

Bhoj Reddy Engineering College for Women: Hyderabad
 Department of Electrical and Electronics Engineering
 Lesson plan of faculty member for the academic year 2018–19
 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	Tutorial: Introduction to vector analysis-Electrostatic fields	9 July 2018
2	Coulombs law and applications	11 July 2018
3	Electric field intensity (EFI) due to line charge	12 July 2018
4	problems on Coulombs law	13 July 2018
5	Electric field intensity (EFI) due to surface charge	14 July 2018
6	Tutorial: Work done a moving point charge in an electrostatic field-electric potential-Numerical	16 July 2018
7	Properties of electric potential function and potential gradient	18 July 2018
8	Gauss's law and applications of Gauss's law	19 July 2018
9	Maxwell's first law	20 July 2018
10	problems on potential gradient	21 July 2018
11	Tutorial : Laplace and poisson's equations	23 July 2018
12	Solution of Laplace equation in one variable form	25 July 2018
13	Electric Dipole and Dipole moment	26 July 2018
14	Potential and EFI due to an electric dipole	27 July 2018
15	problems on electric dipole	28 July 2018
16	Tutorial :Torque on an electric dipole in an electric field	30 July 2018
17	Behavior of conductor in an electric field	1 August 2018
18	Conductors and insulators	2 August 2018
19	Problems	3 August 2018
UNIT – II: DIELECTRICS & CAPACITANCE		
20	Behavior of conductors in an electric field and insulators	4 August 2018
21	problems	8 August 2018
22	Electric field inside a dielectric material	9 August 2018
23	Polarization	10 August 2018
24	Dielectric boundary conditions	11 August 2018
25	Tutorial: Capacitance and capacitance of parallel plates-	13 August 2018
26	problems on capacitance	16 August 2018
27	Spherical and co-axial capacitors with composite dielectrics	17 August 2018
28	Energy stored and energy density in a static electric field	18 August 2018
29	Tutorial: Current density	20 August 2018
30	problems on current density	23 August 2018
31	Conduction and convention current densities	24 August 2018
32	Ohm's law in point form and Equation of continuity	25 August 2018

UNIT – III: MAGETOSTATICS		
33	Tutorial : Static magnetic fields and Biot savart's	27 August 2018
34	Concept of Magnetic field intensity (MFI)	29 August 2018
35	MFI due to a straight current carrying filament and circular	30 August 2018
36	MFI due to square and solenoid current carrying wire	31 August 2018
37	Relationship between magnetic flux , magnetic flux density and MFI	1 September 2018
38	Maxwell's second equation	7 September 2018
39	Amperes law and applications	8 September 2018
40	Tutorial :MFI due to infinite sheet of a current and a long current carrying filament	10 September 2018
41	Point form of Ampere's circuit law	12 September 2018
42	Problems on MFI	14 September 2018
43	Maxwell's third equation	15 September 2018
UNIT-IV: FORCE IN MAGNETIC FIELDS AND MAGNETIC POTENTIAL		
44	Tutorial :Magnetic force-Moving charge in a magnetic field	17 September 2018
45	Lorentz force equation – force on a current element in a magnetic field	19 September 2018
46	Problems on magnetic force	20 September 2018
47	Force on a straight and a long current carrying conductor in a magnetic field	22 September 2018
48	Tutorial: Force between two straight long and parallel current carrying conductors	24 September 2018
49	Magnetic dipole and dipole moment –a differential current loop as a magnetic dipole	26 September 2018
50	Torque on a current loop placed in a magnetic field , scalar magnetic potential and its limitations	27 September 2018
51	problems on torque	28 September 2018
52	Vector magnetic potential and its properties	29 September 2018
53	Tutorial :Vector poisson's equations	1 October 2018
54	Self and mutual inductance-Neumann's formulae	3October 2018
55	Determination of self-inductance of solenoid and toroid	4 October 2018
56	problems on self and mutual inductance	5 October 2018
57	Mutual inductance between a straight long wire and square loop wire in the same wire in same plane	6 October 2018
58	Tutorial :Energy stored and energy density in magnetic field	8 October 2018
59	Introduction to permanent magnetic fields and their characteristics and applications	10 October 2018
60	Tutorial : problems	11 October 2018
UNIT-V: TIME VARYING FIELDS		
61	Introduction to time varying fields	12 October 2018
62	Faraday's laws of electromagnetic induction	13 October 2018
63	Tutorial :Faraday's law integral form and point forms	22 October 2018
64	Maxwell's fourth equation	24 October 2018
65	problems	25 October 2018
66	Statically and dynamically induced emf's	26 October 2018

67	Simple problems	27 October 2018
68	Tutorial :Modification of Maxwell's equation for time varying fields	29 October 2018
69	Displacement current	31 October 2018
70	problems on Displacement current	1 November 2018
71	Problems	2 November 2018
72	Review of Maxwell's Equations	3 November 2018
73	Tutorial :Problems solving from previous question papers	5 November 2018
74	Problems solving from previous question papers	8 November 2018
75	Revision	9 November 2018
76	Revision	10 November 2018

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.

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