

Physics 124 – Intermediate Electricity and Magnetism

General Information

course meeting: MW 11:15am, F 11:00am, TCseq103

Professor: Michael E. Peskin
SLAC, Central Lab R322 926-3250
Varian 360 (Mondays) 736-0326
office hours (in Varian): M 3-4 pm
mpeskin@slac.stanford.edu

Textbook: Griffiths, Classical Electrodynamics

Useful references: Heald and Marion, Classical Electromagnetic Radiation
Feynman, Leighton, and Sands, The Feynman Lectures on Physics, vol. 2
Jackson, Classical Electrodynamics
Taylor and Wheeler, Spacetime Physics

Web page: <http://www.slac.stanford.edu/~mpeskin/Physics124/>

Final: December 12, 8:30 am

Syllabus

1. Relativity and electrodynamics
2. Radiation from moving charges
3. Antennas and arrays of radiators
4. Multipoles and radiation patterns
5. Scattering of electromagnetic radiation
6. Diffraction
7. Relativistic electrodynamics

Physics 120, 121, 124 – Intermediate Electricity and Magnetism
Syllabus Overview

- Physics 120: Static Fields
 1. Electrostatics
 2. Laplace's equation
 3. Electric fields in matter
 4. Magnetostatics and magnetic materials
 5. Energy in electric and magnetic fields
- Physics 121: Dynamic fields
 1. Magnetic induction
 2. The Fourier transform
 3. Maxwell's equations
 4. Energy and momentum of the electromagnetic field
 5. The wave equation
 6. Waves in ideal media: transmission, reflection, and refraction
 7. Waves in non-ideal media: dispersion and absorption
 8. Waveguides
 9. Theory of relativity
- Physics 124: Radiation
 1. Relativity and electrodynamics
 2. Radiation from moving charges
 3. Antennas and arrays of radiators
 4. Multipoles and radiation patterns
 5. Scattering of electromagnetic radiation
 6. Diffraction
 7. Relativistic electrodynamics