

ECE 620

Electromagnetic Field Theory

Fall 2014 Course Outline

Instructor: Dr. Gerald Whitman

Text: Constantine Balanis, *Advanced Engineering Electromagnetics*, 2nd ed., Wiley, 2012; ISBN:978-0-470-58948-9

Reference: Roger Harrington, *Time-Harmonic Electromagnetic Fields*, Wiley-IEEE Press 2001; ISBN:978-0-471-20806-8

Time: Monday 6 -9:05PM, Room: FMH205

Office Hours: Monday 5-6 PM and by appointment (email).

E-mail: whitman@njit.edu **WEB:** <http://web.njit.edu/~whitman/> **Phone:** 973- 596 -3232.

Week		Chapter, Pages	Problems
1-2	Chapter 1: Electromagnetic Fields	1-30	HW1:1.3, 9, 11,17,19 HW2:1.16,18,,20,21,22,29(Solve these 6 problems using the frequency domain Maxwell's equations.
3-4	Chapter 3:Wave Eq. and Solutions	99-120	3.1,2,3,7,8
5-6	Chapter 4: Wave Propagation and Polarization	123-167	4-3,7,14,15,21,24,32
7	Chapter 5: Reflection and Tansmission	173-205	5.1,2,12,13,20,25,26,33,34
8	Midterm Examination		
9-10	Chapter 6:Vector Potentials	259-299	6-1,2,5,25,26,29
11-12	Chapter 7: Theorems and Principles	311-344	7.22,43,44
13-14	Chapter 8: Rectangular Waveguides	352-463	To be assigned
15	Final Examination	\	

In problems 1.16,18,1.20,1.21,22 and 29 note that the fields in the time domain are time harmonic. Thus, solve these problems using the frequency domain Maxwell's equations.

Homework Policy

The problems will be assigned and graded. Students are expected to solve **all** assigned problems. Solutions will be provided and discussed in class. The text contains numerous examples. Students are encouraged to study these examples for practice.

Grade Policy

Midterm 50% and final examination 50%, HW 0-10% (add or subtract). Tests and final exam are closed books and closed notes. Formula sheets (3) for the midterm and (6) for the final are allowed.

NJIT Honor Code

The NJIT Honor Code will be upheld, and any violation will be brought to the immediate attention of the Dean of Students.

Course Description: The topic of this course is the theory and analysis of electromagnetic phenomena that vary sinusoidally in time.

Course Learning Outcome: Students will learn fundamental knowledge of ac electromagnetic theory, which is needed for a broad spectrum of electrical engineering applications .

Changes in the syllabus are possible. Students will be informed of those changes in class announcements.