ANDHRA LOYOLAINSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, New Delhi & Affiliated to JNTUK)
(An ISO 9001:2008 Certified Institution)

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Academic Year: 2018-2019 **Year/Sem:** III B.Tech II sem.

Subject: Instrumentation and Control Systems **Faculty: T.SUBBA REDDY**

Unit	Topic	No. of classes	No. of classes	Dates
I	INTRODUCTION	13	1	19/11/18
	Basic principles of measurement – measurement systems,		1	22/11/8
	Generalized configuration and functional descriptions of measuring instruments – examples.		1	23/11/18
	Static & dynamic performance characteristics		2	24,26/11/18
	sources of error, classification and elimination of errors		2	27,28/11/18
	Theory and construction of various transducers to measure displacement – piezo electric & capacitance		3	29,30/11/18 ,1/12/18
	inductive & photo electric transducers		3	3,5,6/12/18
II	MEASUREMENT OF TEMPERATURE INTRODUCTION	14	1	7/12/18
	Classification – ranges – various principles of measurement		1	10/11/18
	expansion, electrical resistance		2	12,13/12/18
	thermistor – thermocouple		2	14,15/12/18
	pyrometers		1	17/11/18
	MEASUREMENT OF PRESSURE INTRODUCTION		1	19/12/18
	Units – classification – different principles used		1	20/12/18
	bourdon pressure gauges, bellows – diaphragm gauges		2	21,22/12/18
	low pressure measurement – thermal conductivity gauges – ionization pressure gauges, mcleod pressure gauge.		3	24,26,27/12 /18
III	MEASUREMENT OF LEVEL: Direct method – indirect methods – capacitive, ultrasonic	16	2	28,29/12/18
	magnetic, cryogenic fuel level indicators – bubbler level indicator		2	2,3/1/19
	FLOW MEASUREMENT: Rotameter, magnetic, ultrasonic, turbine flow meter,		3	4,5,7/1/19
	hot wire anemometer, laser Doppler anemometer (LDA)		1	8/1/19
	MEASUREMENT OF SPEED: Mechanical tachometers – electrical tachometers		2	9,10/1/19
	stroboscope, noncontact type of tachometer		1	11/1/19
	Measurement of Acceleration and Vibration: Different simple instruments – principles of seismic instruments		1	17/1/19
IV	STRESS STRAIN MEASUREMENTS: Various types of stress and strain measurements.	8	2	18,19/1/19
	electrical strain gauge – gauge factor		2	21,23/1/19

	method of usage of resistance strain gauge for bending compressive and tensile strains		2	1,2/2/19
	usage for measuring torque, strain gauge rosettes		2	4,6/2/19
V	MEASUREMENT OF HUMIDITY – Moisture content of gases, sling psychrometer, absorption psychrometer, dew point meter.	11	3	7,8,9/2/19
	MEASUREMENT OF FORCE, TORQUE AND POWER- Elastic force meters, load cells		3	11,13,14/2/19
	dynamometers		3	15,16,18/2/19
	torsion meters		2	20,22/2/19
VI	ELEMENTS OF CONTROL SYSTEMS: Introduction, importance – classification	8	3	25,27,28/2/19
	open and closed systems, servomechanisms–examples with block diagrams–temperature, speed & position control systems		5	4,6,7,8,9/3/19
	Revision of unit-1	2	2	11,13/3/19
	Revision of unit-2	2	2	14,15/3/19
	Revision of unit-3	2	2	16,18/3/19
	Revision of unit-4	1	1	20/3/19
	Revision of unit-5	2	2	21,22/3/19
	Revision of unit-6	1	1	23/3/19
	Total No. of Classes	74		

TEXT BOOKS:

1. Measurement Systems: Applications & design by D.S Kumar.
2. Mechanical Measurements / BeckWith, Marangoni,Linehard, PHI / PE.

REFERENCES:

1.Experimental Methods for Engineers / Holman.
2. Mechanical and Industrial Measurements / R.K. Jain/ Khanna Publishers.
3.Instrumentation, measurement & analysis by B.C.Nakra & K.K.Choudhary, TMH.

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S.No	Course Objectives

S.No	Course Outcomes

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