Annexure 2

BASIC ELECTRICAL ENGINEERING LAB

Course Code: ECE 121 **Credit Units: 01**

Total Hours: 20

Course Objective:
The objective of the course is to provide a brief knowledge of experimental study of Electrical Engineering to students of all disciplines. This Course includes some practical aspects related to flow of current, voltages, basic knowledge of Transformer, basic knowledge of electromagnetism, basic knowledge of electrical network.

Course Contents:
Lab Experiments are based on the course Basic Electrical Engineering (ECE 101)

List of experiments / demonstrations: (total 20 Hours with 2 Hours each experiment)

1. Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, multi-meter, oscilloscope. Real-life resistors, capacitors and inductors.
2. To verify KVL & KCL in the given network.
3. To verify Superposition Theorem.
4. To verify Maximum Power Transfer Theorem.
5. Demonstration of cut-out sections of machines: dc machine (commutator-brush arrangement), induction machine (squirrel cage rotor), synchronous machine (field winging - slip ring arrangement) and single-phase induction machine.
6. Torque Speed Characteristic of separately excited dc motor.
7. To determine R_{Th}, V_{Th}, R_N, I_N and verify Thevenin's and Norton's Theorem in a given network.
8. To perform open circuit & short circuit test on a single-phase transformer.
9. To study and draw the voltage vs frequency characteristics of the series and parallel resonance for given RLC Circuit
10. Demonstration of (a) dc-dc converters (b) dc-ac converters – PWM waveform (c) the use of dc-ac converter for speed control of an induction motor.

Laboratory Outcomes:

- Get an exposure to common electrical components and their ratings.
- Make electrical connections by wires of appropriate ratings.
- Understand the usage of common electrical measuring instruments.
- Understand the basic characteristics of transformers and electrical machines.
- Get an exposure to the working of power electronic converters.

Examination Scheme:

IA			EE			
Class Test (Practical Based)	**Mid Term Viva**	**Attendance**	**Major Experiment**	**Minor Experiment/ Spotting**	**Practical Record**	**Viva**
15	10	05	35	15	10	10

Note: IA –Internal Assessment, EE- External Exam