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CHAMINADE UNIVERSITY OF HONOLULU

PHYSICS 252 UNIVERSITY PHYSICS - SYLLABUS

Fall Semester, 2000 Instructor: Dr. David Cooke

1. OBJECTIVE OF COURSE:

This course is the second component of a general, calculus-based introduction to physics. It deals with electricity and magnetism, and also to light and optics. Satisfactorily completion of the course sequence will mean that you have had a good preparation for physics at the level required for majoring in physics,and engineering, as well for certain other areas of science and technology.

2. TEXT: Serway "Physics for Scientists and Engineers", 4th ed.

You are expected to take the responsibility for reading the text yourselves. Each chapter should be read quickly just prior to the class presentation of the material - in order that you acquaint yourself with the main ideas that are in each chapter, and to get a good idea of the words and principles that are to be discussed in class. This first reading could consist of a ten minute skim. Then, as the material is currently being discussed, read through each section more carefully, making sure that you understand the detail of the work, and follow through the discussions and examples presented by the author.

3. CONTENT OF COURSE:

The material covered in the course is drawn from chapters 23 through 37 as follows:

Chapter	Key topics, concepts
23	Charge, force between charges, electric fields, force on charge in field
24	Electric flux, Gauss' Law, behavior of insulators and conductors
25	Electric potential, potential difference, potential energy
26	Capacitance, dielectric, energy in capacitor, electric dipole
27	Current and resistance, Ohm's law, effect of temperature
28	EMF, DC circuits, Kirchhoff's laws, RC circuits, household wiring
29	Magnetic fields, force on charge and conductor, torque on loop
30	Source of field, Biot Savart law, Ampere's law, magnetic flux
31	Faraday's law, motional emf
32	Inductance, RL & RLC circuits, induced emf
33	AC circuits, resonance, power, phasor diagram, transformer
34	E.M. waves, Maxwell's equations
35	Light, ray tracing, refraction, reflection, dispersion, Huygen's principle
36	Geometric optics, lens equation
37	Interference, Young's double slit experiment

On completion of the course you will be familiar with these concepts and be able to carry out related calculations (you will be given a sheet containing all the relevant formulae for use during exams.)

It is intended that one chapter per week will be studied, although there is some leeway for extra time on difficult work, as well as extra review sessions. We will go as far as we can to cover all of the chapters listed above, although it is often the case that we do not manage to complete one or more of the later chapters.

4. HOMEWORK:

Homework assignments are given for each chapter. These assignments are not graded, but quickly checked to ascertain whether you are making a serious attempt at the problems, in which case full points are recorded. Worked solutions to the assigned problems will then be available to allow you to check on the correct solution techniques and answers to the problems.

5. QUIZZES & EXAMS:

A quiz is given on completion of each chapter's material (there will be approximately one quiz per week). Two preliminary exams will be held - one during the period September 28th through October 4th, and the other during the week of November 6th through 10th. The final exam will be held at 10:30 a.m. on Wednesday, December 13th.

6. EVALUATION:

Grades are based on homework, quizzes, exams, etc, to the extent presented here:

Attendance:	5%
Homework:	5%
Quizzes:	30%
Prelim. Exams	30%
Final Exam	30%
TOTAL	100%

It is important to understand the grade definitions which guide the awarding of grades at the end of the semester. Grading citeria as stated in the Chaminade undergraduate catalog are as follows:

A -- Outstanding scholarship and an unusual degree of intellectual initiative.

B -- Superior work done in a consistent and intellectual manner.

C -- Average grade indicating a competent grasp of the subject matter.

D -- Inferior work of the lowest passing grade, is not satisfactory for fulfillment of prerequisiste coursework.

F -- Failed to grasp even the minimum subject matter; no credit given.

I -- Did not complete a small portion of the work or final examination due to circumstances beyond the student's control. The issuance of an "I" grade is not automatic. Prior to reporting of grades a constract must be made between the student and the instructor for the completion of the course.

PHYSICS 252L (Laboratory component of the Physics 252 class).

LAB SCHEDULE:

Lab sessions will be held regularly, each Thursday at 2 p.m. The experiments complement the classroom work, and generally will relate to physical principles currently under discussion in the class.

LAB WRITEUPS:

Students will record details of the experiments in a lab book (a bound-page composition book is suitable for this purpose).

The lab reports should be organized as shown below:

A Title - which briefly describes the experiment. An example might be: "Investigation of Friction, Using an Inclined Plane".

An Introduction - in which the objectives of the experiment are laid out clearly.

Procedure and Results - into which section details of what is being done are entered AS THE EXPERIMENT IS BEING CARRIED OUT, and where all measurements and results are recorded. Calculations relating to the experiment should be entered here, too - once again, as you are carrying out the experiment.

Conclusions Here the findings of the experiment are briefly summarized, and the key figures presented (e.g. coefficient of friction values) and compared to bring out the point of the experiment.

GRADES:

Good grades in this class generally go to students who attend regularly, who are conscientious and neat in their work, who demonstrate (through their lab reports) that they have developed a good understanding of the physical principles associated with the labs, and who (ideally) show personal insight into the "research" process involved in carrying out the laboratory experiment.

The following grading citeria, defined in the Chaminade undergraduate catalog, will be used to establish the final grade for the lab class:

A -- Outstanding scholarship and an unusual degree of intellectual initiative.
B -- Superior work done in a consistent and intellectual manner.
C -- Average grade indicating a competent grasp of the subject matter.
D -- Inferior work of the lowest passing grade, is not satisfactory for fulfillment of prerequisiste coursework.
F -- Failed to grasp even the minimum subject matter; no credit given.
I -- Did not complete a small portion of the work or final examination due to circumstances beyond the student's control. The issuance of an "I" grade is not automatic. Prior to reporting of grades a constract must be made between the student and the instructor for the completion of the course.