Name of Faculty : Umesh Saroj
Discipline : Electronics & Communication Engg.
Semester : 2nd
Subject : **Electronic instruments and Measurement**
Lesson Plan Duration : 15weeks (15.01.2026 to 30.04.2026)
Lecture /Practical per week in hours : Lecture: 3 Practical: 4

Week	Theory		Date of Execution	Practical		Date of Execution
	Lecture Day	Topic (Including assignment/test)		Practical Day	Topic	
1st	1st	**Basics of instruments and Measurements**		1st (G1)	Introduction & Familiarization with new lab equipment.	
	2nd	Method of measurement, types of instruments		2nd (G2)	Introduction & Familiarization with new lab equipment.	
	3rd	Specifications of instruments: Accuracy, precision, sensitivity, resolution, range				
2nd	4th	Errors in measurement, sources of errors, limiting errors, loading effect		3rd (G1)	Measurement of voltage, resistance and current using analog multi meter	
	5th	importance and applications of standards and calibration		4th (G2)	Measurement of voltage, resistance and current using analog multi meter	
	6th	**Introduction to Voltage, Current and Resistance Measurement Moving Coil and Moving Iron Instruments**				
3rd	7th	Principles of measurement of DC voltage, DC current		5th (G1)	Measurement of voltage, resistance and current using digital multi meter	
	8th	Principles of measurement of AC voltage, AC current,		6th (G2)	Measurement of voltage, resistance and current using digital multi meter	
	9th	Principles of operation and construction of permanent magnet moving coil (PMMC) instruments				
4th	10th	Continued Principles of operation and construction of permanent magnet moving coil (PMMC) instruments		7th (G1)	Revision	
	11th	Principles of operation and construction of Moving iron type instruments,		8th (G2)	Revision	
	12th	Continued Principles of operation and construction of Moving iron type instruments, VOM Meter				
5th	13th	**Introduction to Cathode Ray Oscilloscope**		9th (G1)	To study the front panel controls of CRO	
	14th	Construction and working of Cathode Ray Tube(CRT)		10th (G2)	To study the front panel controls of CRO	
	15th	Continued Construction and working of Cathode Ray Tube(CRT)				

6th	16th	Block diagram description of a basic CRO and triggered sweep oscilloscope, front panel controls		11th (G1)	Measurement of voltage, frequency, time period and phase using CRO	
	17th	Continued Block diagram description of a basic CRO and triggered sweep oscilloscope, front panel controls		12th (G2)	Measurement of voltage, frequency, time period and phase using CRO	
	18th	Specifications of CRO and their Applications				
7th	19th	Measurement of current, voltage, frequency using CRO		13th (G1)	Measurement of voltage, frequency, time and phase using DSO	
	20th	Measurement of time period and phase using CRO , Lissajous pattern		14th (G2)	Measurement of voltage, frequency, time and phase using DSO	
	21st	Digital storage oscilloscope (DSO) : block diagram and working principle				
8th	22nd	Continued Digital storage oscilloscope (DSO) : block diagram and working principle		15th (G1)	Revision	
	23rd	**Introduction to Impedance Bridges, Q Meter and Function Generator**		16th (G2)	Revision	
	24th	Wheat stone bridge				
9th	25th	AC bridges: Maxwell's induction bridge, Hay's bridge		17th (G1)	Measurement of phase using lissajous pattern on CRO.	
	26th	AC bridges: De-Sauty's bridge,		18th (G2)	Measurement of phase using lissajous pattern on CRO.	
	27th	Block diagram and workig principle of Q meter.				
10th	28th	Explanation of block diagram, specifications of low frequency generators.		19th (G1)	Measurement of unknown resistance using Wheat Stone bridge.	
	29th	Explanation of block diagram, specifications of RF generators.		20th (G2)	Measurement of unknown resistance using Wheat Stone bridge.	
	30th	Pulse generator				
11th	31st	Function generator		21st (G1)	Measurement of Q of a coil	
	32nd	Problem Discussion		22nd (G2)	Measurement of Q of a coil	
	33rd	Revision				
12th	34th	**Introduction to Digital Instruments**		23rd (G1)	Measurement of inductance using Hay's Bridge.	
	35th	Comparison of analog and digital instruments		24th (G2)	Measurement of inductance using Hay's Bridge.	

	36th	Block diagram and working of a digital multi-meter				
13th	37th	Continued Block diagram and working of a digital multi-meter		25th (G1)	Measurement of inductance using Maxwell Induction Bridge.	
	38th	Applications and Limitations of digital multi-meters.		26th (G2)	Measurement of inductance using Maxwell Induction Bridge.	
	39th	Continued Applications and Limitations of digital multi-meters.				
14th	40th	Problem Discussion		27th (G1)	Measurement of capacitance using De Sauty's Bridge.	
	41st	Working principle of logic probe, logic pulser,		28th (G2)	Measurement of capacitance using De Sauty's Bridge.	
	42nd	Continued Working principle of logic probe, logic pulser				
15th	43rd	Revision		29th (G1)	Revision	
	44th	Revision		30th (G2)	Revision	
	45th	Revision				

RECOMMENDED BOOKS

1. AK Sawhney, "Electronics Measurement and Instrumentation" by Dhanpat Rai and Sons, New Delhi
2. Oliver, "Electronics Measurement and Instrumentation" by Tata McGraw Hill Education Pvt Ltd, New Delhi
3. Cooper, "Electronics Instrumentation" by Prentice Hall of India, New Delhi
4. Sanjeev Kumar and Yash Pal, "Electronics Instrumentation and measurement" by North Publications
5. JB Gupta, "Electronics Instrumentation" by Satya Prakashan, NewDelhi

6. E-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR. SUGGESTED

WEBSITES 1. http://swayam.gov.in