

	<b>GURGAON INSTITUTE OF TECHNOLOGY &amp; MANAGEMENT</b>	
	Department : Electronics & communication Branch/Sem : ECE / EE 4 <sup>th</sup> Sem	Session : Jan- July 18 Subject Name & Code : Electromagnetic Theory (EE-208-F)
<b>Lesson Plan</b>		<b>TEACHER : Er. Devender Saini</b>

**Books Referred:**

1. M.N.O. Sadiku, "elements of electromagnetic", 4<sup>th</sup> Ed, Oxford University Press.
2. W.H.Hayt and J.A.Buck, "Electromagnetics field theory," 7<sup>th</sup> edition TMH.
3. Electromagnetic field theory by Ballmen and Jordan

Lecture No.	<i>Topics to be Covered</i>
1.	<b>Section A: Coordinate systems and transformation:</b> Cartesian coordinates, circular cylindrical coordinates
2.	spherical coordinates, vector calculus: differential length, area and volume
3.	Line surface and volume integrals, del operator,
4.	Gradient of a scalar, divergence of a vector and divergence theorem,
5.	Curl of a vector and stroke's theorem
6.	Laplacian of a scalar,
7.	<b>Section B: Electrostatics:</b> Electrostatic fields, coulombs law, and field intensity.
8.	Electric field due to charge distribution, electric flux density,
9.	Gauss's law-Maxwell's equation, electric dipole and flux lines,
10.	Energy density in electrostatic fields, electric field in material space: properties of material
11.	Convection and conduction currents, conductors, polarization in dielectrics
12.	Dielectric constants, continuity equation and relaxation time,
13.	Boundary condition. Electrostatic boundary value problems:
14.	Poisson's and Laplace's equations,

15.	General procedures for solving Poisson's or Laplace's equation,
16.	Resistance and capacitance, method of images. Assignment No.2
17.	<b>Section C: Magneto statics:</b> Magneto-static fields, Biot-Savart's Law, ampere's circuit law
18.	Maxwell's equation, application of ampere's law,
19.	Magnetic flux density- Maxwell's equation, Maxwell's equation for static fields'
20.	Magnetic scalar and vector potential
21.	Magnetic forces, materials and devices:
22.	Forces due to magnetic field, magnetic torque and moment
23.	A magnetic dipole, magnetization in materials
24.	Magnetic boundary conditions, inductors and inductances,
25.	Magnetic energy, Waves and applications
26.	Maxwell's equation, faraday's law
27.	Transformer and motional emf, Displacement current, Maxwell's equation in final form.
28.	<b>Section D: EM wave propagation:</b> wave propagation in lossy dielectrics, plane waves in lossless dielectrics,
29.	Plane wave in free space, plane waves in good conductors,
30.	Power and the Poynting vector, reflection of a plane wave in a normal incidence.
31.	Transmission lines: transmission line parameters, transmission line equations
32.	Input impedance, standing wave ratio and power
33.	Revision class -I
34.	Revision class -II