
COURSE OUTCOME: After completion of course student should be able to

1. The ability to know different filter application in circuit design
2. The ability to know to improvement of frequency response of the amplifiers.
3. The ability to know the integration of multivibratos in the circuit design.
4. The ability to know generation of time base signal for the multivibrators.
5. The ability to know development of real time applications

ELECTROMAGNETIC FIELD THEORY & TRANSMISSION LINES (3-1-0)

COURSE OBJECTIVE:

1. To acquire the knowledge of Electromagnetic field theory that allows the student to have a solid theoretical foundation so that in future propagation and reception of electro- magnetic waves and nature of different type of transmission lines can be realized.
2. To identify, formulate and solve fields and electromagnetic waves propagation problems in a multidisciplinary frame individually or as a member of a group.
3. To provide the students with a solid foundation in engineering fundamentals required to solve problems and also to pursue higher studies.

MODULE	CONTENT	HOURS
MODULE 1	Vector calculus – orthogonal Coordinate System, Transformations of coordinate systems; Gradient, Divergence, Curl – their physical interpretations; Laplacian operator, Divergence Theorem, Stokes Theorem. Useful vector identities.	5
MODULE 2	Coulomb's law, electric field intensity, Field due to a line charge, Sheet charge and continuous volume charge distribution; Gauss' law, Application of Gauss's law, flux density, Potential and Potential gradient, Divergence theorem, Current Densities, Conductors, Poisson's & Laplace's equations. Uniqueness theorem, Biot-Savart's law, Ampere's law, Vector magnetic Potential.	7
MODULE 3	Faraday's law, Maxwell's equations, Equation of continuity, Concept of Displacement Current. Electromagnetic Boundary Conditions, Poynting's Theorem, Time-harmonic EM fields, Helmholtz wave equation. Plane wave solution. Plane Wave Propagation in lossless and lossy dielectric medium and conducting medium. Plane wave in good conductor, Surface resistance, depth of penetration. Polarization of EM wave- Linear, Circular and Elliptical polarization. Reflection and Transmission for normal incidence.	12

MODULE 4	High Frequency Transmission line: The Lumped-Element Circuit model for a Transmission line. Wave propagation. The lossless line. Field Analysis of Co-ax Transmission Lines. R, L, C, G parameters of Co-axial & Two wire Transmission lines, Terminated lossless transmission line, Low loss line, The Smith Chart. Solution of Transmission line problems using Smith chart. Single Stub and Double Stub matching.	12
MODULE 5	Types of transmission line (wave guide, microstrip) - brief introduction, applications and limitations.	4
TEXT BOOK	1. Elements of Electromagnetic by Mathew N.O.Sadiku, Oxford UniversityPress. 2. Microwave Engineering by D. M. Pozar, John Willy & Sons.	
REFERENCE BOOK	1. Electromagnetic Fields Theory Fundamental, B.S.Guru & Huseyn R. Hiziroglu, Thomson Asia Pvt.Ltd. Singapore 2. Electromagnetic Waves and Radiating Systems, E.C.Jordan & K.G.Balmain, PHI publication 3. Microwave Devices and Circuits, Samuel Y, Liao, Pearson Education	

COURSE OUTCOME:

1. Knowledge of Vector calculus and to be familiar with orthogonal co-ordinate system.
2. Understanding of basic laws related with electrostatic and electromagnetic field.
3. Solving Maxwell's equation and deduction of EM wave propagation equations.
4. To understand the parameters related to medium and nature of EM wave propagation.
5. To be familiar with different type of high frequency transmission lines used at microwave frequency.

DIGITAL SYSTEM DESIGN LAB(0-0-3)

SESSIONAL OBJECTIVE:

1. To understand concepts of digital electronics and to formulate, design and solve different digital circuits.
2. To design, implement and simulate various combinational and sequential circuits.
3. To understand various logic families and memory modules.
4. To provide the students with a solid foundation in engineering fundamentals required to solve problems and also to pursue higher studies.

Experiment No.	CONTENT
1	Implementation of various logic gates using universal NAND and NOR gates
2	Gate level minimization and Implementation of two level and multilevel Boolean functions