

LESSON PLAN



SUB: ELECTRICAL MEASUREMENT & INSTRUMENTATION

BRANCH:- ELECTRICAL ENGG.

SEMESTER: 4th

NAME OF FACULTY: UMESH KU. DALAI



**GOVERNMENT POLYTECHNIC,
BHADRAK**

SESSION:2024-25

Hod, Electrical-23
HOD (ELI-23)
G.P.BHADRAK

Academic Co-ordinator
Academic Co-ordinator

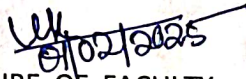
Principal
Govt. Polytechnic, Bhadrak

Discipline: Electrical Engg.	Semester: 4 th	Name of the Teaching Faculty : UMESH KU DALAI(LECT IN ELECT.ENGG.)
Subject: Electrical Measurement & Instrumentation	No. of Days/per week class allotted:4+1	Semester from date: 04.02.2025 – 17.05.2025 No. of Weeks:15
Week	Class Day	Theory
1 st	1 st	Define Accuracy, precision, Errors, Resolutions Sensitivity and tolerance.
	2 nd	Classification of measuring instruments.
	3 rd	Explain Deflecting, controlling arrangements in indicating type of instruments.
	4 th	Explain damping arrangements in indicating type of instruments.
	5 th	Calibration of instruments.
2 nd	1 st	Describe Construction, principle of operation of Moving iron type instruments.
	2 nd	errors, ranges merits and demerits of Moving iron type instruments.
	3 rd	Describe Construction, principle of operation of Permanent Magnet Moving coil type instruments.
	4 th	errors, ranges merits and demerits of Permanent Magnet Moving coil type instruments.
	5 th	Describe Construction, principle of operation, errors, ranges merits and demerits of Dynamometer type instruments .
3 rd	1 st	Describe Construction, principle of operation, errors, ranges merits and demerits of Rectifier type instruments .
	2 nd	Describe Construction, principle of operation, errors, ranges merits and demerits of Induction type instruments .
	3 rd	Extend the range of instruments by use of shunts and Multipliers.
	4 th	Extend the range of instruments by use Multipliers.
	5 th	Solve Numerical
4 th	1 st	Describe Construction, principle of working of Dynamometer type wattmeter (LPF Type)
	2 nd	Describe Construction, principle of working of Dynamometer type wattmeter (UPF Type)
	3 rd	The Errors in Dynamometer type wattmeter
	4 th	methods of their correction.
	5 th	Discuss Induction type watt meters.
	1 st	Discuss Induction type watt meters.
	2 nd	Introduction of Energy meter.

5 th	3 rd	Single Phase Induction type Energy meters – construction, working principle
	4 th	Single Phase Induction type Energy meters r compensation & adjustments.
	5 th	Testing of Energy Meters.
6 th	1 st	Testing of Energy Meters.
	2 nd	Tachometers, types and working principles
	4 th	Principle of operation and construction of Mechanical resonance resonance Type frequency meters.
	5 th	Principle of operation and construction of Mechanical resonance resonance Type frequency meters.
7 th	1 st	Principle of operation and construction of Electrical resonance resonance Type frequency meters.
	2 nd	Principle of operation and construction of Electrical resonance resonance Type frequency meters.
	3 rd	Principle of operation and working of Dynamometer type single phase power factor meters.
	4 th	Principle of operation and working of Dynamometer type single phase power factor meters.
	5 th	Principle of operation and working of Dynamometer type three phase power factor meters.
8 th	1 st	Principle of operation and working of Dynamometer type three phase power factor meters.
	2 nd	Measurement of medium resistance by wheat Stone bridge method.
	3 rd	Measurement of high resistance by loss of charge method.
	4 th	Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively.
	5 th	Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively.
9 th	1 st	Construction and principles of Multimeter. (Analog and Digital)
	2 nd	Measurement of inductance by Maxewell's Bridge method.
	3 rd	Measurement of capacitance by Schering Bridge method
	4 th	Define Transducer, sensing element or detector element.
	5 th	Define transduction elements.

10 th	1 st	Classify transducer. Give examples of various class of transducer.
	2 nd	Resistive transducer
	3 rd	Linear and angular motion potentiometer
	4 th	Thermistor and Resistance thermometers.
	5 th	Wire Resistance Strain Gauges
11 th	1 st	Principle of linear variable differential Transformer (LVDT)
	2 nd	Principle of linear variable differential Transformer (LVDT)
	3 rd	Construction and principles of Multimeter. (Analog and Digital)
	4 th	Measurement of inductance by Maxwell's Bridge method.
	5 th	Measurement of capacitance by Schering Bridge method
12 th	1 st	Define Transducer, sensing element or detector element and transduction elements.
	2 nd	Classify transducer. Give examples of various class of transducer.
	3 rd	Resistive transducer.
	4 th	Linear and angular motion potentiometer.
	5 th	Thermistor and Resistance thermometers.
13 th	1 st	Wire Resistance Strain Gauges.
	2 nd	Inductive Transducer.
	3 rd	Principle of linear variable differential Transformer (LVDT).
	4 th	Uses of LVDT.
	5 th	Capacitive Transducer
	1 st	General principle of capacitive transducer.

14 th	2 nd	Variable area capacitive transducer.
	3 rd	Change in distance between plate capacitive transducer
	4 th	Piezo electric Transducer
	5 th	Hall Effect Transducer with their applications.
15 th	1 st	Principle of operation of Cathode Ray Tube.
	2 nd	Principle of operation of Oscilloscope (with help of block diagram).
	3 rd	Measurement of DC Voltage & current.
	4 th	Measurement of AC Voltage, current,
	5 th	Measurement of phase & frequency.


 SIGNATURE OF FACULTY
 Lect.in Elect.Engg.
 Govt. Poly. Bhadrak