20EC2501B - ELECTRONIC INSTRUMENTATION

Offering Branch	ECE		
Course Category:	Open Elective -I	Credits:	3
Course Type:	Theory	Lecture-Tutorial-Practical:	3-0-0
Prerequisites:	NIL	Continuous Evaluation:	30
		Semester End Evaluation:	70
		Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	**Comprehend** the concepts of Electronic instrumentation	K2
CO2	**Identify** the Performance characteristics of instruments	K3
CO3	**Illustrate** the different types of Signal Generator, Wave Analyzers& Bridges	K3
CO4	**Analyze** the various types of Oscilloscopes	K4
CO5	**Illustrate** the concept of various types of Transducers.	K3

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2									2			2	2
CO2	2									2			2	2
CO3	3									2			2	2
CO4		2								2			2	2
CO5	2									2			2	2
Avg.	**2**	**2**								**2**			**2**	**2**

1- Low **2-Medium** **3-High**

Course Content

UNIT-1	**Performance characteristics of instruments:** Static characteristics, Errors in Measurement, Dynamic Characteristics, DC Voltmeters- Multi range, Range extension, Thermo couple type RF ammeter, Ohmmeters series type, shunt type, Miltimeteres for Voltage, Current and resistance measurements.	CO1, CO2
UNIT-2	**Signal Generator& Wave Analyzers :** Fixed and variable signal generators, AF oscillators, Standard signal generator, AF sine and square wave signal generators, Function Generators, Basic wave analyzers, Frequency selective wave analyzers, Hetero- dyne wave analyzer, Harmonic Distortion Analyzers, Spectrum Analyzers.	CO1, CO3
UNIT-3	**Oscilloscopes:** Dual trace oscilloscope, Measurement of amplitude, period and frequency, Sampling oscilloscope, storage oscilloscope, digital readout oscilloscope, digital storage oscilloscope.	CO1, CO4
UNIT-4	**Bridges:** Wheatstone Bridge, AC Bridges Measurement of inductance- Maxwell's bridge, Measurement of capacitance - Schearing Bridge. Wien Bridge, Q-meter.	CO1, CO3
UNIT-5	**Transducers:** Resistance, Capacitance, inductance, Strain gauges, LVDT, Piezo Electric transducers, Resistance Thermometers, Thermocouples, Thermistors, Sensistors, force, pressure, velocity, humidity, moisture, speed, Data acquisition system.	CO1, CO5

Learning Resources

Text books:	1. Electronic instrumentation, - H.S.Kalsi, Tata McGraw Hill, 2nd edition 2004. 2. Modern Electronic Instrumentation and Measurement Techniques – A.D. Helfrick and W.D. Cooper, PHI, 5th Edition, 2002.
Reference books	1. Electronic Instrumentation & Measurements - David A. Bell, PHI, 2nd Edition,2003.

	2. Electronic Test Instruments, Analog and Digital Measurements - Robert A.twitter, Pearson Education, 2nd Edition ,2004