

LESSON PLAN

Name of the Faculty: Ms. Parul Sharma

Discipline: Instrumentation & Control Engg.

Semester: 1st

Subject: Fundamental of Instrumentation Engg.

Lesson PlanDuration: 15 weeks

Work Load (Lecture/Practical) Per Week (In Hours): Lectures–02,Practical – 04

Week	Theory		Practicals	
	Lect- ure Day	Topic (Including assignment/Test)	Pract- ical Day	Topic
1 st	1 st	UNIT 1 Basics of Instrumentation- Introduction <ul style="list-style-type: none">Definition of measurements and its significanceMethods of measurements: Direct methods, Indirect methods	1 st	Experiment 1. Familiarization with the process of calibration.- introduction
			2 nd	Experiment 1. Familiarization with the process of calibration.- perform
	2 nd	<ul style="list-style-type: none">Scope and necessity of instrumentsElements of a Generalized	3 rd	Taking Problem & solve them
			4 th	Revise the practical
2 nd	3 rd	<ul style="list-style-type: none">Measurement system i. Primary sensing element ii. Variable conversion element iii. Data presentation element	5 th	Experiment 2. Calibrate the given Ammeter with the standard Ammeter of same range.-introduction
			6 th	Experiment 2. Calibrate the given Ammeter with the standard Ammeter of same range- perform
	4 th	<ul style="list-style-type: none">Introduction of TransducersDefinition of sensors & transducers,ii. Difference between sensor & transducer.	7 th	Taking Problem & solve them
			8 th	Revise the practical
3 rd	5 th	<ul style="list-style-type: none">Assignment-ITest	9 th	Experiment 3. Calibrate the given Voltmeter with the standard Voltmeter of same range.- introduction
			10 th	Experiment 3. Calibrate the given Voltmeter with the standard Voltmeter of same range- perform
	6 th	UNIT II Instrumentation Systems- Introduction <ul style="list-style-type: none">Types of instrumentation systems i.Intelligent instrumentation system ii. Dump instrumentation system	11 th	Taking Problem & solve them
			12 th	Revise the practical
4 th	7 th	<ul style="list-style-type: none">First Sessional Test	13 th	Experiment 4. Familiarization and demonstration of Liquid Crystal Display- introduction
			14 th	Experiment 4. Familiarization and demonstration of Liquid Crystal Display- perform
	8 th	<ul style="list-style-type: none">Analysis of Sessional testPTM-I	15 th	Taking Problem & solve them
			16 th	Revise the practical
5 th	9 th	<ul style="list-style-type: none">Classification of Instruments i. Absolute instruments ii. Secondary instruments	17 th	Experiment 5 Identification of various types of Instruments. .- introduction
			18 th	Experiment 5 Identification of various types of Instruments. .- perform
	10 th	<ul style="list-style-type: none">Functions of instruments i. Indicating function ii. Recording function iii. Controlling function	19 th	Taking Problem & solve them
			20 th	Revise the practical
6 th	11 th	<ul style="list-style-type: none">Modes of operation of secondary Instruments.	21 th	Experiment 6 To study and operate different types of printers.- introduction

		<ul style="list-style-type: none"> i. Analog mode ii. Digital mode 	22 th	Experiment 6 To study and operate different types of printers.- perform
	12 th	UNIT III Performance Characteristics and Selection Criteria of Instruments-Introduction <ul style="list-style-type: none"> Performance characteristics 	23 th	Taking Problem & solve them
			24 th	Revise the practical
7 th	13 th	<ul style="list-style-type: none"> Static characteristics of instruments-accuracy, precision, linearity, resolution, sensitivity, hysteresis, drift, dead time, loading effects. 	25 th	Experiment 7. Demonstration and operation of strip chart recorder.- introduction
			26 th	Experiment 7. Demonstration and operation of strip chart recorder.- perform
	14 th	<ul style="list-style-type: none"> Assignment –II Test 	27 th	Taking Problem & solve them
			28 th	Revise the practical
8 th	15 th	<ul style="list-style-type: none"> Dynamic characteristics-time constant, response time, natural frequency, damping coefficient. Selection criteria of instruments 	29 th	Experiment 8. Demonstration of Circular chart recorder.- introduction
			30 th	Experiment 8. Demonstration of Circular chart recorder.- perform
	16 th	<ul style="list-style-type: none"> Calibration. i. Definition and importance of calibration. ii. Process of calibration.	31 th	Taking Problem & solve them
			32 th	Revise the practical
9 th	17 th	<ul style="list-style-type: none"> Second Sessional Test 	33 th	Experiment 9. To assemble seven segment display using LEDs. .- introduction
			34 th	Experiment 9. To assemble seven segment display using LEDs. .- perform
	18 th	<ul style="list-style-type: none"> Analysis of Sessional test PTM-III 	35 th	Taking Problem & solve them
			36 th	Revise the practical
10 th	19 th	UNIT IV Display and Recording Devices-Introduction	37 th	Experiment 10 Calculate parallax error in analog meter. .- introduction
			38 th	Experiment 10 Calculate parallax error in analog meter. .- perform
	20 th	<ul style="list-style-type: none"> Need of Recorders in Instrumentation system 	39 th	Taking Problem & solve them
			40 th	Revise the practical
11 th	21 th	<ul style="list-style-type: none"> Classification of Recorders XY, Strip chart recorder, magnetic tape recorder	41 th	Experiment 11 Detection and removal of Systematic error in an Instrument. .- introduction
			42 th	Experiment 11 Detection and removal of Systematic error in an Instrument. .- perform
	22 th	<ul style="list-style-type: none"> Digital display units Light Emitting Diode (LED) Liquid Crystal Display (LCD) 	43 th	Taking Problem & solve them
			44 th	Revise the practical
12 th	23 th	<ul style="list-style-type: none"> Segmental displays Dot matrices Fluorescent Displays 	45 th	Experiment 12 Identification of various types of Sensors and transducers. .- introduction
			46 th	Experiment 12 Identification of various types of Sensors and transducers. .- perform
	24 th	<ul style="list-style-type: none"> Assignment-III Test 	47 th	Taking Problem & solve them
			48 th	Revise the practical
13 th	25 th	UNIT V Errors in Measurement- Introduction <ul style="list-style-type: none"> Limiting error 	49 th	Experiment 13 Familiarization and use of Fluorescent display. .- introduction
			50 th	Experiment 13 Familiarization and use of Fluorescent display. .- perform
	26 th	<ul style="list-style-type: none"> Relative limiting error known error 	51 th	Taking Problem & solve them
			52 th	Revise the practical
14 th	27 th	<ul style="list-style-type: none"> Sources of errors i. Gross error ii. Systematic error iii. Instrumental error iv. Environmental error	53 th	Experiment 14. To prepare laboratory equipment maintenance check list. .- introduction
			54 th	Experiment 14. To prepare laboratory equipment maintenance check list. .- perform

		v. Observational error vi. Random error <ul style="list-style-type: none"> Normal distribution of errors 		
	28 th	<ul style="list-style-type: none"> Third Sessional Test 	55 th	Taking Problem & solve them
			56 th	Revise the practical
15 th	29 th	<ul style="list-style-type: none"> Analysis of Sessional test PTM-III 	57 th	Experiment 15. To study safety precautions in handling laboratory equipments.- introduction
			58 th	Experiment 15. To study safety precautions in handling laboratory equipments.- perform
	30 th	<ul style="list-style-type: none"> Revision 	59 th	Taking Problem & solve them
			60 th	Revise the practical