POWER SYSTEMS LAB

Course Code	20EE3651	Year	III	Semester(s)	II
Course Category	Professional Core	Branch	EEE	Course Type	Lab
Credits	1.5	L-T-P	0-0-3	Prerequisites	--
Continuous Internal Evaluation:	15	Semester End Evaluation:	35	Total Marks:	50

Course Outcomes	
Upon **successful completion of the course, the student will be able to**	
CO1	**Demonstrate** the practical power transmission network and calculate various parameters.(L3)
CO2	**Determine** the parameters and fault calculations of synchronous machine.(L3)
CO3	**Analyse** the characteristics of different relays used in electrical power systems.(L4)
CO4	**Analyse** the modern power system networks by using software tools.(L4)
CO5	Conduct experiments as a **team/individual** by using equipment available in the Laboratory.
CO6	Make an effective **report** based on experiments.

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations(3:High, 2:Medium, 1:Low)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3			3								3	2	1
CO2	3			3								3	2	1
CO3		3		3								3	2	1
CO4		3	3	3	3							3	2	1
CO5									3				2	1
CO6										3			2	1

Syllabus		
Expt. No.	Contents	Mapped CO
Conduct any ten experiments		
1	Evaluation of ABCD parameters for transmission line.	CO1, CO5, CO6
2	Evaluation of surge impedance loading of transmission line.	CO1, CO5, CO6
3	Determination of sub-Transient reactance of a salient pole machine.	CO2, CO5, CO6
4	Determination of sequence impedances of a cylindrical rotor alternator.	CO2, CO5, CO6
5	Fault Analysis under occurrence of LG Fault & LL Fault.	CO2, CO5, CO6
6	Characteristics of electromagnetic type IDMT over current relay.	CO3, CO5, CO6
7	Characteristics of electro mechanical type over voltage relay.	CO3, CO5, CO6
8	Characteristics of static negative sequence relay.	CO3, CO5, CO6

9	Characteristics of static biased differential relay.	CO3, CO5, CO6
10	Characteristics of microprocessor based under voltage relay.	CO3, CO5, CO6
11	Characteristics of microprocessor based over voltage relay.	CO3, CO5, CO6
12	Formation of Y-Bus by direct inspection method using MATLAB.	CO4, CO5, CO6
13	Transient stability studies using MATLAB.	CO4, CO5, CO6
14	Simulation of power system stabilizer using SIMULINK.	CO4, CO5, CO6
15	Simulation of single area and two area systems using SIMULINK.	CO4, CO5, CO6

Learning Resources

Text Books

1. J.B. Gupta, "Fundamentals of Switchgear and Protection", S.K. Kataria & Sons, 1st edition 2011.
2. Hadi Saadat, "Power System Analysis", PSA publishing, 3rd edition, 2011.

Reference Books

1. D.P.Kothari and I.J.Nagrath, "Modern power system analysis", TMH Publications, 4th edition, 2011.
2. C.L.Wadhwa, " Electrical power systems", New Age International (P) Limited, 6th edition, 2018.