

### MAJOR EQUIPMENT

| <b>Course Code: EE3271</b> <b>Course Title: Electric Circuits Laboratory</b><br><b>Subject incharge: Dr.R Banupriya</b> |                                                                                        |                                                        |
|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>Sl. No.</b>                                                                                                          | <b>Description of Equipment</b>                                                        | <b>Required numbers<br/>(for batch of 30 students)</b> |
| 1                                                                                                                       | 10 Nos of PC loaded with Pspice/ Matlab/e-Sim / Scilab/<br>Equivalent Software Package | Minimum 10 Users                                       |

### MINOR EQUIPMENT

| <b>Course Code: EE3271</b> <b>Course Title: Electric Circuits Laboratory</b> |                                                                                                             |                                                        |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>Sl. No.</b>                                                               | <b>Description of Equipment</b>                                                                             | <b>Required numbers<br/>(for batch of 30 students)</b> |
| 1                                                                            | Printer                                                                                                     | 1                                                      |
| 2                                                                            | Regulated Power Supply (0-30V )                                                                             | 15 Nos                                                 |
| 3                                                                            | Function Generator (MHz Range)                                                                              | 5 Nos                                                  |
| 4                                                                            | Oscilloscope (20 MHz)                                                                                       | 10 Nos                                                 |
| 5                                                                            | Digital Storage Oscilloscope (20 MHz)                                                                       | 2 Nos                                                  |
| 6                                                                            | AC/DC – Voltmeters of required rating                                                                       | 10 Nos                                                 |
| 7                                                                            | AC/DC -Ammeters of required rating                                                                          | 10 Nos                                                 |
| 8                                                                            | Multimeters                                                                                                 | 10 Nos                                                 |
| 9                                                                            | Decade Resistance Box, Decade Inductance Box, Decade<br>Capacitance Box                                     | 6 Nos each.                                            |
| 10                                                                           | Single Phase Wattmeter of suitable rating                                                                   | 5 Nos                                                  |
| 11                                                                           | Circuit Connection Boards -                                                                                 | 20 Nos                                                 |
| 12                                                                           | Connecting Wires                                                                                            | Necessary Quantity                                     |
| 13                                                                           | Three phase star& delta connected load / Single phase load<br>bank of suitable rating                       | 3 Nos                                                  |
| 14                                                                           | Necessary Quantities of Resistors, Inductors, Capacitors of<br>various capacities (Quarter Watt to 10 Watt) |                                                        |

## **SAFETY MEASURES**

- **General Rules of Conduct in Laboratories are displayed.**
  - **Specific Safety Rules for students are displayed.**
  - **Fire Extinguisher and First aid kit are regularly inspected and restocked as necessary.**
  - **All electrical wires are protected by using MCB.**
  - **Well trained technical supporting staff.**
  - **Periodical servicing of the lab equipments.**
  - **Maintaining a clean and organized laboratory.**
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### MAPPING OF COs WITH POs AND PSOs

| COs  | POs |     |     |     |     |     |     |     |     |      |      |      | PSOs |      |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
|      | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PS01 | PS02 | PS03 |
| 1    | 3   | 2   | -   | -   | 1   | 1   | 1   | -   | -   | -    | -    | 2    | 2    | 1    | 1    |
| 2    | 3   | 2   | -   | -   | 1   | 1   | 1   | -   | -   | -    | -    | 2    | 2    | 1    | 1    |
| 3    | 3   | 2   | -   | -   | 1   | 1   | 1   | -   | -   | -    | -    | 2    | 2    | 1    | 1    |
| Avg. | 3   | 2   | -   | -   | 1   | 1   | 1   | -   | -   | -    | -    | 2    | 2    | 1    | 1    |

**EE3271**

**ELECTRIC CIRCUITS LABORATORY**

**L T P C**  
**0 0 4 2**

#### **COURSE OBJECTIVES:**

- To simulate various electric circuits using Pspice/ Matlab/e-Sim / Scilab
- To gain practical experience on electric circuits and verification of theorems

#### **LIST OF EXPERIMENTS**

##### **Familiarization of various electrical components, sources and measuring instruments**

1. Simulation and experimental verification of series and parallel electrical circuit using fundamental laws.
2. Simulation and experimental verification of electrical circuit problems using Thevenin's theorem.
3. Simulation and experimental verification of electrical circuit problems using Norton's theorem.
4. Simulation and experimental verification of electrical circuit problems using Superposition theorem.
5. Simulation and experimental verification of Maximum Power transfer theorem.
6. Simulation and Experimental validation of R-C, R-L and RLC electric circuit transients
7. Simulation and Experimental validation of frequency response of RLC electric circuit.
8. Design and implementation of series and parallel resonance circuit.
9. Simulation and experimental verification of three phase balanced and unbalanced star, delta networks circuit (Power and Power factor calculations).

**TOTAL: 60 PERIODS**

#### **COURSE OUTCOMES:**

- CO1: Use simulation and experimental methods to verify the fundamental electrical laws for the given DC/AC circuit (Ex 1)
- CO2: Use simulation and experimental methods to verify the various electrical theorems (Superposition, Thevenin, Norton and maximum power transfer) for the given DC/AC circuit (Ex 2-5)
- CO3: Analyze transient behavior of the given RL/RC/RLC circuit using simulation and experimental methods (Ex 6)
- CO4: Analyze frequency response of the given series and parallel RLC circuit using simulation and experimentation methods (Ex 7-8)