Course No.	Course Name	L-T-P - Credits	Year of Introduction
EE234	CIRCUITS AND MEASUREMENTS LAB	0-0-3-1	2016

Course Objectives

To develop measurement systems for various electrical circuits and systems and to use different transducers for measurement of physical variables.

List of Exercises/Experiments : (18 experiments are listed, out of which 12 experiments are mandatory).

1. Verification of Superposition Theorem in dc circuits.
2. Verification of Thevenin's Theorem in dc circuits.
3. Determination of impedance, admittance, power factor and real/reactive/ apparent power drawn in RLC series/parallel circuits.
4. 3-phase power measurement using one wattmeter and two-wattmeter method.
5. Determination of B-H curve, μ-H curve and μ-B curve of an iron ring specimen.
6. Measurement of voltmeter and ammeter resistances using Wheatstone's bridge and Kelvin's double bridge and extension of range of voltmeters and ammeters
7. Measurement of self/ mutual inductance and coupling co-efficient of iron cored coil and air-cored coil.
8. Calibration of meters and measurement of unknown resistance using slide- wire potentiometer.
9. Calibration of single phase energy meter by direct and phantom loading at various power factors.
10. Calibration of 3-phase energy meter using standard wattmeter.
11. Calibration of wattmeter using Vernier dial potentiometer
12. Measurement of capacitance using Schering Bridge.
13. Extension of instrument range by using Instrument transformers(CT and PT)
14. Characteristics of Thermistor, RTD, and Thermocouple
15. Characteristics of LVDT.
16. Characteristics of strain gauge/ Load cell.
17. Measurement of energy using electronic Energy meter/TOD meter
18. Current measurement using Clamp on meter

Expected Outcome:

After the completion of the course student will be able to:

1. Analyze RLC circuits and coupled circuit to obtain the voltage -current relations
2. Verify DC netwok theorems by setting up various networks
3. Calibrate the single phase and three phase energy meter at various power faqctors
4. Measure power in a single and three phase circuits by various methods
5. Determine magnetic characteristics of iron ring specimen
6. Measure high and low resistances using various bridges
7. Use Electronic energy meter, TOD meter and clamp on meter

Text Book:

1. Sawhney AK: A course in Electrical and Electronic Measurements & instrumentation, Dhanpat Rai .
2. J B Gupta : A course in Electrical & Electronic Measurement & Instrumentation., S K Kataria & Sons
3. Kalsi H. S., Electronic Instrumentation, 3/e, Tata McGraw Hill, New Delhi, 2012