

Bhoj Reddy Engineering College for Women: Hyderabad
Department of Electrical and Electronics Engineering
Lesson plan of faculty member for the academic year 2017–18
 Class: II B Tech Branch-Section: EEE Semester: I
 Subject: Electromagnetic Fields (EMF) Lectures per week: 4+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
UNIT – I: ELECTROSTATISTICS		
1	Introduction to vector analysis-Electrostatic fields	12 July 2017
2	Coulombs law and applications	13 July 2017
3	Electric field intensity (EFI) due to line charge	14 July 2017
4	Tutorial: problems on Coulombs law	14 July 2017
5	Electric field intensity (EFI) due to surface charge	18 July 2017
6	Work done a moving point charge in an electrostatic field-electric potential	19 July 2017
7	Properties of electric potential function and potential gradient	20 July 2017
8	Gauss's law and applications of Gauss's law	21 July 2017
9	Maxwell's first law	21 July 2017
10	Tutorial : problems on potential gradient	25 July 2017
11	Laplace and poison's equations	26 July 2017
12	Solution of Laplace equation in one variable form	27 July 2017
13	Electric Dipole and Dipole moment	28 July 2017
14	Potential and EFI due to an electric dipole	28 July 2017
15	Tutorial : problems on electric dipole	1 August 2017
16	Torque on an electric dipole in an electric field	2 August 2017
17	Behavior of conductor in an electric field	3 August 2017
18	Conductors and insulators	4 August 2017
19	Problems	4 August 2017
UNIT – II: DIELECTRICS & CAPACITANCE		
20	Behavior of conductors in an electric field and insulators	8 August 2017
21	Tutorial: problems	9 August 2017
22	Electric field inside a dielectric material	10 August 2017
23	Polarization	11 August 2017
24	Dielectric boundary conditions	11 August 2017
25	Capacitance and capacitance of parallel plates	16 August 2017
26	Tutorial: problems on capacitance	17 August 2017
27	Spherical and co-axial capacitors with composite dielectrics	18 August 2017
28	Energy stored and energy density in a static electric field	18 August 2017
29	Current density	22 August 2017
30	Tutorial: problems on current density	23 August 2017
31	Conduction and convention current densities	24 August 2017
32	Ohm's law in point form and Equation of continuity	29 August 2017

UNIT – III: MAGETOSTATICS		
33	Static magnetic fields and Biot savart's	30 August 2017
34	Concept of Magnetic field intensity (MFI)	31 August 2017
35	MFI due to a straight current carrying filament and circular	1 September 2017
36	Tutorial : MFI due to square and solenoid current carrying wire	1 September 2017
37	Relationship between magnetic flux , magnetic flux density and MFI	5 September 2017
38	Maxwell's second equation	12 September 2017
39	Amperes law and applications	13 September 2017
40	MFI due to infinite sheet of a current and a long current carrying filament	14 September 2017
41	Point form of Ampere's circuit law	15 September 2017
42	Tutorial: Problems on MFI	15 September 2017
43	Maxwell's third equation	19 September 2017
UNIT-IV: FORCE IN MAGNETIC FIELDS AND MAGNETIC POTENTIAL		
44	Magnetic force-Moving charge in a magnetic field	21 September 2017
45	Lorentz force equation – force on a current element in a magnetic field	22 September 2017
46	Tutorial: Problems on magnetic force	22 September 2017
47	Force on a straight and a long current carrying conductor in a magnetic field	3 October 2017
48	Force between two straight long and parallel current carrying conductors	4 October 2017
49	Magnetic dipole and dipole moment –a differential current loop as a magnetic dipole	5 October 2017
50	Torque on a current loop placed in a magnetic field , scalar magnetic potential and its limitations	6 October 2017
51	Tutorial: problems on torque	6 October 2017
52	Vector magnetic potential and its properties	10 October 2017
53	Vector poisson's equations	11 October 2017
54	Self and mutual inductance-Neumann's formulae	12 October 2017
55	Determination of self-inductance of solenoid and toroid	13 October 2017
56	Tutorial: problems on self and mutual inductance	13 October 2017
57	Mutual inductance between a straight long wire and square loop wire in the same wire in same plane	17 October 2017
58	Energy stored and energy density in magnetic field	19 October 2017
59	Introduction to permanent magnetic fields and their characteristics and applications	20 October 2017
60	Tutorial : problems	20 October 2017
UNIT-V: TIME VARYING FIELDS		
61	Introduction to time varying fields	24 October 2017
62	Faraday's laws of electromagnetic induction	25 October 2017
63	Faraday's law integral form and point forms	26 October 2017
64	Maxwell's fourth equation	27 October 2017
65	Tutorial : problems	27 October 2017
66	Statically and dynamically induced emf's	31 October 2017
67	Simple problems	1 November 2017

68	Modification of Maxwell's equation for time varying fields	2 November 2017
69	Displacement current	3 November 2017
70	Tutorial : problems on Displacement current	3 November 2017
71	Problems	7 November 2017

TEXTBOOKS:

1. "William H.Hayt & John. A. Buck" ," Engineering Electromagnetics" , Mc-Graw Hill companies 7th Edition ,2009.
2. " Sadiku", "Electromagnetic Fields", Oxford Publications ,4th Edition

REFERENCE BOOKS:

1. "J D Kraus" , "Electromagnetics " Mc-Graw Hill, 4th Edition 1992.
2. "CR Paul and S.A.Nasar" , "Introduction to Electromagnetics", Mc-Graw Hill publications 3rd Edition, 1997.

Name and signature of the faculty: Ravi Kumar K ----

Name and signature of Head of the Department: Deepthi S ----