

Lesson Plan

Name of the Faculty : Er. Manisha Dhindsa

Discipline : Electronics and Communication Engineering

Semester : 4th

Subject : **Electromagnetic waves (B24-ECE-206)**

Lesson Plan Duration : 15 weeks (from January to May, 2026)

****Work Load (Lecture / Practical) per week (in hours):** Lectures-03

Week	Theory	
	Lecture Day	Topic (including assignment / test)
1	1 st	Introduction of coordinate system
	2 nd	Cartesian, Cylindrical
	3 rd	Spherical coordinate systems
2	4 th	Review of vectors: Gradient
	5 th	curl, and Divergence of vector
	6 th	Line integral, Surface integral
3	7 th	Volume integral
	8 th	Coulomb's law
	9 th	Electric Field Intensity, Electric Potential
4	10 th	Field of a Line Charge, Field of a Sheet of Charge
	11 th	Electric Flux, Electric Flux Density
	12 th	Gauss's Law and its applications
5	13 th	Boundary conditions for Electric Field
	14 th	Method of Images, Poisson's and Laplace's Equations
	15 th	Uniqueness Theorem
6	16 th	Biot - Savart Law. Magnetic field of a linear conductor of infinite length.
	17 th	Magnetic field of a circular current carrying loop.
	18 th	Magnetic Vector potentials, Magnetic Circuit
7	19 th	Force on a moving charge in magnetic field, Force on a Current Carrying Conductor in Magnetic Field
	20 th	Torque on a closed current carrying loop in magnetic field
	21 st	Magnetic flux and Magnetic flux density
8	22 th	Ampere's Circuit law, Faraday's Law
	23 th	Boundary Conditions for Magnetic field
	24 th	Maxwell's Equations for Free space, Good Conductors
9	25 th	Lossy Dielectric for Static & Sinusoidal Time Variations Fields
	26 th	Retarded potentials and Numericals
	27 th	Plane Waves & its properties

10 th	28th	Uniform Plane waves, Wave Equation for Free Space and Conducting Medium
	29th	Propagation of Plane Waves in Lossy Dielectrics
	30 th	Good Dielectrics & Good Conductors
11 th	31th	Skin effect and Skin depth for different medium.
	32th	Poynting's Vector
	33th	Poynting theorem
12 th	34 th	Reflection of plane waves from perfect conductors
	35 th	dielectrics under normal and oblique incidence
	36 th	Representation of transmission line
13 th	37 th	Reflection in Transmission Line
	38 th	Transmission Line Equations
	39 th	Graphical methods for solving transmission line
14 th	40 th	Rectangular Waveguides: TE, TM, TEM Waves
	41 th	Class Test 1
	42 th	Calculation of field in rectangular waveguide for TE and TM mode
15 th	43 th	Cut-off & Guided frequency of waveguide.
	44 th	Numericals
	45 th	Class Test 2

Er. Manisha Dhindsa

Assistant Professor

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