

**POWER SYSTEM & SIMULATION LAB – I****Course Code:13EE2109****L P C**  
**0 3 2****Pre requisites:** Power System Analysis,  
Power System Operation & Control**Course Outcomes:**

At the end of this Course, the student will be able to

- CO 1: Analyze and interpret data on various power system components.
- CO 2: Simulate the characteristics of various power system control using modern software tools.
- CO 3: Determine various faults using Generator protection Module
- CO 4: Measure various parameters using Digital storage oscilloscope.
- CO 5: Analyze transient stability using MiPower

**LIST OF EXPERIMENTS**

1. Develop a program to solve Swing Equation.
2. Determination of Sub-Transient Reactance of a Salient Pole Machine.
3. Study and testing of over current and over voltage relay in Generator protection system with IDMT relay characteristics.
4. Develop a Simulink model for a single area load frequency problem and simulate the same.
5. Write a program to find Y-bus & Z-bus
6. Determination of the parameters of synchronous machine by using digital oscilloscope.
7. Simulate a transmission line and find I.Ferranti effect, II. Efficiency
8. Transient Stability analysis of a typical power system by using MiPower.
9. Design a PID controller.
10. Fault Analysis of 3 phase alternator
  - i) LG Fault
  - ii) LL Fault
  - iii) LLG Fault
  - iv) LLLG Fault

**Text Books:**

1. Allen J.Wood and Bruce F.Wollenberg, "*Power Generation, Operation and Control*", 2<sup>nd</sup> Edition, John Wiley & Sons Inc, 1996.
2. Olle E.Elgerd, "*Electrical Energy Systems Theory – An introduction*" 2<sup>nd</sup> Edition, Tata McGraw Hill, 1983.
3. Hadi Saadat, "*Power System Analysis* ", Second Edition , TMH Publication New Delhi.
4. D. P. Kothari and J. S. Dhillon, "*Power System Optimization*", Second Edition-PHI Learning Private Limited- 2011.