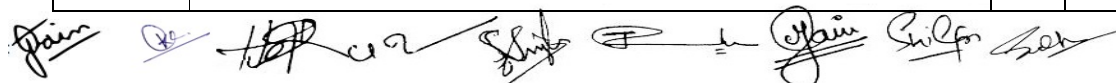
 SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal) Department of Electrical Engineering												
Semester/Year		I/I		Program			B.Tech					
Subject Category		BSC		Subject Code:		EEA102		Subject Name:		Electronics Instrumentation		
Maximum Marks Allotted								Contact Hours			Total Credits	
Theory				Practical				Total Marks	L	T		P
End Sem	Mid-Sem	Quiz	Ass	End Sem	lab	Assg	100		3	-	-	3
Prerequisites:												
Fundamental of Electrical Engineering, Laws of Electrical Engineering												
Course Objective:												
1. To understand CRO and its practical application 2. To understand the different types of AC bridges for measurement of resistance, inductance, capacitance & frequency and quality factor. 3. To understand and study transducers and multiplexing, A/D & D/A. 4. To understand digital instruments												
Course Outcomes:												
CO1: Understand and distinguish the different types of transducers. CO2: Apply the knowledge and identify different types of signal generators used in different applications. CO3: Apply the knowledge and identify different types of wave analyzer used in harmonics elimination. CO4: Demonstrate different types of digital instruments used in day to day applications. CO5: Illustrate different types and parts of CRO.												
UNITs	Descriptions										Hrs.	CO's
I	Transducers Transducers definition and classification, Characteristic & choice of Transducers, Resistive inductive and capacitive transducers, strain gauge and gauge factor, Thermistor, Thermo couples, LVDT, Piezo-Electric transducers, Hall effect transducers, Opto-electronic transducers.										9	1,2,3,5
II	Signal Generators Fixed & variable frequency AF oscillators, Sine wave generators, Standard signal generator, AF Sine and Square wave generator, Function generator, Square and pulse generator, Random noise generator, Sweep generator, TV Sweep generator, Marker generator, Sweep- Marker generator, Beat frequency oscillator.										9	1,2,3,4
III	Wave analyzer Basic wave analyzer, Frequency selective wave analyzer, Heterodyne wave analyzer, Harmonic distortion, analyzer, spectrum analyzer digital Fourier analyzer.										5	1,2,3,4
IV	Digital Instruments Advantages of Digital instruments over analog instruments, resolution and sensitivity of Digital meters. Digital Voltmeter - Ramp type, Dual slope integration type, Integrating type, Successive approximation type, Continuous balance DVM or Servo balancing potentiometer type DVM, Digital Multimeter, Digital frequency meter, Time period measurement, High frequency measurement, Electronic counter, Digital tachometer, Digital PH meter, Digital phase meter, Digital capacitance meter.										9	1,2,3,4
V	Introduction to CRO/DSO Different parts of CRO, Its Block diagram, Electrostatic focusing, Electrostatic deflection, post deflection acceleration, Screen for CRTs, Vertical & Horizontal deflection system, Time base circuit, Oscilloscope probes and transducers, Attenuators, Application of CROs, Lissajous patterns, Special purpose CROs- Multi input, Dual trace, Dual beam, Sampling, Storage (Analog & Digital) Oscilloscopes.										8	1,2,3,4,5



Guest Lectures (if any)				
Total Hours				40
Text Book-				
<ol style="list-style-type: none"> 1. Kalsi H.S., "Electronic Instrumentation", TMH 2. Electronics & Electrical Measurements & Instrumentation, S.K. Kataria & Sons., J.B. Gupta. 3. Sawhney A.K. Instrumentation & Measurement –Dhanpat Rai & Co. 4. Rajput R.K. Electronic Instrumentation-S.Chand. 				
Reference Books-				
<ol style="list-style-type: none"> 1. Albert. D. Helfrick, W.D. Cooper, "Modern Electronic Instrumentation and measurement techniques", PHI. 2. Morris A.S., "Principles of Measurement & Instrumentation", PHI 3. Rangan C.S., G.R. Sarma, Mani, "Instrumentation : Devices & systems", TMH 4. Murthy BVS, "Transducers and Instrumentation", PHI. 5. Doebelin D.O., "Measurement Systems- Applications and Design". 				
Modes of Evaluation and Rubric				
Theory (60)	Midsem (20)	Assignment (10)	Quiz (10)	Total (100)
Practical (30)	LW (10)	Quiz (10)		Total (50)
List/Links of e-learning resource				
NPTEL				
Recommendation by Board of studies on		14/6/22		
Approval by Academic council on		16/6/22		
Compiled and designed by		Dr. Jitendra Tandekar		
Subject handled by department		Electrical Engg.		

