EEL 3470 Electromagnetic Field & Waves

Credits: 4

Text book, title, author, and year:
F.T. ULABY, E. MICHIELSSEN and U. RAVAIOLI:FUNDAMENTALS OF
APPLIED ELECTROMAGNETICS, Prentice-Hall/Pearson, 2010 (1) -Ref Text -1
M. N. O. Sadiku: Elements of Electromagnetics, Oxford Press, 2010   -Ref Text -2
Supplemental materials: Lecture Notes (in 6 Units) will be made available on the Black-Board periodically.

Specific course information
   a. **Catalog description:** Vector Analysis, Electrostatics. Magnetostatics. Time-varying EM Fields. Plane-wave/TEM Wave- Reflection/Refraction. Transmission Line Theory. Guided Wave Propagation
   b. **Prerequisites:** EEL3111 (Circuits 1), MAC 2313 (Math) and co-requisite EEL3112 (Circuit 2)
   c. **Required, elective, or selected elective:** Required core course

Specific goals for the course
   a. **Specific outcomes of instruction:** This course will impart both theoretical concepts and practical aspects of Electromagnetic Theory. Relevant field concepts and EM wave and propagation principles (including Maxwell's equations and Helmoltz wave equation will be taught). Design of EM components like capacitors and inductors will be indicated. Principle of transmissions lines and the associated design aspects of stub-line matching etc. will be deliberated. Analytical solutions of boundary value problems to solve for potential functions in a medium and its elaboration as a computational exercise are discussed. The computational exercise is given as a term project.
1. The student will understand the concepts of electromagnetic theory
2. The student will be able to perform analytical calculations on various EM-related electric and magnetic field problems
3.