**19EE21P1-ELECTRICAL CIRCUITS AND SIMULATION LAB**

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| **Course Category:** | Professional core | **Credits:** | 1.5 |
| **Course Type:** | Laboratory | **Lecture-Tutorial-Practical:** | 0-0-3 |
| **Pre-requisite:** | Basic concepts of Ohm’s Law, Kirchhoff’s Laws. Basic knowledge of Network Theorems  | **Sessional Evaluation:****External Exam Evaluation:****Total Marks:** | 4060100 |

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| **Course Objectives:** | Students undergoing this course are expected to learn : |
| 1. The design and analysis of basic electric circuits.2. The network theorems.3. The measurement of power and resonating condition in AC circuits.4. The two port network parameters experimentally.5. To Plot the locus diagram6. The verification of electrical circuit theorems using MATLAB software |
| **Course Outcomes:** | After completing the course the student will be able to: |
| CO1 | Analyse the electric circuits experimentally. |
| CO2 | Verify the network theorems. |
| CO3 | Measure the power in single phase AC circuit and resonating condition in RLC series circuit. |
| CO4 | Determine the two port network parameters experimentally. |
| CO5 | Plot the locus diagram of the given circuit experimentally. |
| CO6 | Acquire skills of using MATLAB software for electrical circuit studies. |
| **Course Content:** | Minimum of 10 experiments to be conducted out of the following:**List of Experiments**1. Verification of Kirchhoff’s current law and Kirchhoff’s voltage law using hardware and simulation
2. Verification of Super position theorem using hardware and simulation
3. Verification of Reciprocity theorem using hardware and simulation
4. Verification of Maximum Power Transfer theorem using hardware and simulation
5. Verification of Thevenin’s theorem using hardware and simulation
6. Verification of Norton’s theorem using hardware and simulation
7. Resonance in series RLC circuit using hardware and simulation
8. Locus diagram of RC series circuit using hardware and simulation
9. Measurement of time constant and rise time in RC series circuit using hardware and simulation
10. Average value, RMS value, Form Factor, Peak Factor of sinusoidal wave, Square wave using hardware and simulation
11. Determination of two port network parameters using hardware and simulation
12. Measurement of power and power factor using hardware and simulation
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