Department of Electrical & Electronics Engineering

Lesson Plan & Work-done Diary for AY: 2025-26-Odd Semester

Course with Code: Power System Analysis-2 – BEE703				Faculty: Maria Sushma S				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: Network Topology									
1.		**Network Topology:** Introduction to the course	ICT, Chalk and Talk						
2.		Basic definitions of Elementary graph	ICT, Chalk and Talk						
3.		Elementary graph theory: Tree, cut-set, loop.	ICT, Chalk and Talk						
4.		Formation of Incidence Matrices	ICT, Chalk and Talk						
5.		Formation of Incidence Matrices cntd.	ICT, Chalk and Talk						
6.		Primitive network-Impedance form and admittance form	ICT, Chalk and Talk						
7.		Formation of Y Bus by Singular Transformation	Chalk and Talk						
8.		Y bus by Inspection Method.	Chalk and Talk						
9.		Illustrative examples	Chalk and Talk						
10.		Illustrative examples	Chalk and Talk						
11.		Illustrative examples and summary of M1	Chalk and Talk						

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MODULE-2 : Load Flow Studies									
12.		**Module-2: Load Flow Studies**: Introduction, Classification of buses..	Chalk and Talk						
13.		Power flow equation,	Chalk and Talk						
14.		Operating Constraints	Chalk and Talk						
15.		Data for Load flow	Chalk and Talk						
16.		Gauss Seidel iterative method.	Chalk and Talk						
17.		Illustrative examples	Chalk and Talk						
18.		Illustrative examples	Chalk and Talk						
19.		Illustrative examples	Chalk and Talk						
20.		Summary of M2-VTU QP -SRS-Discussion							

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MODULE-3 : Load Flow Studies Continued								
21.		**Module-3: Load Flow Studies(continued):**Newton-Raphson method derivation in Polar form	Chalk and Talk					
22.		Fast decoupled load flow method,	Chalk and Talk					
23.		Flow charts of LF methods.	Chalk and Talk					
24.		Comparison of Load Flow Methods.	Chalk and Talk					
25.		Illustrative examples	Chalk and Talk					
26.		Illustrative examples	Chalk and Talk					
27.		Illustrative examples	Chalk and Talk					
28.		Illustrative examples	Chalk and Talk					
29.		Illustrative examples	Chalk and Talk					
30.		Summary of M3-VTU QP -SRS-Discussion	Chalk and Talk					

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MODULE-4 : Economic Operation of Power System and Unit Commitment								
31.		**Module-4: Economic Operation of Power System**: Introduction and Performance curves	Chalk and Talk					
32.		Economic generation Scheduling neglecting losses and generator limits	Chalk and Talk					
33.		Economic generation scheduling including generator limits and neglecting losses	Chalk and Talk					
34.		Economic dispatch including transmission losses	Chalk and Talk					
35.		Derivation of transmission loss formula.	Chalk and Talk					
36.		Illustrative examples.	Chalk and Talk					
37.		**Unit Commitment**: Introduction, Constraints and unit commitment solution by prior list method	Chalk and Talk					
38.		Dynamic forward DP approach (Flow chart and Algorithm only).	Chalk and Talk					

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MODULE-5 : Symmetrical Fault Analysis and Power System Stability								
39.		**Module-5: Symmetrical Fault Analysis:** Z Bus Formulation by Step by step building algorithm without mutual Coupling between the elements by addition of link and addition of branch.	Chalk and Talk		W-4			
40.		Z Bus Formulation cntd.- addition of branch.	Chalk and Talk		F-2			
41.		Illustrative examples.	Chalk and Talk		M-4			
42.		Z bus Algorithm for Short Circuit Studies excluding numerical.	Chalk and Talk		T-1			
43.		**Power System Stability:** Numerical Solution of Swing Equation by Point by Point method	Chalk and Talk		W-4			
44.		Runge Kutta Method.	Chalk and Talk		F-2			
45.		Illustrative examples	Chalk and Talk		M-4			
46.		Illustrative examples	Chalk and Talk		T-1			
47.		Illustrative examples	Chalk and Talk		W-4			
48.		Summary of M-5	Chalk and Talk		F-2			
49.		Revision	Chalk and Talk		M-4			
50.		Revision	Chalk and Talk		T-1			

Cycle-1			
Expt No.	**Title of the Experiment**	**Batch-2** **Thu**	**Batch-1** **Fri**
1.	Y-Bus Formation for Power Systems with and without Mutual Coupling, by Singular Transformation.		
2.	Y-Bus Formation for Power Systems without Mutual Coupling, by Inspection method.		
3.	Formation of Jacobian matrix in Polar Coordinates, for a System having less than 4 Buses.		
4.	Load Flow Analysis using Gauss Siedel Method for the system with both PQ buses and PV Buses. By simulation.		
5.	Load Flow Analysis using NR Method and Fast Decoupled Method for the system with both PQ buses and PV Buses. (Using suitable simulation package		
Cycle-2			
6.	Determination of Bus Currents, Bus Power and Line Flows, for a Specified System Voltage		
7.	Write a program to generate unit commitment schedule for a system with three units using priority listing method (priority based on least cost).		
8.	Optimal Generation Scheduling for Thermal power plants (Using suitable simulation package.)		
9.	Formation of Z-Bus (without mutual coupling) using Z-Bus Building Algorithm.		
10.	To obtain Swing Curve and to Determine Critical Clearing Time, Regulation, Inertia Constant/Line Parameters /Fault Location/Clearing Time/Pre-Fault Electrical Output for a Single Machine connected to Infinite Bus through a Pair of identical Transmission Lines Under 3-Phase Fault On One of the two Lines. (Using suitable simulation package.)		
11.	Repetition		
12.	Repetition		
13.	Lab CIE		

	Activity	Planned	Actual	Remarks
1	Theory Classes	50		
2	Lab session	12		
3	Assignments/ Quizzes/ Self-study	2: Assignments 1: Group Activity 3: Quiz/SRS		
4	Tutorials/ Extra classes	NA		
5	Internal Assessments	3		Average of 3 test
6	ICT based Teaching (% of usage in Curriculum)			

Planning	Execution
Faculty Signature:	**Faculty Signature:**
HoD Signature:	**HoD Signature:**