GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN

ACADEMIC SESSION(2025-26)

Discipline : ELECTRICAL ENGG.	Semester: 4th Sem	Name of the Teaching Faculty :Leena Marndi
Subject : S & A	No. of Days / per week class allotted : 03	Semester From date : 22.12.2025 To Date : 18.04.2026

MONTH	Week	Day	Topics
DECEMBER	4th	1st	Overview of measurement systems: Definition of sensor, Difference between sensor, transmitter and transducer; Primary measuring element: selection,
		3rd	static and dynamic characteristics: Range; Response time; Accuracy; Precision;
	5th	1st	Sensitivity; Dead band; Dead time; Signal transmission:
		3rd	Types of signal: Pneumatic signal; Hydraulic signal
JANUARY	1ST	4th	Electronic Signal. Standard signal ranges
	2nd	1st	Introduction of Electronic transmitter; Pneumatic transmitter; Smart transmitters.
		3rd	Classification of sensors. Characteristics and calibration of different sensors
		4th	Working Principle of Displacement, Position and Motion sensors,
	3rd	1st	Limit switches, Proximity sensors, LVDT
		4th	strain gauge, Tacho- generator
	4th	1st	Encoders, Hall sensors,
		3rd	Distance sensors.
		4th	Light Sensor. Accelerometer, Force, Torque,
	5th	3rd	Tactile sensors, Load cells, Piezoelectric transducer.
		4th	Principle of Piezo Resistive Type; Variable Capacitive Type; Variable reluctance type sensors.
FEBRUARY	1st	1st	Synchros and resolver
		3rd	Bourden tube
		4th	Bellows; Diaphragm
	2nd	1st	Application of Diaphragm: Capacitance Type, Reluctance Type
		3rd	Application of Diaphragm:Strain Gauge Type and Inductive Type.
		4th	Application of Bellows: Electrical
	3rd	1st	Application of Bellows:Piezoelectric pressure transducers
		3rd	McLeod gage, Pirani gage
		4th	Ionisation gage.
	4th	1st	Level sensors: Float type, Variable resistive type,
		3rd	Level sensors:Inductive type, Capacitive type
		4th	Flow sensors: Reynolds numbers; Types of Flow meters and principle of flow measurement:
RCH	1st	1st	Differential pressure type: orifices; venturi tubes
		4th	flow tubes; flow nozzles;
	2nd	1st	pitot tubes; and Rotameter,
		3rd	Nutating disk & Rotary-vane types.
		4th	Velocity meters: Turbine; Vortex shedding;
		1st	Electromagnetic and Mass flow meters,

MA	3rd	3rd	Anemometer
		4th	Ultrasonic flow meter.
	4th	1st	Temperature sensors: Thermocouples, Thermistor, RTD, Pyrometer.
		3rd	Definition and Example; selection; Types of Actuators;
		4th	Pneumatic actuator; Electro-Pneumatic actuator
	5th	1st	cylinder, rotary actuators, Mechanical actuating system
APRIL	1st	4th	Hydraulic actuator; Control valves: Construction;
	2nd	1st	Valve coefficient or valve sizing; valve characteristics;
		3rd	types of valves; valve selection.
		4th	Electrical actuating systems: Solid-state switches, Solenoids,Voice Coil
	3rd	1st	Electric Motors; Principle of operation its application: D.C motors
		3rd	AC motors - Single phase
		4th	3 Phase Induction Motor; Synchronous Motor; Stepper motors - Piezoelectric Actuator.