Department of Electrical and Computer Engineering
520.220 Fields, Matter and Waves II
Spring 2008

2007-09 Catalog: Magnetostatic fields in vacuum and material media. Maxwell's equations and time-dependent electric and magnetic fields. Electromagnetic waves and radiation. Transmission lines, wave guides, applications. (3 credit hours/Elective)

Prerequisite(s): 520.219 Fields, Matter and Waves or equivalent

Textbook: William H. Hayt, Jr., and John A. Buck *Engineering Electromagnetics*, 6th edition

Course Objectives: To provide both the mathematical and physical background needed for more advanced study in areas such as material properties, electronics and quantum electronics

Topics Covered:
1. The Steady Magnetic Field
2. Magnetic Forces, Materials, and Inductance
3. Time-Varying Fields and Maxwell's Equations
4. The Uniform Plane Wave
5. Plane Waves at Boundaries and in Dispersive Media
6. Waveguide and Antenna Fundamentals

Class Schedule: Three - one hour lectures/ week

Contribution of Course to Meeting the Professional Component (credit hours):

Engineering Science	Engineering Science and Design
3	

Relationship of Course to Program Educational Outcomes (√ those that apply):

x	Apply mathematics, probability and statistics, basic science, and computer science
	Design and conduct experiments, analyze and interpret data
x	Identify, formulate and solve electrical engineering problems
	Use technical skills and modern engineering tools to design to meet needs
	Communicate effectively and work on multidisciplinary teams
	Contemporary issues, ethical responsibilities, environmental, health, safety issues
	Engage in life-long learning

Prepared November 1, 2007 by: Richard I. Joseph