

<b>Discipline : ETC</b>	<b>Semester:- 3<sup>rd</sup></b>	<b>Name of the Teaching Faculty: -  Aditi Mohapatra</b>
<b>Subject:- Electronics Measurement &amp; Instrumentation (TH-4)</b>	<b>No of Days/per Week Class Allotted :-  04</b>	<b>Semester From:- Date: 01.07.2024 To Date:08.11.2024</b>
<b>Week</b>	<b>Class Day</b>	<b>Theory</b>
<b>1<sup>st</sup></b>	<b>1<sup>st</sup></b>	Qualities of Measurement
	<b>2<sup>nd</sup></b>	Discuss the Static Characteristics,
	<b>3<sup>rd</sup></b>	Accuracy, sensitivity, reproducibility & static error of instruments
	<b>4<sup>th</sup></b>	Dynamic characteristics & speed of instruments
<b>2<sup>nd</sup></b>	<b>1<sup>st</sup></b>	Errors of an instrument & explain various types.
	<b>2<sup>nd</sup></b>	Introduction to Indicator & Display devices & its types
	<b>3<sup>rd</sup></b>	Basic principle of meter movement, permanent magnetic moving coil movement & its advantages & disadvantages
	<b>4<sup>th</sup></b>	Operation of Moving Iron Instrument
<b>3<sup>rd</sup></b>	<b>1<sup>st</sup></b>	Basic principle of operation of DC Ammeter and Multi range Ammeter
	<b>2<sup>nd</sup></b>	Basic principle of operation of AC Ammeter and Multi range Ammeter
	<b>3<sup>rd</sup></b>	Basic principle of operation of DC Voltmeter and its applications
	<b>4<sup>th</sup></b>	Basic principle of operation of AC Voltmeter and its application
<b>4<sup>th</sup></b>	<b>1<sup>st</sup></b>	Basic principle of Ohm Meter (Series & Shunt type)
	<b>2<sup>nd</sup></b>	Basic principle of Analog Multi meter, its types & applications
	<b>3<sup>rd</sup></b>	Operation of Q meter and its essentials
	<b>4<sup>th</sup></b>	Digital Instruments
<b>5<sup>th</sup></b>	<b>1<sup>st</sup></b>	Principle of operation of Ramp type Digital Voltmeter & applications
	<b>2<sup>nd</sup></b>	Operation of display of 3 1/2, 4 1/2– Digital Multi meter & Resolution and Sensitivity
	<b>3<sup>rd</sup></b>	Basic principle of operation of working of Digital Multi meter , its types & applications
	<b>4<sup>th</sup></b>	Basic principle of operation of working of Digital Frequency Meter
<b>6<sup>th</sup></b>	<b>1<sup>st</sup></b>	Operation of working of Digital Measurement of Time
	<b>2<sup>nd</sup></b>	Measurement of Frequency.
	<b>3<sup>rd</sup></b>	Principle of operation of working of Digital Tachometer
	<b>4<sup>th</sup></b>	Principle of operation of working of Automation in Digital Instruments (Polarity Indication, Ranging, Zeroing & Fully Automatic
<b>7<sup>th</sup></b>	<b>1<sup>st</sup></b>	Block diagram of LCR meter & its working principle.
	<b>2<sup>nd</sup></b>	Oscilloscope
	<b>3<sup>rd</sup></b>	Basic principle of Oscilloscope & its Block Diagram
	<b>4<sup>th</sup></b>	Basic principle & Block diagram of CRO, its specification
<b>8<sup>th</sup> 8<sup>th</sup></b>	<b>1<sup>st</sup></b>	Basic principle & Block diagram of Dual Trace Oscilloscope & its specification
	<b>2<sup>nd</sup></b>	
	<b>3<sup>rd</sup></b>	CRO Measurements,
	<b>4<sup>th</sup></b>	Lissajous figures
	<b>1<sup>st</sup></b>	Applications of Oscilloscope (Voltage period & frequency measurement)
	<b>2<sup>nd</sup></b>	Operation of Digital Storage Oscilloscope & High frequency Oscilloscope
		Bridges

9 <sup>th</sup>	3 <sup>rd</sup>	Types of Bridges ( DC& Ac Bridges)
	4 <sup>th</sup>	DC Bridges (Measurement of Resistance by Wheatstone's Bridge)
10 <sup>th</sup>	1 <sup>st</sup>	AC bridges (Measurement of inductance by Maxwell's Bridge )
	2 <sup>nd</sup>	AC bridges (Measurement of inductance by Hay's Bridge)
	3 <sup>rd</sup>	Measurement of capacitance by Schering's Bridge
	4 <sup>th</sup>	Measurement of capacitance by DeSauty Bridge.
11 <sup>th</sup>	1 <sup>st</sup>	Working principle of Q meter its circuit diagram
	2 <sup>nd</sup>	measurement of Low impedance
	3 <sup>rd</sup>	Measurement of frequency
	4 <sup>th</sup>	LCR Meter & its measurements
12 <sup>th</sup>	1 <sup>st</sup>	Transducers & Sensors
	2 <sup>nd</sup>	Parameter, method of Selecting & advantage of Electrical Transducer & Resistive Transducer
	3 <sup>rd</sup>	Working principle of Strain Gauges, define Strain Gauge (No mathematical Derivation)
	4 <sup>th</sup>	Working principle of LVDT
13 <sup>th</sup>	1 <sup>st</sup>	Working principle of capacitive transducers (pressure)
	2 <sup>nd</sup>	Working principle of Load Cell (Pressure Cell)
	3 <sup>rd</sup>	Working principle of Temperature Transducer (RTD)
	4 <sup>th</sup>	Working principle of Temperature Transducer ( Optical Pyrometer)
14 <sup>th</sup>	1 <sup>st</sup>	Working principle of Temperature Transducer (Thermocouple, Thermister)
	2 <sup>nd</sup>	Working principle of Current transducer and KW Transducer.
	3 <sup>rd</sup>	Working principle of Proximity & Light sensors.
	4 <sup>th</sup>	Signal Generator, Wave Analyser & DAS General aspect & classification of Signal generators
15 <sup>th</sup>	1 <sup>st</sup>	Working principle of AF Sine & Square wave generator .
	2 <sup>nd</sup>	Working principle of the Function Generator
	3 <sup>rd</sup>	Function of basic Wave Analyser& Spectrum Analyser
	4 <sup>th</sup>	Basic concept of Data Acquisition System (DAS)

  
 16.8.24  
 Teaching Faculty

  
 HOD, ETC