

GOVERNMENT POLYTECHNIC, SAMBALPUR, RENGALI

DEPARTMENT OF E&TC ENGINEERING

LESSON PLAN

**SUBJECT- ELECTRONICS MEASUREMENT & INSTRUMENTATION (TH-4)
SEMESTER-3RD**

NAME OF THE FACULTY- MS. LOPAMUDRA BHOI

TOTAL NO. OF PERIODS-60(4/W)

UNIT	DATE	PERIOD	TOPICS TO BE COVERED
1	2 nd week of November,2021		Qualities of Measurement
		1	Discuss the Static Characteristics
		2	Accuracy, sensitivity, reproducibility & static error of instruments
		3	Dynamic characteristics & speed of instruments.
		4	Errors of an instrument & explain various types.
		5	Previous year questions discussion & assignments.
2	3 rd week of November,2021		Indicating Instruments
		1	Introduction to Indicator & Display devices & its types
		2	Basic principle of meter movement, permanent magnetic moving coil movement & its advantages & disadvantages.
		3	Operation of Moving Iron Instrument
		4	Basic principle of operation of DC Ammeter and Multi range Ammeter
		5	Basic principle of operation of AC Ammeter and Multi range Ammeter
		6	Basic principle of operation of DC Voltmeter and its applications
		7	Basic principle of operation of AC Voltmeter and its application
		8	Basic principle of Ohm Meter (Series & Shunt type)
		9	Basic principle of Analog Multimeter, its types & applications
		10	Operation of Q meter and its essentials
		11	Previous year questions discussion & assignments.
3	2 nd week of December,2021		Digital Instruments
		1	Principle of operation of Ramp type Digital Voltmeter & applications
		2	Operation of display of 3 1/2, 4 1/2– Digital Multimeter & Resolution and Sensitivity
		3	Basic principle of operation of working of Digital Multimeter ,its types & applications
		4	Basic principle of operation of working of Digital Frequency Meter
		5	Operation of working of Digital Measurement of Time
		6	Measurement of Frequency
		7	Principle of operation of working of Digital Tachometer
		8	Principle of operation of working of Automation in Digital Instruments (Polarity Indication, Ranging, Zeroing & Fully Automatic)
		9	Block diagram of LCR meter & its working principle.
		10	Previous year questions discussion & assignments.
4	1 st week of January,2022		Oscilloscope
		1	Basic principle of Oscilloscope & its Block Diagram
		2	Basic principle & Block diagram of CRO, Dual Trace Oscilloscope & its specification
		3	CRO Measurements, Lissajous figures
		4	Applications of Oscilloscope (Voltage period & frequency measurement)
		5	Operation of Digital Storage Oscilloscope & High frequency Oscilloscope
		6	Previous year questions discussion & assignments
5			Bridges

	2 nd week of January,2022	1	Types of Bridges (DC & Ac Bridges)
		2	DC Bridges (Measurement of Resistance by Wheatstone's Bridge)
		3	AC bridges (Measurement of inductance by Maxwell's Bridge & by Hay's Bridge)
		4	Measurement of capacitance by Schering's Bridge & De-Sauty Bridge.
		5	Working principle of Q meter its circuit diagram & measurement of Low impedance
		6	Measurement of frequency
		7	LCR Meter & its measurements
		8	Previous year questions discussion & assignments
6	3 rd week of January,2022		Transducers & Sensors
		1	Parameter, method of Selecting & advantage of Electrical Transducer & Resistive Transducer
		2	Working principle of Strain Gauges, define Strain Gauge (No mathematical Derivation)
		3	Working principle of LVDT
		4	Working principle of capacitive transducers (pressure)
		5	Working principle of Load Cell (Pressure Cell)
		6	Working principle of Temperature Transducer (RTD, Optical Pyrometer, Thermocouple, Thermister)
		7	Working principle of Current transducer and KW Transducer.
		8	Working principle of Proximity & Light sensors.
9	Previous year questions discussion & assignments		
7	2 nd week of February,2022		Signal Generator, Wave Analyser & DAS
		1	General aspect & classification of Signal generators
		2	Working principle of AF Sine & Square wave generator
		3	Working principle of the Function Generator
		4	Function of basic Wave Analyser& Spectrum Analyser
		5	Basic concept of Data Acquisition System (DAS)
6	Previous year questions discussion & assignments		