



**Department of Electrical & Electronics Engineering**

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

Course with Code: Power System Analysis I- BEE601				Faculty: Maria Sushma S			Semester & Section: VI	
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
<b>MODULE-1</b>								
1.		<b>Representation Of Power System Components</b> Introduction about the subject, syllabus discussion	Chalk and Talk					
2.		Single-phase Representation of Balanced Three-Phase Networks	Chalk and Talk					
3.		One-Line Diagram	Chalk and Talk					
4.		Impedance or Reactance Diagram, Numerical Problems	Chalk and Talk					
5.		Per Unit (PU) System, Numerical problems	Chalk and Talk					
6.		Steady-State Model of Synchronous Machine, Power transformer, Transmission line and loads	Chalk and Talk					
7.		Steady-State Model of Transmission line and loads	Chalk and Talk					
8.		Numerical problems on per unit system	Chalk and Talk					
9.		Numerical problems on per unit system	Chalk and Talk					

10		Numerical problems and Summary of Module 1 and VTU Question paper discussion	Chalk and Talk					
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**MODULE-3**

11.		<b>Symmetrical Component</b> Introduction,	Chalk and Talk					
12.		Phase Shift in Star-Delta Transformers	Chalk and Talk					
13.		Sequence Impedances of Transmission Lines	Chalk and Talk					
14.		Sequence Impedances and Sequence Network of Power System	Chalk and Talk					
15.		Sequence Impedances and Networks of Synchronous Machine,	Chalk and Talk					
16.		Sequence Impedances of Transmission Lines	Chalk and Talk					
17.		Sequence Impedances and Networks of Transformers	Chalk and Talk					
18.		Construction of Sequence Networks of a Power System	Chalk and Talk					
19.		Sequence Impedance of SynchronousGenerator						

20.		Numerical Problems on Sequence Networks and VTU Question paper discussion <b>Summary of Module3</b>						
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<b>MODULE-4</b>								
21		<b>Unsymmetrical Fault Analysis</b> Introduction						
22		Symmetrical Component Analysis of Unsymmetrical Faults						
23		Single Line-To-Ground (LG) Fault,						
24		Numericals on Single Line-To-Ground(LG) Fault						
25		Line-To-Line (LL) Fault						
26		Numericals on Line-To-Line (LL) Fault						
27		Double Line-To-Ground (LLG) Fault						
28		Numericals on Double Line-To-Ground (LLG) Fault						
29		Open Conductor Faults						
30		Open Conductor Faults- Numericals <b>Summary of Module 4</b> and VTU Question paper discussion						

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<b>MODULE-5</b>								
31		<b>Power System Stability:</b> Introduction						
32		Dynamics of a Synchronous Machine						
33		Power Angle Equation Salient and Non – Salient pole Synchronous Machines						
34		Power Angle Equation Salient and Non – Salient pole Synchronous Machines continued						
35		Simple Systems, numerical problems						
36		Steady-State Stability						
37		Transient Stability, Numericals						
38		Equal Area Criterion						
39		Numericals on Equal Area Criterion						
40		Factors Affecting Transient Stability <b>Summary of Module 5</b> and VTU Question paper discussion						

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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
<b>MODULE-2</b>								
41		<b>Symmetrical Fault Analysis, Introduction</b>						
42		Transient on a Transmission Line						
43		Transient on a Transmission Line						
44		Short Circuit of a Synchronous Machine (On No Load)						
45		Numericals on Short Circuit of a Synchronous Machine (On No Load)						
46		Short Circuit of a Loaded Synchronous Machine						
47		Numericals on Short Circuit of a Loaded Synchronous Machine						
48		Selection of Circuit Breakers						
49		Numericals on Selection of Circuit Breakers						
50		Numericals and <b>Summary of Module 2</b> and VTU Question paper discussion						

Course with Code: Power System Analysis I- BEE601- IPCC Lab				Faculty: Maria Sushma S			Semester & Section: VI	
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
<b>List of Experiments</b>								
1.		Write a program to draw power angle curves for salient and non-salient pole synchronous machines, reluctance power, excitation, EMF and regulation.						
2.		Write a program to calculate Sag of a transmission line for i)Poles at equal height ii)Poles at unequal height						
3.		Write a program to determine the efficiency, Regulation, ABCD parameters for short and long transmission line and verify $AD-BC=1$ .						
4.		Write a program to determine the efficiency, Regulation and ABCD parameters for medium transmission line for i) $\Pi$ - configuration ii) T- Configuration and verify $AD-BC=1$ .						
5.		Write a program to calculate sequence components of line voltages given the unbalanced phase voltages.						
6.		Write a program to calculate the sequence components of line currents, given the unbalanced phase currents in a three phase i) 3-wire system ii) 4 wire system.						
7.		Determination of fault currents and voltages in a single transmission line for i) Single Line to Ground Fault. ii)Line to Line Fault iii) Double Line to Ground Fault Using suitable simulating software package.						
8.		Determination of fault currents and voltages in a single transmission line for Three phase Fault Using suitable simulating software package.						
9.		Write a program to obtain critical disruptive voltage for various atmospheric and conductor conditions.						
10.		Write a program to evaluate transient stability of single machine connected to infinite bus.						

	<b>Activity</b>	<b>Planned</b>	<b>Actual</b>	<b>Remarks</b>
<b>1</b>	Theory Classes	50		
<b>2</b>	IPCC Lab	10		
<b>3</b>	Assignments/ Self-study	2		
<b>4</b>	Quiz/Seminar/Group discussion	1		
<b>5</b>	Internal Assessments	3		
<b>6</b>	ICT based Teaching (% of usage in Curriculum)	30%		
<b>Planning</b>			<b>Execution</b>	
<b>Faculty Signature:</b>			<b>Faculty Signature:</b>	
<b>HoD Signature:</b>			<b>HoD Signature:</b>	