

ELECTRONIC INSTRUMENTATION
(Open Elective – I)

Course Code	20EC2501B	Year	III	Semester	I
Course Category	OE - 1	Branch	Common to All	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Nil
Continuous Internal 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 (L2)
CO2	Identify the Performance characteristics of instruments (L3)
CO3	Illustrate the different types of Signal Generator, Wave Analyzers & Bridges (L3)
CO4	Analyze the various types of Oscilloscopes (L4)
CO5	Illustrate the concept of various types of Transducers.(L3)

Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)														
Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation														
* - Average value indicates course correlation strength with mapped PO														
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	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
Average	2	2								2			2	2

Syllabus		
Unit No.	Contents	Mapped CO
I	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
II	Signal Generator & Wave Analyzers: Fixed and variable signal	CO1,CO3

	generators, AF oscillators, Standard signal generator, AF sine and square wave signal generators, Function Generators, Basic wave analyzers, Frequency selective wave analyzers, Heterodyne wave analyzer, Harmonic Distortion Analyzers, Spectrum Analyzers.	
III	Oscilloscopes: Dual trace oscilloscope, Measurement of amplitude, period and frequency, Sampling oscilloscope, storage oscilloscope, digital readout oscilloscope, digital storage oscilloscope.	CO1,CO4
IV	Bridges: Wheatstone Bridge, AC Bridges Measurement of inductance-Maxwell's bridge, Measurement of capacitance - Schering Bridge. Wien Bridge, Q-meter.	CO1,CO3
V	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

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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	
