

Department of Electrical and Electronics Engineering

Lesson Plan & Work-done Diary for AY:2024-25, ODD Semester

Course with Code: Power System Operation & Control / 21EE72				Faculty: Mr. Shreeshayana R			Semester & Section: VII	
Class No.	Date planned (DD/MM)	Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM)	Topics Covered	TLP Executed	Remarks if any deviation
MODULE-1								
1		Course Orientation; Module-1: Introduction:	Chalk & Talk					
2		Operating States of Power System, Objectives of Control, Key Concepts of Reliable Operation	Chalk & Talk					
3		Preventive and Emergency Controls and Energy Management Centre	Chalk & Talk					
4		Supervisory Control and Data Acquisition (SCADA): Introduction, components, application in Power System, basic functions and advantages.	Chalk & Talk					
5		Building blocks of SCADA system, components of RTU	Chalk & Talk					
6		Communication subsystem, IED functional block diagram.	Chalk & Talk					
7		Classification of SCADA system: Single master–single remote; Single master–multiple RTU	Chalk & Talk					
8		Multiple masters–multiple RTUs; and Single master, multiple sub master, multiple remote.	Chalk & Talk					
9		Discussion on VTU QP questions, Summary of Module-1	ICT					
10		SRS Conduction /Assignment	ICT					
Remarks:								

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MODULE-2								
11		Module-2: Automatic Generation Control (AGC): Introduction, Schematic diagram of load frequency and excitation voltage regulators of turbo generators.	Chalk & Talk					
12		Load frequency control (Single area case)	Chalk & Talk					
13		Turbine speed governing system, Model of speed governing system	Chalk & Talk					
14		Turbine model, Generator load model	Chalk & Talk					
15		Complete block diagram of representation of load frequency control of an isolated power system, Numerical	Chalk & Talk					
16		Steady-state analysis, Numerical	Chalk & Talk					
17		Control area concept	Chalk & Talk					
18		Proportional plus Integral Controller. Numerical	Chalk & Talk					
19		Discussion on VTU QP questions, Summary of Module-2	ICT					
20		SRS Conduction /Assignment	ICT					
Remarks: IA-1: QP Discussion*								

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MODULE-3								
21		Module-3: Automatic Generation Control in Interconnected Power System: Two area load frequency control.	Chalk & Talk					
22		Optimal (Two area) load frequency control by state variable.	Chalk & Talk					
23		Automatic voltage control, Numerical	Chalk & Talk					
24		Load frequency control with generation rate constraints (GRCs).	Chalk & Talk					
25		Numericals	Chalk & Talk					
26		Speed governor dead band and its effect on AGC.	Chalk & Talk					
27		Digital LF Controllers.	Chalk & Talk					
28		Decentralized control, Numericals	Chalk & Talk					
29		Discussion on VTU QP questions, Summary of Module-3	ICT					
30		SRS Conduction /Assignment	ICT					
Remarks: IA-II: QP Discussion*								

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MODULE-4								
31		Module-4:Control of Voltage and Reactive Power: Introduction, Generation and absorption of reactive power.	Chalk & Talk					
32		Relation between voltage, power and reactive power at a node.	Chalk & Talk					
33		Methods of voltage control: Injection of reactive power, Shunt capacitors and reactors.	Chalk & Talk					
34		Series capacitors, Synchronous compensators and Series injection.	Chalk & Talk					
35		Tap changing transformers. Combined use of tap-changing transformers and reactive power injection.	Chalk & Talk					
36		Booster transformers, Phase shift transformers.	Chalk & Talk					
37		Voltage collapse.	Chalk & Talk					
38		Numericals	Chalk & Talk					
39		Discussion on VTU QP questions, Summary of Module-4	ICT					
40		SRS Conduction /Assignment	ICT					
Remarks:								

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MODULE-5								
41		Module-5:Power System Security: Introduction, Factors affecting power system security.	Chalk & Talk					
42		Contingency Analysis.	Chalk & Talk					
43		Linear Sensitivity Factors.	Chalk & Talk					
44		AC power flow methods.	Chalk & Talk					
45		Contingency Selection and Ranking.	Chalk & Talk					
46		State Estimation of Power Systems: Introduction	Chalk & Talk					
47		Linear Least Square Estimation.	Chalk & Talk					
48		Numericals	Chalk & Talk					
49		Discussion on VTU QP questions, Summary of Module-5	ICT					
50		SRS Conduction /Assignment	ICT					
Remarks: IA-III: QP Discussion*								



A T M E
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Sl. No.	Activity	Planned	Actual	Remarks
1	Theory Classes	40		
2	Assignments/Quizzes/Self-study	5: Write Up		
		1: Group Activity		
		5: SRS		
3	Tutorials/ Extra classes	-		
4	Internal Assessments	3		
5	ICT-based Teaching. (% of usage in Curriculum)	10		
Planning			Execution	
Faculty Signature:			Faculty Signature:	
HoD Signature:			HoD Signature:	

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