

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: IV B Tech

Branch-Section: EEE

Semester: II

Subject: Fundamentals of HVDC and FACTS Devices

Lectures per week: 3+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
UNIT – I: Introduction		
1	Introduction, Economics of HVDC Transmission system	21 December 2017
2	Comparison of AC & DC transmission	22 December 2017
3	Application of HVDC Transmission system	23 December 2017
4	Tutorial: (G3, G2, G1) - Introduction	21,22,23 December 2017
5	Types of HVDC links	28 December 2017
6	Typical layout of HVDC converter station	29 December 2017
7	HVDC converters	30 December 2017
8	Tutorial: (G3, G2, G1) – Types of HVDC links	28, 29, 30 December 2017
9	Analysis of Gratez circuit with overlap	4 January 2018
10	Analysis of Gratez circuit without overlap	5 January 2018
11	Converter bridge characteristics	6 January 2018
12	Tutorial: (G3, G2, G1) – SCR Characteristics	4, 5, 6 January 2018
13	Rectifier configuration of 12 pulse converter	11 January 2018
14	Inverter configuration of 12 pulse converter	12 January 2018
15	Numericals	13 January 2018
16	Tutorial: (G3, G2, G1) – Numerical on comparison	11,12,13 January 2018
UNIT-II: Converter and HVDC System Control		
17	Principles of DC link control	18 January 2018
18	Converters control Characteristics	19 January 2018
19	Firing angle control	20 January 2018
20	Tutorial: (G3, G2, G1) – Firing Angle control	18,19,20 January 2018
21	Current Control Extinction Angle Control	25 January 2018
22	Starting and Stopping of DC link	27 January 2018
23	Tutorial: (G3, G1) – Current Control	25, 27 January 2018
24	Starting and Stopping of DC link	1 February 2018
UNIT-III: Harmonics, Filters and Reactive Power Control		
25	Generation of Harmonics	2 February 2018
26	AC Filters, DC Filters	3 February 2018
27	Tutorial: (G3, G2, G1) – Objective question	1,2,3 February 2018
28	Reactive Power requirements, Sources of Reactive Power	10 February 2018
29	Tutorial: (G2) – Mid 1 QP discussion	10 February 2018
30	Modelling of AC/DC converters	15 February 2018
31	Controller equations,	16 February 2018
32	Simultaneous and sequential methods	17 February 2018
33	Tutorial: (G3, G2, G1) – Unit 2 Revision	15,16,17 February 2018
UNIT-IV: Introduction to FACTS and Static Shunt Compensators		
34	Introduction, Flow of power in AC parallel paths	22 February 2018
35	Types of FACTS controllers	23 February 2018
36	Definitions of FACTS controllers	24 February 2018
37	Tutorial: (G3, G2, G1) – FACTS	22,23,24 February 2018
38	Objectives of Shunt Compensation	2 March 2018
39	Methods of VAR generation	3 March 2018
40	Tutorial: (G3, G2) – Seminars	2,3 March 2018
41	Static VAR compensators	8 March 2018
42	SVC	9 March 2018

43	STATCOM	10 March 2018
44	Tutorial: (G3, G2, G1) – Comparison of SVC and STATCOM	8, 9, 10 March 2018
UNIT-V: Static Series Compensators		
45	Objectives Series Compensators	15 March 2018
46	Variable impedance type- TCSC	16 March 2018
47	Switching converter	17 March 2018
48	Tutorial: (G3, G2, G1) – Series Compensators	15,16,17 March 2018
49	SSSC	22 March 2018
50	Basic operating control schemes	23 March 2018
51	UPFC	24 March 2018
52	Tutorial: (G3, G2) – Seminars	22, 23 March 2018
53	Independent real and reactive power flow controller, control	29 March 2018
54	Revision	30 March 2018
55	Tutorial: (G3, G2, G1) – Revision	29,30 March 2018

Text books:

1. S. Kamakshaiah, V. Kamaraju, "HVDC Transmission", TMH
2. G.Hingorani, Laszlo Gyugyi, "Understanding FACTS Concepts and Technology of Flexible AC Transmission System, "IEEE Press, Wiley India..

Name and signature of the faculty: Deepti S ----

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