Lesson Plan

Name of Faculty: Monika

Discipline: Electronics & Communication Engg.

Semester: 5th

Subject: Instrumentation

Lesson Plan Duration: 16weeks (15th March 2022 to 30th June 2022)

Work Load (Lecture /Practical) per week in hours: Lecture: 3 Practical: 3

Week	Theory		Practical	
	Lecture Day	Topic (Including assignment/test)	Practical Day	Topic
1st	1st	Introduction to Measurements	1st (G1)	Introduction to Lab Equipments
	2nd	Importance of measurement, basic measuring systems	2nd (G2)	Introduction to Lab Equipments
	3rd	Advantages and limitations of each measuring systems and display devices		
2nd	4th	Introduction to Transducers. Theory, construction and use of transducers (resistance type)	3rd (G1)	To measure temperature using a thermocouple/PTO/temperature Sensor.
	5th	Theory, construction and use of transducers (inductance type)	4th (G2)	To measure temperature using a thermocouple/PTO/temperature Sensor.
	6th	Theory, construction and use of transducers (capacitance type)		
3rd	7th	Theory, construction and use of transducers (electromagnetic type)	5th (G1)	Revision
	8th	Theory, construction and use of transducers (piezo electric type)	6th (G2)	Revision
	9th	Introduction to Measurement of Displacement and Strain		
4th	10th	Displacement Measuring Devices: wire wound potentiometer, LVDT	7th (G1)	Study and use of digital temperature controller
	11th	Displacement Measuring Devices: strain gauges	8th (G2)	Study and use of digital temperature controller
	12th	Inductance type wire wound potentiometer, LVDT, strain gauges		

5th	13th	Resistive type wire wound potentiometer, LVDT, strain gauges	9th (G1)	Revision
	14th	Wire and foil type wire wound potentiometer, LVDT, strain gauges	10th (G2)	Revision
	15th	Gauge factor, gauge materials and their selections.		
6th	16th	Use of electrical strain gauges, strain gauge bridges and amplifiers.	11th (G1)	Use of thermistor in ON/OFF transducer
	17th	Introduction to Force and Torque Measurement	12th (G2)	Use of thermistor in ON/OFF transducer
	18th	Different types of force measuring devices and their principles		
7th	19th	Different types of force measuring devices and their principles...contd	13th (G1)	Study of variable capacitive transducer/proximity Switches
	20th	Load measurements by using elastic transducers and electrical strain gauges	14th (G2)	Study of variable capacitive transducer/proximity Switches
	21st	Load cells		
8th	22nd	Measurements of torque by brake	15th (G1)	Revision
	23rd	Measurements of torque by dynamometer, electrical strain gauges	16th (G2)	Revision
	24th	Speed measurements; different methods		
9th	25th	Revision & problem discussion	17th (G1)	Draw the characteristics of a potentiometer
	26th	Introduction to Pressure Measurement, Bourdon pressure gauges	18th (G2)	Draw the characteristics of a potentiometer
	27th	Electrical pressure pick ups		
10th	28th	Principle and construction of Bourdon pressure gauges, pressure pick ups	19th (G1)	Revision
	29th	Applications of Bourdon pressure gauges and Electrical pressure pick ups	20th (G2)	Revision
	30th	Use of pressure cells.		
11th	31st	Introduction to Flow Measurement	21st (G1)	To measure linear displacement using LVDT, Ultrasonic
	32nd	Basic principles of magnetic	22nd	To measure linear displacement

		flow meters	(G2)	using LVDT, Ultrasonic
	33rd	Basic principles of magnetic flow meters, ultrasonic flow meters		
12th	34th	Introduction to Measurement of Temperature	23rd (G1)	Revision
	35th	Bimetallic thermometer	24th (G2)	Revision
	36th	Thermoelectric thermometers		
13th	37th	Resistance thermometers, Thermocouple	25th (G1)	To study the use of electrical strain gauge
	38th	Thermisters and pyrometer	26th (G2)	To study the use of electrical strain gauge
	39th	Temperature recorders		To study weighing machine using load cell
14th	40th	Introduction to Measurement of other non electrical quantities	27th (G1)	To measure pH/ TPS/DO_2 value of given solution.
	41st	Measurement of non electrical quantity: humidity	28th (G2)	To measure pH/ TPS/DO_2 value of given solution.
	42nd	Revision and problem discussion		Revision
15th	43rd	Measurement of non electrical quantity: pH level	29th (G1)	Revision
	44th	Measurement of non electrical quantity: Vibrations	30th (G2)	
	45th	Revision and problem discussion		