

ENGINEERING ELECTROMAGNETICS
17EC36
LECTURE NOTES BY SANEESH CLEATUS T
(link at the bottom of this page)

SYLLABUS

Modules
Module-1 Coulomb's Law, Electric Field Intensity and Flux density Experimental law of Coulomb, Electric field intensity, Field due to continuous volume charge distribution, Field of a line charge, Electric flux density.
Module-2 Gauss's law and Divergence Gauss' law, Divergence. Maxwell's First equation (Electrostatics), Vector Operator and divergence theorem. Energy, Potential and Conductors Energy expended in moving a point charge in an electric field, The line integral, Definition of potential difference and potential, The potential field of point charge, Current and Current density, Continuity of current
Module-3 Poisson's and Laplace's Equations Derivation of Poisson's and Laplace's Equations, Uniqueness theorem, Examples of the solution of Laplace's equation. Steady Magnetic Field Biot-Savart Law, Ampere's circuital law, Curl, Stokes' theorem, Magnetic flux and magnetic flux density, Scalar and Vector Magnetic Potentials
Module-4 Magnetic Forces Force on a moving charge, differential current elements, Force between differential current elements. Magnetic Materials Magnetisation and permeability, Magnetic boundary conditions, Magnetic circuit, Potential Energy and forces on magnetic materials
Module -5 Time-varying fields and Maxwell's equations Faraday's law, displacement current, Maxwell's equations in point form, Maxwell's equations in integral form. Uniform Plane Wave Wave propagation in free space and good conductors. Poynting's theorem and wave power, Skin Effect
Text Book: W.H. Hayt and J.A. Buck, "Engineering Electromagnetics", 7th Edition, Tata McGraw-Hill, 2009, ISBN-978-0-07-061223-5. Reference Books: 1. John Krauss and Daniel A Fleisch, "Electromagnetics with applications", McGraw- Hill. 2. N. Narayana Rao, "Fundamentals of Electromagnetics for Engineering", Pearson

Lecture note for all the modules are available in the link

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