

Syllabus for ELE216 Electromagnetics I

Recommended Sources:

- Fundamentals of Engineering Electromagnetics, David K. Cheng (Addison Wesley 1993, ISBN: 0-201-56611-7)
- Electromagnetics in Engineering, W. H. Hayt, Jr., J. A. Buck - 7. basım, McGraw-Hill, ISBN: 007-124449-2
- Field and Wave Electromagnetics, David K. Cheng - İkinci Basım, Addison-Wesley ISBN: 0-201-12819-5
- Introduction to Electrodynamics, David J. Griffiths, Prentice Hall, New Jersey, 1999
- Mühendislikte elektromanyetiğin temelleri, David K. Cheng, Türkçe çeviri, Palme Yayıncılık 2007

Week		
1	Vector Analysis and vector operations	
2	Orthogonal coordinate systems	
3	Gradient of a scalar field, Divergence and Curl of a vector field	
4	Review of parametrization of variables, Line Integrals, Surface Integrals, Divergence Theorem, Stoke's Theorem, 2 Null Identities, Helmholtz's Theorem	
5	Fundamental Postulates of Electrostatics in Free Space, Coulomb's law, Gauss' law	
6	Electrostatic Potential, Material Media in Static Electric Field	
7	Electric Flux Density and Dielectric Constant, Boundary Conditions for Electrostatic Fields, Capacitances and Capacitors	
8	Electrostatic Energy and forces, Boundary Value Problems in Electrostatics, Poisson's and Laplace's Equations	
9	Steady Electric Currents, Current Density, Ohm Kanunu	
10	Equation of Continuity, Kirchoff's current law, Resistance calculations	
11	Static Magnetic Fields, Fundamental Postulates of Magnetostatics in Free Space	
12	Vector Magnetic Potential, The Biot-Savart Law, Magnetic Dipole, Magnetization and Equivalent Current Densities	
13	Magnetic materials, Boundary Conditions for magnetostatic fields, Inductances and Inductors	
14	Magnetic Energy, Magnetic Force and Torque	