



Stevens Institute of Technology

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Syllabus

EE/MT/PEP542: Electromagnetic

Overview

Paragraph description of course objectives and requirements
Develop and Apply Maxwell's Equations using vector calculus

Prerequisites

Taken after course number and name MA 227 Multivariate Calculus (or equivalent)

Cross-listed with. EE 542

Learning Goals

After taking this course, the student will be able to:

- (see above)

Pedagogy

Students will study a mathematical exposition of Maxwell's equations and examples of applications to electrostatics, magnetostatics and electrodynamics, including electromagnetic waves. Performance will be measured with homework assignments and examinations.

Required Text(s)

1. *Introduction to Electrodynamics, 3rd ed.*: by David J., Griffiths, Prentice Hall ISBN0-13-805326-X

Required Readings

Readings will be assigned for each week in the weekly study guides.

Assignments

Analytic exercises are assigned in the weekly study guides.

The assignments and their weights are as shown below:

1. Homework	40%
2. Examinations	60%
TOTAL	100%

Week	Topics
1	Review of Vector Algebra and Calculus
2	Coulomb Law; Electric Field
3	Conductors; Poisson Equation; Method of Images
4	Laplace Equation in Spherical and Cylindrical Coordinates
5	Multipole expansion; Electric Dipole Field
6	Dielectrics
7	Mid-term Exam
8	Linear Dielectrics; Magnetostatics
9	Ampere Law; Vector Potential
10	Magnetism in Matter; Electromotive Force
11	Faraday's Law of Induction; Inductance; ac Circuits
12	Maxwell's Equations; Electromagnetic waves I; Plane waves
13	Electromagnetic waves II; waveguides, vector spherical waves