ECE 3342: Electromagnetic Theory II

Credit / Contact hours: 3 / 3

Course coordinator: Hermann Krompholtz

Textbook(s) and/or other required material: Inan & Inan, *Electromagnetic Waves*, Prentice Hall 2000.

Catalog description: General solutions for Maxwell’s equations. Traveling waves in scalar media. Boundary conditions and constraints imposed by bounding surfaces.

Pre-requisite(s) or co-requisites: ECE 3341 and MATH 3351.

Designation: Required

Course learning outcomes: Upon completion of this course, students should be able to do the following:

1. Analyze time varying fields problems using Maxwell’s equations.
2. Analyze plane waves in lossless media.
3. Analyze time varying fields problems applied to plane waves in lossy media.
4. Analyze time varying fields applied to waves interacting with boundaries.
5. Apply these techniques to guided waves.

Student outcomes addressed: a, e, and k.

Topics covered

Time varying fields and Maxwell’s equations - 6 hours
Waves in unbounded lossless media - 6 hours
Waves in unbounded lossy media - 6 hours
Waves interacting with planar boundaries - 6 hours
Guided waves - 6 hours
Introduction to antennas - 4 hours
Special topics in electromagnetics - 4 hours
Test and reviews - 4 hours