), which reviews the basics for solving physics problems.

Ch. 3: Vectors *(Assigned reading: Entire Chapter)*

A lot of problem-solving in this class will involve working with vectors, and finding resultants of two or more vectors by resolving each vector into components, etc… Most of this chapter should be a review; what may be new is the use of *unit vectors*, and ***i***, ***j***, ***k*** notation (Ch. 3.4), which you will need to eventually feel comfortable with along with the other material in this chapter.

Ch. 4: Two Dimensional Motion *(Assigned reading:* Sections 4.1 through 4.3. Be sure to study the Example Problems*)*

This assignment covers the first three sections of this chapter: 2-D kinematics through projectile motion.

AP Physics-C is a demanding college-level course, which has two main objectives:

1. To prepare you to successfully complete the first semester of a first-year physics course in college;
2. To prepare you to successfully complete the AP Physics-C Exam.

I strongly recommend the following studying tip come September: Use two notebooks.

- Use one for taking fairly quick "draft" notes in class with annotations (*e.g.*, comments, questions).
- Copy your draft notes into the second notebook each day (or two) in order to:
  - reinforce your review and understanding of the draft notes;
  - address your annotations (*e.g.*, referring to your text to correct/refine your notes);
  - ask me follow-up questions about the material.

*** Visit the following to get an overview of this course:**

http://apcentral.collegeboard.com/apc/Controller.jpf

https://apcentral.collegeboard.org/courses/ap-physics-c-mechanics?course=ap-physics-c-mechanics