NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: Th-3 (ELECTRICAL MEASUREMENT & INSTRUMENTION)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	MEASURING INSTRUMENTS	5	5
2	ANALOG AMMETERS AND VOLTMETERS	10	10
3	WATTMETERS AND MEASUREMENT OF POWER	8	8
4	ENERGYMETERS AND MEASUREMENT OF ENERGY	8	8
5	MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR	7	7
6	MEASUREMENT OF RESISTANCE, INDUCTANCE& CAPACITANCE	8	8
7	SENSORS AND TRANSDUCER	9	9
8	OSCILLOSCOPE	5	5
10	Tutorial	15	15
	TOTAL	75	75

Discipline: EE	Semester: 4th	Name of the Teaching Faculty: Er. Prakash Kumar Mohanty
Week	Class Day	Theory / Practical Topics
1st	1st	**1. MEASURING INSTRUMENTS**
		1.1 Define Accuracy, precision, Errors, Resolutions Sensitivity and tolerance.
	2nd	Classification of measuring instruments. Explain Deflecting, controlling and damping arrangements in
	3rd	1.3 Explain Deflecting, controlling and damping arrangements in indicating type of instruments.
	4th	1.3 Explain Deflecting, controlling and damping arrangements in indicating type of instruments.
	5th	1.4 Calibration of instruments.
2nd	1st	**2. ANALOG AMMETERS AND VOLTMETERS** Describe Construction, principle of operation, errors, ranges meritsand demerits of:
	2nd	2.1.1 Moving iron type instruments.
	3rd	2.1.2 Permanent Magnet Moving coil type instruments.
	4th	2.1.2 Permanent Magnet Moving coil type instruments.
	5th	2.1.3 Dynamometer type instruments
3rd	1st	2.1.3 Dynamometer type instruments
	2nd	2.1.4 Rectifier type instruments
	3rd	2.2 Extend the range of instruments by use of shunts and Multipliers.
	4th	2.3 Solve Numerical
	5th	**3. WATTMETERS AND MEASUREMENT OF POWER** Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)
	1st	3.1 Describe Construction, principle of working of Dynamometer type wattmeter. (LPF and UPF type)

4th	2nd	3.2 The Errors in Dynamometer type wattmeter and methods of their correction.
	3rd	3.3 Discuss Induction type watt meters.
	4th	**4. ENERGYMETERS AND MEASUREMENT OF ENERGY** Introduction .
	5th	4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
5th	1st	4.2 Single Phase Induction type Energy meters – construction, working principle and their compensation & adjustments.
	2nd	4.3 Testing of Energy Meters.
	3rd	**5. MEASUREMENT OF SPEED, FREQUENCY AND POWER FACTOR** Tachometers, types and working principles
	4th	5.2 Principle of operation and construction of Mechanical and Electrical resonance Type frequency meters.
	5th	5.3 Principle of operation and working of Dynamometer type single phase and three phase power factor meters.
6th	1st	**6. MEASUREMENT OF RESISTANCE, INDUCTANCE& CAPACITANCE** Classification of resistance.
	2nd	6.1.1 Measurement of low resistance by potentiometer method. .
	3rd	6.1.2 .Measurement of medium resistance by wheat Stone bridge method.
	4th	6.1.3 Measurement of high resistance by loss of charge method.
	5th	6.1.3 Measurement of high resistance by loss of charge method.
7th	1st	6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively.
	2nd	6.2 Construction, principle of operations of Megger & Earth tester for insulation resistance and earth resistance measurement respectively.
	3rd	6.3 Construction and principles of Multimeter. (Analog and Digital)

	4th	6.3 Construction and principles of Multimeter. (Analog and Digital)
	5th	6.4 Measurement of inductance by Maxewell's Bridge method.
8th	1st	6.4 Measurement of inductance by Maxewell's Bridge method.
	2nd	6.5 Measurement of capacitance by Schering Bridge method
	3rd	6.5 Measurement of capacitance by Schering Bridge method
	4th	6.5 Measurement of capacitance by Schering Bridge method
	5th	Tutorial class
9th	1st	**7. SENSORS AND TRANSDUCER** Define Transducer, sensing element or detector element and transduction elements
	2nd	7.1. Define Transducer, sensing element or detector element and transduction elements
	3rd	7.2. Classify transducer. Give examples of various class of transducer.
	4th	7.2. Classify transducer. Give examples of various class of transducer.
	5th	7.3. Resistive transducer
10th	1st	7.3. Resistive transducer
	2nd	7.3.1 Linear and angular motion potentiometer.
	3rd	7.3.1 Linear and angular motion potentiometer.
	4th	7.3.2 Thermistor and Resistance thermometers.
	5th	7.3.2 Thermistor and Resistance thermometers.
11th	1st	7.3.3 Wire Resistance Strain Gauges
	2nd	7.3.3 Wire Resistance Strain Gauges
	3rd	7.4. Inductive Transducer
	4th	7.4. Inductive Transducer

	5th	Tutorial class
12th	1st	7.4.1 Principle of linear variable differential Transformer (LVDT)
	2nd	7.4.1 Principle of linear variable differential Transformer (LVDT)
	3rd	7.4.1 Principle of linear variable differential Transformer (LVDT)
	4th	7.4.2 Uses of LVDT.
	5th	Tutorial class
13th	1st	7.5. Capacitive Transducer.
	2nd	7.5. Capacitive Transducer.
	3rd	7.5.1 General principle of capacitive transducer.
	4th	7.5.1 General principle of capacitive transducer.
	5th	Tutorial class
14th	1st	7.5.2 Variable area capacitive transducer.
	2nd	7.5.2 Variable area capacitive transducer.
	3rd	7.5.3 Change in distance between plate capacitive transducer.
	4th	7.5.3 Change in distance between plate capacitive transducer.
	5th	7.6. Piezo electric Transducer and Hall Effect Transducer with their applications.
15th	1st	7.6. Piezo electric Transducer and Hall Effect Transducer with their applications.
	2nd	**8. OSCILLOSCOPE** Principle of operation of Cathode Ray Tube.
	3rd	8.2. Principle of operation of Oscilloscope (with help of block diagram).
	4th	8.3. Measurement of DC Voltage & current.
	5th	8.4. Measurement of AC Voltage, current, phase & frequency.