

COURSE CODE: 1152EE105	COURSE TITLE: ADVANCES IN POWER SYSTEM	L	T	P	C
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COURSE CATEGORY:

Program Elective

PREAMBLE :

To model steady-state operation of large-scale power systems and to solve the power flow problems and to analyze the stability

PREREQUISITE COURSES:

Power System Analysis

RELATED COURSES:

Power System Protection & Switch gear

COURSE EDUCATIONAL OBJECTIVES :

- To understand the advancement of power system in various aspects such as synchronous oscillations and other advancements

CO Nos.	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
C01	Explain the basics of harmonics and sub harmonics oscillation	K2
C02	Understand the Stability analysis of multi-machine system	K2
C03	Power quality standards, curves and monitoring devices	K2
C04	Basics of Grid and distribution systems	K2
C05	Power system networking, protection and control	K2

CORRELATION OF COs AND POs

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M										L	L
CO2			H					M	M			
CO3												
CO4			H		H	L	H				L	L
CO5					L			M	M		L	L

COURSE CONTENT:

UNIT I	HARMONICS & SUB HARMONICS OSCILLATION	9
Understanding sub harmonics- sub harmonics in Ferro resonant circuit- sub harmonic protection- harmonic distortion & oscillation – non linear oscillations		
UNIT II	STABILITY OF MULTIMACHINE SYSTEM	9
Transient stabilization of multi machine power system with nontrivial transfer conductance-on-line transient stability analysis- excitation control for multi machine power system		
UNIT III	POWER QUALITY	9
Power quality issues- standards- power quality monitoring devices- power quality		

conditioners for smart grid- CBEMA curves		
UNIT IV	GRID BASED POWER SYSTEM	9
DC micro grid based distribution power generation system – Grid – tied power system- smart grid based solutions applied to power distribution system.		
UNIT V	POWER SYSTEM NETWORKING	9
Power system network reduction techniques- synchronization and kron reduction in power networks- protection control- EMS- SCADA, RTU, PLC		
TOTAL: 45 PERIODS		
TEXT BOOKS:		
<ol style="list-style-type: none"> 1. Power System Network Reduction Techniques – Dr.C.Radha Krishnan. 2. Power system stability- Kundur. 3. Power quality- C.sankaran. 		
REFERENCE BOOKS:		
<ol style="list-style-type: none"> 1. Power system engineering – Rajput. 2. Understanding the principles of power system harmonics- Arillaga, CRC publications 		