

**M.TECH FIRST SEMESTER
POWER SYSTEMS LAB**

17EEPC1L1

Lab Practice: 3 periods/week

Credits: 2

Internal Assessment: 25 marks

End Semester Assessment: 50 marks

Course Objective:

The aim of this course is to communicate the basic awareness on different types of faults in power systems and to interpret the students to the equipment in electrical engineering practice so that it helps them in industry oriented learning

Course Learning Outcomes: At the end of the course the student will be able to

1. Determine the parameters of various machines used in power systems.
2. Determine the performance characteristics of a long transmission line and its reactive power requirement.
3. Understand the characteristics of different relays used in electrical Industry.
4. Design and analyze power system networks by using modern software tools for power system simulation studies.

Conduct any 10 experiments

1. Reactive power control of long transmission line.
2. A, B, C, D constants of long transmission line.
3. Operating characteristics of Static differential Relay.
4. Operating characteristics of IDMT over current relay.
5. Determination of regulation of non salient pole alternator by EMF, MMF and ZPF methods.
6. Determination of sub-Transient reactance of a salient pole machine.
7. Sequence impedances and fault studies on synchronous machine
8. Characteristics of microprocessor based under voltage relay.
9. Characteristics of microprocessor based over voltage relay.
10. Evaluation of surge impedance loading of transmission line.
11. Equivalent circuit of a three winding transformer.
12. Determination of breakdown strength of oil
13. Characteristics of static negative sequence relay.
14. Program to read and print out the power system load flow data of 5 BUS – IEE 14 Bus and IEEE 30 Bus systems
15. Formation of Ybus using two dimensional arrays by inspection method
16. Formation of Ybus using Sparsity Technique
17. DC load flow study
18. NR – load flow study with FACTS.
19. Characteristics of Electromagnetic type over voltage relay
20. Characteristics of Numerical type over voltage relay
21. Generator protection using simulink