

Phys. 3416, ELECTRICITY & MAGNETISM
Mondays and Wednesdays, 12:00 noon – 1:45 pm
4 Semester hours

Fall 2006
Room FN2.106

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Office Hours: Mondays and Wednesdays, 10:00 am to 11:00 am and 3:30 pm to 4:30 pm,
or at other times by appointment.

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Dr. Paul MacAlevy will substitute for Prof. Tinsley when absent.
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Prerequisite: PHYS 3311 or equivalent.

Electricity and Magnetism 3314 deals with the fundamentals of electrostatics and magnetostatics, using vector calculus methods, which provides techniques for evaluating electric and magnetic field and potential distributions from simple configurations of charges and magnetic dipoles and dielectric and magnetic materials. The analysis of time varying fields leads, through Maxwell's equations, to the ability to describe electromagnetic wave phenomena.

On completing the class the students will be able to:

1. use vector calculus methods to solve for electric fields and potentials using, for example, Gauss's, theorem and image theory,
2. use the theory of the displacement electric field to solve for electric fields and potentials in the presence of dielectric materials,
3. use theorems such as the Biot Savart law and Ampere's law to determine magnetic fields generated by surface currents and solenoids, with or without magnetizable material.
4. use Maxwell's equations to determine characteristics of electromagnetic waves.

The required textbook is by Griffiths: "Introduction to Electrodynamics", Third edition, Prentice Hall. There will be two mid-semester exams, on September 25 and October 25 at class times, and the final exam 11 am Wednesday, November 29.. These will be closed book, with one page of handwritten notes allowed.

The grade will be based 15% on the homework, 25% for each of the mid-term and final exams, with 10% for intangibles.

Normally homework will be set once per week. No late homework will be accepted, except for illness or emergency excused only by the professor in advance of the due date.