



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA – 533 003, Andhra Pradesh, India**  
**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

## COURSE STRUCTURE-R19

III Year – I SEMESTER				
	L	T	P	C
	0	0	3	1.5
<b>ELECTRICAL MEASUREMENTS &amp; INSTRUMENTATION LABORATORY</b>				

### Learning Objectives:

- To understand the correct function of electrical parameters and calibration of voltage, current, single phase and three phase power and energy, and measurement of electrical characteristics of resistance, inductance and capacitance of a circuits through appropriate methods.
- To understand the calibration of DC and AC Potentiometers.
- To understand the testing of CT and PT.
- To Understand and the characteristics of Thermo couples, LVDT, Capacitive transducer, piezoelectric transducer.
- To understand the measurement of strain, Phase difference and frequency.

### Any 10 of the following experiments are to be conducted

1. Calibration of dynamometer wattmeter using phantom loading
2. Crompton D.C. Potentiometer - Calibration of PMMC ammeter and PMMC voltmeter
3. Kelvin's double Bridge - Measurement of resistance - Determination of tolerance.
4. Capacitance Measurement using Schering Bridge.
5. Inductance Measurement using Anderson Bridge.
6. Calibration of LPF Wattmeter – by direct loading.
7. Measurement of 3 phase power with single watt meter and 2 No's of C.T.
8. Testing of C.T. using mutual inductor – Measurement of % ratio error and phase angle of given C.T. by Null method.
9. P.T. testing by comparison – V.G as Null detector – Measurement of % ratio error and phase angle of the given P.T.
10. AC Potentiometer – Polar form/Cartesian form – Calibration of AC Voltmeter, Parameters of Choke
11. Thermocouple – characteristics
12. LVDT – characteristics.
13. Capacitive transducers characteristics.
14. Piezoelectric transducer characteristics.
15. Measurement of strain using strain gauge
16. Measurement of phase difference, frequency using Lissajous patterns in CRO.

### Learning Outcomes:

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

- measure the electrical parameters voltage, current, power, energy and electrical characteristics of resistance, inductance and capacitance.
- known the characteristics of transducers.
- measure the strains, frequency and phase difference.