

Course no.:	ENR 188
Course title:	Power System Laboratory
Core or elective:	Core
Number of credits:	2
Number of lectures-tutorials-practicals:	0-0-56
Course coordinator:	Mr. Sheeraz Kirmani

Course Objectives:

To work in power industry, it is very important to be able to handle various power system equipment like synchronous machine, DC machine, Induction machine, transformers and transmission lines. This laboratory is designed to give students a hands-on experience on different equipment of electrical power system.

Prerequisites:

Course ENR 135: Power Systems Engineering

Evaluation procedure:

- Practical records: 20 %
- Viva voce: 30 %
- Practical: 50 %

Details of course content and allotted time

S. o.	Topic	Allotted time (hrs)		
		L	T	P
1	To determine the ABCD parameters for short, medium and long transmission line			4
2	To study speed control of DC motor above the normal range by field control and to plot speed vs field current characteristics			4
3	To determine the performance of a transmission line under different loading conditions			4
4	To simulate the different types of faults in a power system			4
5	To obtain load characteristics of DC shunt motor			4
6	To vary the speed of an induction motor by varying voltage and to change the direction of rotation.			4
7	To perform the no load test and block rotor test on an induction motor			4
8	To perform the load test on an induction motor			4
9	To perform the OC and SC test and Sumpner's back to back test on a transformer and determine the circuit model parameters			4
10	To understand reactive power and power factor in single-phase and three-phase circuits			4
11	To operate two transformers in parallel and study the load sharing between them			4
12	To calculate regulation at full and unity power factor for a single phase transformer			4
13	To find the OCC and SCC of an alternator			4
14	To study the voltage profile improvement using shunt capacitors			4
Total				56

Recommended readings

Books:

1. DP Kothari and IJ Nagrath, "Modern Power System Analysis", Tata McGraw-Hill
2. DP Kothari and IJ Nagrath, "Electrical Machines", Tata McGraw-Hill
3. Prabha Kundur, "Power System Stability and Control", Tata McGraw-Hill

This course has been commented upon by:

1. Dr Ashu Verma, Assistant Professor, Gautam Buddha University
2. Dr M Rizwan, Assistant Professor, Delhi Technological University