Philadelphia University

Faculty of Engineering - Department of Communications and Electronics Engineering

Course Information

Title: Electromagnetics II (650312)

Prerequisite: Electromagnetics I (610213)

Credit Hours: 3 credit hours (16 weeks per semester, approximately 44 contact hours)

Textbook: "Elements of Electromagnetics " , Matthew Sadiku, Oxford University Press, 2010

References: "Field & Wave Electromagnetics', K Cheng, Addision - Wesley, 1998.
"Engineering Electromagnetics", Hayt, William H. Jr., Mc Graw, 1995

Catalog Description: The course is a requirement for Communication and Electronics engineering students. It introduces the principles and applications of Maxwell's equation and wave propagation in free space, transmission lines and waveguides, and how to solve problems using analytical methods and tools to perform impedance matching.It introduces also different Antenna characteristics

Course Topics

Week	Topic
1	WAVES & APPLICATIONS - Maxwell's EQUATIONS
2,3,4	ELECTOMAGNETIC WAVE PROPAGATION: Waves in General, Wave Propagation in Lossy Dielectrics, Wave Propagation in Lossy Dielectrics, Wave Prpagation in Free Space, and Wave Propagation Good Conductors.
5	POWER & POYNTING VECTROS
6,7,8	REFLECTION OF A PLANE WAVE AT NORMAL INCIDENCE
9, 10, 11	TRASMISSION LINES (TL): TL Parameters, TL Equation, Input Impedance, SWR, and Power The Smith Chart, Applications of TL & Transients on TL
12,13, 14	WAVEGUIDES: Introduction, Rectangular Waveguides, Transverse Magnetic (TM) modes, Transverse Electric (TE) modes, Wave propagation in the Guide, & Power Transmission and Attenuation
15,16	BASICE ANTENNAS: Hertzian Dipole, Half-Wave Dipole Antenna, Quarter -Wave Monopole Antenna, & Small loop Antenna Characteristics

Course Learning Outcomes and Relation to ABET Student Outcomes:

Upon successful completion of this course, a student should be able to:

1.	Understand the fundamental concepts of Maxwell's equations.	[a]
2.	Applying this fundamental knowledge for commonly used transmission mediums such as free space propagation, transmission lines, and wave guides	[e]
3.	Matching transmission line characteristics impedance to load impedance	[e, c]
4.	Understanding basic antenna theory related to free space transmission	[a , e]
5.	Use analytical tools (Smith Chart) to asses and analyze problems	[e]

Assessment Instruments:

Evaluation of students' performance (final grade) will be based on the following categories:

Exams: Two written exams will be given. Each will cover about 3-weeks of lectures

Quizzes: 10-minute quizzes will be given to the students during the semester. These quizzes will cover material discussed during the previous lecture(s).

Homework: Problem sets will be given to students. Homework should be solved individually and submitted before the due date.

Copying homework is forbidden, any student caught copying the homework or any part of the homework will receive zero mark for that homework

Participation: Questions will be asked during lecture and the student is assessed based on his/her response

Final Exam: The final exam will cover all the class material.

Grading policy:

First Exam	20%
Second Exam	20%
Homework's, Quizzes and participation	20%
Final Exam	40%
Total:	100%

Attendance policy:

Absence from classes and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse, acceptable to and approved by the Dean of the relevant college/faculty, shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

February, 2017