

Physics 200
Electricity and Magnetism
Cuyamaca College

Fall 2009

Instructor: Jerry Riley

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Office Hours:

Monday 7:30 to 7:55 AM

Tuesday 7:30 to 7:55 AM and 11:00 to 12:30 PM

Wednesday 7:30 to 7:55 AM and 11:00 to 12:30 PM

Thursday 7:30 to 7:55 AM

Description:

This course deals with the electric and magnetic behavior of matter. The primary emphasis will be on Maxwell's Equations and their applications.

This course along with Physics 190 and 210 satisfies the lower division physics requirement for astronomy, chemistry, physics, engineering and pre-med majors.

Course Prerequisites:

Physics 190 or equivalent and credit for or concurrent enrollment in Mathematics 280 (Calculus 2) **(a strong background in integration and word problems recommended)**

WITHOUT THE FOLLOWING SKILLS, COMPETENCIES AND/OR KNOWLEDGE, YOU WILL BE HIGHLY UNLIKELY TO SUCCEED IN THIS COURSE:

Ability to solve algebraic word problems by using substitution or simultaneous equations

Knowledge of trigonometric functions and their identities

Ability to solve linear, quadratic and trigonometric equations

Knowledge of related rates and derivatives

Ability to integrate polynomial, exponential and trigonometric functions

Ability to use the relationship between force, mass and acceleration to solve dynamics problems

Ability to use conservation of energy and conservation of momentum concepts

Understand simple harmonic motion and can apply its concepts to analyze oscillating systems

Objectives:

Able to calculate electric and magnetic forces

Able to calculate electric and magnetic fields

Understand the basic concepts of voltage, current and power

Understand the basic concepts of resistance, capacitance and inductance

Able to solve for current, voltage, power and time constants in DC circuits consisting of resistors, capacitors, inductors and batteries

Able to solve for impedance, current, voltage, phase angle and power in AC circuits consisting of resistors, capacitors, inductors and generators
Able to use Maxwell's Equations to solve problems in electricity and magnetism

Text:

Physics for Scientists and Engineers, Seventh Edition Combined, by Serway and Jewett

Grading:

80 % 4 Exams (Drop the lowest one) **There are no make-up exams!**
20 % ~ 10 Lab Reports/ Computer Work (Drop the lowest one) **There are no make-up labs!**

Grade Cut Offs

A 90 % to 100 %
B 80 % to 89.99 %
C 60 % to 79.99 %
D 50 % to 59.99 %
F 0 % to 49.99 %

Tentative Outline

Chap 23 The Electric Field
Chap 24 Gauss's Law
Chap 25 The Electric Potential
Exam 1

Chap 26 Capacitors and Dielectrics
Chap 27 Current and Resistance
Chap 28 Direct Current Circuits
Exam 2

Chap 29 The Magnetic Field
Chap 30 Sources of the Magnetic Field
Chap 31 Faraday's Law of Induction
Exam 3

Chap 32 Inductance
Chap 33 Alternating Current Circuits
Chap 34 Electromagnetic Waves
Exam 4

This course adheres to the policies outlined in the Cuyamaca College catalogue. For further information, see Academic Policies stated in the catalogue.

I recommend you use the Supervised Tutoring services that are available to you. Refer to the class schedule for more information.