

## ELECTRONIC INSTRUMENTATION

<b>Course Code</b>	20EC2501B	<b>Year</b>	III	<b>Semester</b>	I
<b>Course Category</b>	Open Elective-I	<b>Branch</b>	Common to All	<b>Course Type</b>	Theory
<b>Credits</b>	3	<b>L-T-P</b>	3-0-0	<b>Prerequisites</b>	Nil
<b>Continuous Internal Evaluation:</b>	30	<b>Semester End Evaluation:</b>	70	<b>Total Marks:</b>	100

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Course Outcomes	
Upon successful completion of the course, the student will be able to	
<b>CO1</b>	<b>Comprehend</b> the concepts of electronic instrumentation (L2)
<b>CO2</b>	<b>Identify the Performance</b> characteristics of instruments (L3)
<b>CO3</b>	<b>Illustrate</b> the different types of Signal Generator, Wave Analyzers & Bridges (L3)
<b>CO4</b>	<b>Analyze</b> the various types of Oscilloscopes (L4)
<b>CO5</b>	<b>Illustrate</b> the concept of various types of Transducers. (L3)

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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	PO10	PO11	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

Syllabus		
Unit No.	Contents	Mapped CO
I	<b>Performance characteristics of instruments:</b> 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	<b>Signal Generator &amp; Wave Analyzers :</b> Fixed and variable signal generators, AF oscillators, Standard signal generator, AF sine and	CO1, CO3

	square wave signal generators, Function Generators, Basic wave analyzers, Frequency selective wave analyzers, Hetero- dyne wave analyzer, Harmonic Distortion Analyzers, Spectrum Analyzers.	
III	<b>Oscilloscopes:</b> Dual trace oscilloscope, Measurement of amplitude, period and frequency, Sampling oscilloscope, storage oscilloscope, digital readout oscilloscope, digital storage oscilloscope.	CO1, CO4
IV	<b>Bridges:</b> Wheatstone Bridge, AC Bridges Measurement of inductance- Maxwell's bridge, Measurement of capacitance - Schearing Bridge. Wien Bridge, Q-meter.	CO1, CO3
V	<b>Transducers:</b> 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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<b>Learning Resources</b>	
<b>Text Books</b>	
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.	
<b>Reference Books</b>	
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	

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