

**GOVERNMENT POLYTECHNIC, SAMBALPUR, RENGALI**

**DEPARTMENT OF E&TC ENGINEERING**

**LESSON PLAN**

**SUBJECT- EM&I (Th-4)**

**SEMESTER-3RD**

**NAME OF THE FACULTY- ms Pragyan paramita Pradhan    TOTAL CLASS-  
60(4/W)**

UNIT	DATE	PERIOD	TOPICS TO BE COVERED
<b>1</b>	August 1st week		<b>Qualities of Measurement</b>
		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.
<b>2</b>	August 3 <sup>rd</sup> week		<b>Indicating Instruments</b>
		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
<b>3</b>	September 2 <sup>nd</sup> week		<b>Digital Instruments</b>
		1	Principle of operation of Ramp type Digital Voltmeter & application
		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
4	October 2 <sup>nd</sup> week		<b>Oscilloscope</b>
		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
5	November 1st week		<b>Bridges</b>
		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 & DeSauty Bridge
		5	Working principle of Q meter its circuit diagram & measurement of Low impedance
		6	Measurement of frequency
		7	LCR Meter & its measurements
6	November 4th week		<b>Transducers &amp; Sensors</b>
		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.
7	December 3 <sup>rd</sup> week		<b>Signal Generator, Wave Analyser &amp; DAS</b>
		1	General aspect & classification of Signal generators
		2	Working principle of AF Sine & Square wave generator
		3	Measurement of capacitance by Schering's Bridge & DeSauty Bridge.
		4	Function of basic Wave Analyser& Spectrum Analyser
		5	LCR Meter & its measurements

