**20EE32P2-POWER SYSTEMS & SIMULATION LAB**

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| **Course Category:** | Professional core | **Credits:** | 1.5 |
| **Course Type:** | Laboratory | **Lecture-Tutorial-Practical:** | 0-0-3 |
| **Pre-requisite:** | Power system Analysis, power system, Switchgear and Protection | **Sessional Evaluation:****Univ.Exam Evaluation:****Total Marks:** | 4060100 |

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| **Course Objectives:** | Students undergoing this course are expected to: |
| 1. Procure sufficient knowledge on MATLAB to solve the power system problems.2. Conduct different parameter analysis on transmission lines. 3. Learn about various system studies and different techniques used for Power system planning.4.Learn about the dynamic analysis of power system5. Present problem oriented knowledge of power system analysis methods.6. Learn about AVR design in power system. |
| **Course Outcomes:** | After completing the course the student will be able to |
| **CO1** | Understand the computation techniques to determine line parameters. |
| **CO2** | Determine the Impedance and Admittance matrix of the given transmission line. |
| **CO3** | Understand modeling of transmission lines by load flow techniques. |
| **CO4** | Implement a good Unit Commitment method. |
| **CO5** |  Design a better Economic load dispatch in power systems. |
| **CO6** | Predict the reasons for all faults in power system. |
| **Course Content:** | Minimum of 10 experiments to be conducted out of the following:**LIST OF EXPERIMENTS**1. Computation of line parameters using MATAB.
2. Modelling of transmission lines.
3. Formation of Y bus.
4. Load flow analysis using G-S method.
5. Economic load dispatch in power systems.
6. Load-frequency dynamics of single and two area power systems.
7. Numerical Solution of Swing Equation.
8. Simulate LG, LL, LLG and 3phase faults in a 3 machine 9 bus system at same location.
9. Unit Commitment Program.
10. Design AVR for a Power System.
11. Simulate the Ferranti effect for a short transmission line.
12. Simulate Voltage and Current wave forms for various Power factors (UPF, 0.8lag & 0.8 lead) for a simple power system.
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