

Chaminade University  
**PHYSICS 151 College Physics I**  
**Fall 2003**  
 Syllabus

Welcome to Physics 151, the first of a two-semester introductory physics course ! Physics 151 covers the basics of motion (including rotational motion), energy and momentum, gravity, oscillations, wave motion, sound, fluids and thermal physics. In the next semester, we continue with electricity and magnetism, optics and modern physics.

Course Goal:

The over-all purpose of this course is to provide you with a background in physics adequate to meet your future needs, especially in other areas of study; and to help you appreciate how the world works and why it works the way it does.

Since some of you may be taking the MCAT exam later, a more specific goal is to help prepare as much as possible for the physics part of this exam.

Other goals may come up during the semester and these will certainly be mentioned and discussed in class.

Prerequisites:

The course is an algebra-based course and the math prerequisite is Math 110 Pre-Calculus. You should be familiar with algebra up through the quadratic equation and its solution, trig, functions and graphs, the exponential function and log functions.

Math is an essential part of physics because it allows us to calculate results. In physics (and actually in much of science) it is not enough to just learn the concepts and laws; we also want to use these concepts and laws in calculating the value of various quantities in different situations. So we have to write equations, manipulate the equations and plug numbers into the equations.

Hopefully, these words are not too upsetting. But we want to set the stage and let you know why math is used so much in physics. To help you, difficult math points will be gone over in class, especially during the first semester. This will also help form a basis for the rest of the year.

Finally, you must also be registered in the lab component: Physics 151 College Physics I Laboratory

Instructor: Dr. Milton Cha  
 Home ph 284-3484 e-mail: milton@hawaii.edu

Class

Location: Henry Hall  
Time: M W F Lecture: 10:00 - 10:50 am W Lab 2:00 - 4:50 pm

Required

Textbook: *PHYSICS, 2<sup>nd</sup> ed*, by James S. Walker (Prentice-Hall, 2004)

Other

Requirements: a scientific calculator / notebook / lab notebook (more on this later)

Course

Objectives:

- a. Acquire a working knowledge of basic physical concepts and laws
- b. Learn to apply these concepts and laws in practical and/or common situation to calculate results
- c. Gain an understanding of how the world works and why (along with an appreciation of the beauty of nature)

- d. Acquire skills in numeracy (making calculations, estimates, units, using a calculator)

Objectives  
for the lab:

- a. Learn to do an experiment (determine objective, organize, assign work, record and make notes)
- b. Learn to make graphs and to interpret graphs
- c. Develop skill in assessing the final results and how well they support (or not support) the hypothesis
- d. Acquire skill in error analysis
- e. Be able to write up the experiment in acceptable scientific form, and present it

Homework, Exams  
and all that:

Your instructor will go over the class format in more detail during the first class, but basically there will be lectures, problem-solving sessions, and labs.

PLEASE NOTE: There just isn't enough time to cover everything in class, so you must do much reading and studying on your own outside of class, especially on material not covered in class.

The following factors are important:

- Attendance: It is very important to attend each class, so attendance counts
- Homework: There will be homework for each chapter, to be turned in for grading, and returned. There is a separate assignment sheet
- Quizzes: There will be chapter quizzes based on the material in the chapter
- Exams: There will be two hour-long exams during the semester, roughly a third of the way each time, and a final exam

In terms of percentages:

- Attendance 5 % of the final grade
- Homework 25 % of the final grade
- Quizzes 20 % of the final grade
- Exams 50 % of the final grade

Grades:

- A 90 - 100
- B 80 - 89
- C 70 - 79
- D 60 - 69
- F lower than 59
- I grade deferred

Phys 151 L - the Lab Component

In physics (and science) experimental results provide the final word. So it is essential to do experiments to find out what actually happens. An important skill to learn is to be able to carry out an experiment properly.

The grade for the lab component will be based on the following:

- Attendance
- Active participation in the lab and experiment
- Ability to set up and carry out an experiment
- Recording and note-taking during the experiment

and

the Lab report

## Important Policies

Please keep the following in mind (see the Student Handbook for more details)

### Attendance:

You must make every effort to attend all classes. The instructor must report any absence of two weeks or more to the Office of the Associate Provost and the Registrar.

You should notify the instructor when illness or any other serious difficulty prevents you from attending class and make arrangements to complete missed class work.

You can call the instructors phone number or leave a message at Office of the Natural Science/Math Division.

### Classroom Behavior

Please be punctual; unexcused tardiness is an absence

The following will not be allowed in class: smoking, alcoholic beverages, pets, radios, tape decks, headsets, personal TVs and other personal audiovisual equipment. Also, turn off beepers and cell phones unless permission has been granted in advance to leave them on at low volume.

You should follow the University's dress code (especially footwear and shirts).

Inappropriate language and remarks are not allowed at any time, and action may have to be taken if this keeps up.

All in all, let's have nice, user-friendly, and enjoyable classes.

## A Few Words on Taking a Physics Course

Again, these words are not to frighten you, but to help you as you go through the course

Do not miss class; useful material and methods will be discussed which may be important in connection with homework or exams

**ASK QUESTIONS !!** There are no dumb questions in physics (or science). If you don't understand something, ask. If you are having trouble with the homework, reading, etc., ask. Your instructor is there to help you.

Don't fall behind; it is very difficult for most people (including your truly) to catch up in a very short time like a day or two; the worse is to get so far behind that you have to copy someone's work - then you don't learn anything

It is very important to work at physics consistently every week, at least 6 hours, in a quiet place without distractions like a radio or TV. This is a big one which will help a lot.

As mentioned, it is very difficult to catch with a week's work in a night or in one day.

Try to read ahead. Don't worry if you do not understand everything the first time through. Class discussions usually help to bring the material together.

Working together in a group helps, but don't get dependent on it as you have to do the exams on your own

Do the homework problems. A possible method (not the only way; try to develop your own) is to look at the homework problems first and see if you can figure out what's its all about. If necessary, look for similar examples in the chapter and see if these give you some ideas. Now read the chapter and while you do so, you may, and in many chapter you will, realize what you have to do to solve the problem.

The above is one way to do the work. There are other ways. E.g., some like to read through the chapter first, then try the homework. You have to be aware of what works best for you and try to refine you way.

Don't worry about what equation to use; the first thing to do is try to figure out what the problem or reading assignment is all about; once you realize what's involved, the equations usually suggest themselves

Be an ACTIVE participant in the physics course. It's very hard to be passive (like watching TV) and get through physics successfully. Take an interest in it. See how it applies to your daily life or the world around you. Think of examples from daily life.

This beginning course is much like learning a new language. You have a new "vocabulary," new "grammar" and you have to learn to think in terms of this new material.