

Branch Name:	Electrical Engineering
ProgramCode:	ET213
CourseName:	Power System Stability and Control Practical
CourseCode:	2ET2130201P
Pre-requisiteCourse:	Interconnected Power System

Course Objectives:

1. To understand the various power system stability problems.
2. To understand various types of stability.
3. To know various effects and advantages-disadvantages of stability in electrical power system.
4. To identify and analyze the control strategies for improving power system stability.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-	-	-	10	25	10	25	50

Course Contents:

Sr. No.	Detail of Practical	Content Hours
1	Prepare a simulation to observe the voltage buildup of an unloaded synchronous generator with step excitation.	04
2	Prepare a simulation to observe the load angle variation of the synchronous machine connected to infinite bus with different disturbances.	04
3	Prepare a simulation of SMIB system and observe its transient response.	04
4	Prepare a state space model of a small power system and carry out small signal analysis.	04
5	Prepare a simulation of two machine system connected through a long transmission line.	04
6	Prepare a simulation of a multi-machine system and observe the dynamic response.	04
7	Prepare a simulation to show steady state voltage instability.	02
8	Prepare simulation of P-V and Q-V curves for given power system.	02

Reference Books:

1. J. Machowski, J.W. Bialek, J.R. Bumby - Power System Dynamics, Stability and Control, Wiley publishers.
2. P. Sauer and M.A. Pai - Power System Dynamics and Stability, Prentice Hall.
3. Ajarappa - The Techniques for Computation of Voltage Stability Assessment, Wiley IEEE Press.
4. I. J. Nagrath and D. P. Kothari - Modern Power Systems Analysis, Tata McGraw Hill

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the basic types of power system stabilities.	2 Understanding
CLO2	Analyze and design various methods for determine the power system stability .	4Analyze 6 Creating
CLO3	acquire the knowledge of sub-synchronous resonance and its effect on power system.	2 Understanding
CLO4	Understand the torsional characteristics & sub synchronous oscillation.	2 Understanding
CLO5	Analyze and evaluate the voltage stability and reason for voltage collapse.	4Analyze 5 Evaluate
CLO6	Analyze and evaluate the transient stability, symmetrical component and different fault in system.	4Analyze 5 Evaluate

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	L			M			L				M		M			L
CLO2			L		M			M		L		M		M	H	
CLO3		L		M			L				M		M			L
CLO4				M			L				M		M			L
CLO5			L		M			M		L		M		M	H	
CLO6			L		M			M		L		M		M	H	

H: High, M: Medium, L: Low