

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: II

Subject: Electrical Machines II (EM II)

Lectures per week: 4+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
UNIT – I: POLY PHASE INDUCTION MOTORS		
1	Introduction	27 December 2018
2	Constructional details of cage and wound rotor machines	29 December 2018
3	Tutorial: diagrams of cage and wound rotor machines	29 December 2018
4	Mathematical equation of rotating magnetic field	31 December 2018
5	Production of rotating magnetic field, Principle of operation	03 January 2019
6	Rotor EMF and rotor frequency	05 January 2019
7	Tutorial: Phasor diagrams of 3 phase RMF	05 January 2019
8	Rotor reactance, rotor current and power factor at standstill	07 January 2019
9	Tutorial: Problems on EMF equation	08 January 2019
10	Rotor X, rotor current and power factor during normal operation	10 January 2019
11	Rotor power input, copper losses, mechanical power developed	12 January 2019
12	Tutorial: Problems on EMF equation	12 January 2019
13	Rotor power input, copper losses, mechanical power developed	17 January 2019
14	Inter relation of input, copper losses, mechanical power developed	19 January 2019
15	Tutorial: Problems on losses	19 January 2019
UNIT II: CHARACTERISTICS OF INDUCTION MOTORS, SPEED CONTROL METHODS		
16	Rotor power input, copper losses, mechanical power developed	21 January 2019
17	Inter relation of input, copper losses, mechanical power developed	22 January 2019
18	Expressions for maximum torque and starting torque	24 January 2019
19	Torque slip characteristic, Equivalent circuit, phasor diagram	28 January 2019
20	Crawling and cogging, No load test and Blocked Rotor Test	29 January 2019
21	Tutorial: Problems on tests	31 January 2019
22	Predetermination of performance	02 February 2019
23	Tutorial: Problems on tests	02 February 2019
24	Methods of starting	04 February 2019
25	Starting current and Torque calculations	05 February 2019
26	Tutorial: Problems on circle diagram	07 February 2019
27	Change of voltage, Change of frequency	09 February 2019
28	Tutorial: Problems on circle diagram	09 February 2019
29	voltage/frequency injection of an EMF into rotor circuit	11 February 2019
30	Induction generator Principle of operation	12 February 2019
UNIT III: CONSTRUCTION, PRINCIPLE OF OPERATION, CHARACTERISTICS & REGULATION OF SYNCHRONOUS GENERATOR		
31	Constructional Features of round rotor and salient pole machines	14 February 2019
32	Armature windings-Integral slot and fractional slot windings	16 February 2019
33	Tutorial: Problems on V/F	16 February 2019
34	Distributed and concentrated windings, Distribution, Pitch and winding factors	18 February 2019
35	E.M.F Equation, Salient pole alternators-two reaction analysis	19 February 2019
36	Phasor diagram-load characteristics	21 February 2019
37	Regulation by synchronous impedance, MMF method	23 February 2019
38	Tutorial: Problems on EMF equation	23 February 2019
39	Harmonics in generated EMF, suppression of harmonics	25 February 2019
40	Armature reaction, Slip Test, Phasor diagrams	26 February 2019
41	Leakage reactance-synchronous reactance and impedance	28 February 2019

42	Experimental determination	02 March 2019
43	Tutorial: Problems on synchronous impedance, MMF method	02 March 2019
44	Regulation by Z.P.F method	05 March 2019
45	Regulation by A.S.A method	07 March 2019
UNIT IV: PARALLEL OPERATION OF SYNCHRONOUS GENERATOR, SYNCHRONOUS MOTORS		
46	Synchronizing alternators with infinite bus bars, power torque	09 March 2019
47	Tutorial: Problems power torque	09 March 2019
48	Parallel operation and load sharing	11 March 2019
49	Effects of change of excitation and mechanical power input	12 March 2019
50	Analysis of short circuit current waveform	14 March 2019
51	Determination of sub-transient, transient and steady state reactance's	16 March 2019
52	Tutorial: problems on power developed	16 March 2019
53	Synchronous motor Theory of operation	18 March 2019
54	Variation of current and power factor with excitation	19 March 2019
55	Synchronous condenser	23 March 2019
56	Tutorial: problems on power developed	23 March 2019
57	Mathematical analysis for power developed-hunting and its suppression	25 March 2019
58	Methods of starting, Synchronous induction motor	26 March 2019
59	The Phasor diagram	28 March 2019
60	steady state reactance's	30 March 2019
UNIT V: SINGLE PHASE MOTORS & SPECIAL MOTORS		
61	Single phase induction motor	30 March 2019
62	Constructional features	01 April 2019
63	Double revolving field theory	02 April 2019
64	Split phase motors	04 April 2019
65	Shaded pole motor	08 April 2019
66	Phasor diagrams	09 April 2019
67	Numerical on special machines	11 April 2019
68	Mathematical approach of double revolve theory	13 April 2019
69	Tutorial: Problems on direct and quadrature axis	13 April 2019
70	Problems on shaded pole motor	15 April 2019
71	Numerical on split phase motors	16 April 2019
72	Revision	18 April 2019
73	Revision	20 April 2019
74	Tutorial: Numerical of all units	20 April 2019

Text Books:

1. "I.J.Nagarath & D.P.kothari" "Electrical Machines", Tata MC Graw Hill, 7th Edition, 2009
2. "PS Bhimbra", "Electrical Machines", Khanna Publishers, 2014
3. "M.G.Say", "Performance and Design of AC Machines", CBS Publishers, 3RD Edition, 2002
4. "A.E.Fitzgerald, C.Kingsley and S.Umans", "electric machinery", Mc Graw Hill Companies, 7th Edition 2013

Name and signature of the faculty: Mr K Vinay kumar ----

Name and signature of Head of the Department: Ms R Manju Bhargavi ----