Version 11/27/06

EECS 210 Applied Electromagnetic Theory

Fall 2006 | **Office Hours** | **Prof. A. R. Neureuther,**
Tu, Th 12:30-2 | **M, (W), 11AM** | **509 Cory Hall, 2-4590**
400 Cory | **Tu, Th, (F) 10AM** | **neureuth@eecs**

Final Exam Specification Sheet
Final Tuesday, Dec 12, 293 Cory
90 Minutes: Material Since Midterm
90 Minutes: Material Before Midterm Re-Take Opportunity
Open Book, Open Notes
Bring Calculator, Paper Provided

IV. Guided Waves

Kinetic boundary conditions and k-values
Dynamic boundary conditions and dispersion relationship
Wave impedance and Poynting vector
Fields generated by a localized source
Reading: Chapter 8.2-8.5, 8.11-8.12

V. Dielectric, Corrugated Conductor and Plasmon Waveguides

k-vectors, dispersion relations, modes, orthogonality
Coupling coefficient between modes
Periodic coupling and k-vectors
Coupled mode theory and solutions
Applications of the coupled mode solution
Reading: Kogelnik 2.2, 2.6, Harrington 4.8
No: Theory Small Reflections, Signal Flow Graph Theory

VI. Radiation and Scattering

Near fields from a localized current and charge source
Radiation from a localized current source
Antenna pattern as producte of FT element pattern and FT array factor
Scatterning at long wavelength limit (small dielectric and p.e.c. spheres)
Kirchhoff scalar diffraction
Scattering at short wavelength limit (large objects)
Spherical harmonic expansion
Vector integral representation
Images as sum of planewaves from periodic masks
Standingwaves in material layers
Reading: 9.1-9.4A, 10.1, 10.5, 10.9-10.10
Lite: 9.6-9.7, 9.12, 10.3-10.4, 10.6, 10.7-10.8, 10.11
Skip (or read for your own interest 9.5, 10.2)