EEL 6482 Electromagnetic Theory 1

Credits: 3 credits

Textbook, Title, Author, and Year: Advanced Engineering Electromagnetics, C. A. Balanis, Wiley, 2011

Reference Materials: Engineering Electromagnetics Class Notes, J. Bagby, 2011, available on Blackboard.

Specific Course Information

Catalog Description: Review of fundamental concepts. Electromagnetic theorems and concepts; boundary value problems in Cartesian, cylindrical, and spherical coordinates; computer-aided design techniques in electromagnetics

Prerequisites: EEL 3470: Electromagnetic Fields and Waves

Specific goals for the Course: To provide students with a firm foundation in engineering electromagnetics and design techniques. Considerations include Maxwell's equations, the wave equation, wave propagation and polarization, reflection and transmission, solution by potential functions, scattering, integral equations, asymptotic methods, and use of computer--aided design software packages.

Brief List of Topics to be covered:

1. Field quantities, Maxwell's equations, boundary conditions, electrical materials
2. Wave equation and basic solutions in Cartesian, cylindrical, and spherical coordinates
3. Wave polarization, reflection, and transmission
4. Solutions utilizing potential functions
5. Electromagnetic theorems and principles
6. Scattering of electromagnetic waves
7. Integral equation formulations and solutions
8. Asymptotic methods
9. Use of CAD software in electromagnetics