

Lesson Plan for Electrical Measurement and Instrumentation (Th3)		
Discipline: Electrical Engineering	Semester: 4th	Name of the Teaching Faculty: Sri Subhra Pratik Sahoo (GUEST FACULTY)
Subject: Electrical Measurement and Instrumentation	No. of days per week class allotted: 5	Semester From Date : 16/01/2024 to Date: 26/04/2024 No. of Weeks: 15
Week	Class Day	Theory
1st		1. MEASURING INSTRUMENTS
	1st	1.1 Define Accuracy, precision, Errors, (cont.)
	2nd	1.1 Define Accuracy, precision, Errors, (cont.)
	3rd	1.1 Define Accuracy, precision, Errors, (cont.)
	4th	Resolutions Sensitivity and tolerance
	5th	Resolutions Sensitivity and tolerance
2nd	1st	1.2 Classification of measuring instruments.
		2.ANALOG AMMETERS AND VOLTMETERS
	2nd	2.1. Describe Construction, principle of operation, errors, ranges merits and demerits of:
	3rd	2.1.1 Moving iron type instruments.
	4th	2.1.2 Permanent Magnet Moving coil type instruments.
	5th	2.1.3 Dynamometer type instruments
	1st	2.1.4 Rectifier type instruments
	2nd	2.1.5 Induction type instruments
	3rd	2.2 Extend the range of instruments by use of shunts and Multipliers.
	4th	2.2 Extend the range of instruments by use of shunts and Multipliers.
	5th	2.2 Extend the range of instruments by use of shunts and Multipliers.
4th	1st	2.3 Solve Numerical
	2nd	3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)(cont.)
	3rd	3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)
	4th	3.2 The Errors in Dynamometer type wattmeter .
	5th	Methods of their correction.
5th	1st	3.3 Discuss Induction type watt meters.(cont.)
	2nd	3.3 Discuss Induction type watt meters.
	3rd	Questions and answers session
		4. ENERGYMETERS AND MEASUREMENT OF ENERGY
	4th	4.1 Introduction
	5th	4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.(cont.)
6th	1st	4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.(cont.)
	2nd	4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.

	3rd	4.3 Testing of Energy Meters.(cont.)
	4th	4.3 Testing of Energy Meters.
	5th	Questions and answers session.
7th	1st	Questions and answers session.
		5. MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR
	2nd	5.1 Tachometers, types and working principles(cont.)
	3rd	5.1 Tachometers, types and working principles.
		5.2 Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters.(cont.)
	4th	5.2 Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters.(cont.)
8th	1st	5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters(cont.)
	2nd	5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters
	3rd	5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters
		6. MEASUREMENT OF RESISTANCE, INDUCTANCE& CAPACITANCE
	4th	6.1 Classification of resistance
	5th	6.1..1. Measurement of low resistance by potentiometer method. .
9th	1st	6.1..2. Measurement of medium resistance by wheat Stone bridge method.
	2nd	6.1..3. Measurement of high resistance by loss of charge method.
	3rd	6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively.
	4th	6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively.
	5th	6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively.
10th	1st	6.5 Measurement of capacitance by Schering Bridge method
		7. SENSORS AND TRANSDUCER
	2nd	7.1. Define Transducer, sensing element or detector element and transduction elements.
	3rd	7.1. Define Transducer, sensing element or detector element and transduction elements.
	4th	7.1. Define Transducer, sensing element or detector element and transduction elements.
	5th	7.2. Classify transducer. Give examples of various class of transducer.
11th	1st	7.2. Classify transducer. Give examples of various class of transducer.
	2nd	7.3. Resistive transducer,
	3rd	7.3. Resistive transducer,
	4th	7.3.1 Linear and angular motion potentiometer.
	5th	7.3.1 Linear and angular motion potentiometer.
12th	1st	7.3.1 Linear and angular motion potentiometer.
12th	2nd	7.3.2 Thermistor and Resistance thermometers.
	3rd	7.3.2 Thermistor and Resistance thermometers.
	4th	7.3.3 Wire Resistance Strain Gauges
	5th	7.3.3 Wire Resistance Strain Gauges
13th	1st	7.4. Inductive Transducer)
	2nd	7.4.1 Principle of linear variable differential Transformer (LVDT)

14th	3rd	7.4.1 Principle of linear variable differential Transformer (LVDT)
	4th	7.4.2 Uses of LVDT.
	5th	7.5. Capacitive Transducer.
	1st	7.5.1 General principle of capacitive transducer.
	2nd	7.5.1 General principle of capacitive transducer.
	3rd	7.5.2 Variable area capacitive transducer.
	4th	7.5.2 Variable area capacitive transducer.
	5th	7.5.3 Change in distance between plate capacitive transducer.7.6. Piezo electric Transducer and Hall Effect Transducer with their applications.
15th		8. OSCILLOSCOPE
	1st	8.1. Principle of operation of Cathode Ray Tube.
	2nd	8.2. Principle of operation of Oscilloscope (with help of block diagram).
	3rd	8.3. Measurement of DC Voltage & current.
	4th	8.4. Measurement of AC Voltage, current, phase & frequency.
	5th	Questions answers session.

HoD Elect. Engg.

Academic Co-ordinator

Signature of Faculty