

ECE 533/633

Advanced Electromagnetics (4)

Instructor: Professor Lisa M. Zurk, ECE Department, Portland State University, FAB 160-17, 503-725-5423, zurkl@cecs.pdx.edu

Schedule (Winter 2008): TR 12:00 – 13:50, URBN 303

Course Description: Advanced course in electromagnetics: topics include guided waves, mathematical methods, boundary values problems, time varying fields, and scattering from rough surfaces and volumes.

Prerequisites: ECE 331 and 332 (or equivalent); ECE 576/676 helpful.

Grading:

Mid-term #1: 30%	(tentative date: Jan 29 th)
Mid-term #2: 30%	(tentative date: Feb 26 th)
Final: 40%	(March 20, 10:15-12:05)

Course Text: *Advanced Engineering Electromagnetics*, by Constantine Balanis, John Wiley & Sons, 1989, ISBN 0-471-62194-3

Supplemental Text: *Electromagnetic Wave Propagation, Radiation, and Scattering*, by Akira Ishimaru, Prentice Hall, 1991, ISBN 0-13-249053-6

Material Covered:

- Construction of solutions, radiation and scattering equations (Chapter 6)
- Electromagnetic theorems and principles: Duality, reciprocity, volume & surface equivalence (Chapter 7)
- Rectangular waveguides and cavities: TE and TM modes, resonant cavities dielectric slab waveguides (Chapter 8)
- Scattering: Scattering from planar surfaces, strips, spheres and cylinders (Chapter 11)
- Integral equation and Method of Moments: EFIE, MFIE, MOM, (Chapter 12)
- Geometric theory of Diffraction: Geometric optics, GTD (Chapter 13)
- Green's functions: Sturm-Liouville problems, 2D Green's functions (Chapter 14)