GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN

DSCIPLINE : MECHANICAL ENGG.		Semester: 4th		Name of the Teaching Faculty :Thakura Hansdah
MECHATRONICS(C)		No. of Days / per week class allotted : 03	CHAPTER	Semester From date : 22,12.2025 To Date : 18.04.2026
MONTH	Week	Day		Topics
JANUARY	1ST	1st	CHAPTER-1	Introduction to Mechatronics
	2nd	1ST		Mechatronics; Importance of Mechatronics; Systems:
		2nd		Mea- surement systems; Control systems and their types; Closed-loop control System
		5TH		Automatic water level controller; Sequential controllers-washing machine.
	3rd	1ST		Measurement System terminology: Displacement, Position & Proximity Sensor
		2nd		Velocity and Mo- tion Sensors; Force Sensors; Fluid Pressure Sensors; Flow Sensors;
		5TH		Liquid Level Sensors; Tempera- ture Sensors; Light Sensors; Selection of Sensors
	4th	1ST		Mechanical Actuation Systems: Types of motion; Freedom and constraints; Loading; G
		2nd		Trains; Pawl & Ratchet; Belt & Chain drives; Bearings: Selection, Ball & Roller bea
		5TH		Mechanical aspects of motor selection.
	5TH	1ST		Electrical Actuation Systems: Switches & Relays; Solenoids; D.C Motors; A.C.M
		2nd		tepper Mo- tors: Specifications and Control of stepper motors; Servomotors:
		5TH		Servomotor and A.C Servomotor
FEBRUARY	2nd	1ST	CHAPTER-2	Pneumatic & Hydraulic Systems: Power supplies; DCV
		2nd		PCV; Cylinders; Rotary actuators.
		5TH		Mathematical Model: Introduction to Mathematical model; Mechanical System building
	3rd	1ST		building blocks.
		2nd		ystem Model: Engineering.Systems: Rotational, Translational Systems; ElectroMechanical System; Hydro-Mechanical System.
				CLASS TEST-1
		5TH	CHAPER-3	Input/Output Systems: Interfacing; Input/output ports; Interface requirements: Buffers
	4th	1ST		Hand- shaking, Polling and interrupts, Serial interfacing; Introduction to PIA; Seri
		2nd		communications inter- face; Example of interfacing of a seven-segment display with a decoder.
		5TH		Programmable Logic Controller (PLC): Definition; Basic block diagram and structure of PLC

	5TH	1ST		nput/Output processing; PLC Programming: Ladder diagram, its logic functions,
		2nd		Latching and Sequencing; PLC mnemonics; Timers; Internal relays and Counters;
		5TH		Shift registers; Master and Jump Controls; Data handling; Analog input/output; Selection of PLC.
MARCH	2nd	1ST		Constructional features and working of a telescopic shock absorber
		2nd		Design Examples & Advanced Applications in Mechatronics:
		5TH		Design process stages;Traditional Vs Mechatronics designs; Possible design solutions:
	3RD	1ST		Timed switch, Wind-screen wiper motion, Bath room scale; Case studies of Mechatronics systems:
		2nd		**INTERNAL EXAMINATION-1**
		5TH		**INTERNAL EXAMINATION.**
	4th	1ST	CHAPTER-4	pick-and-place robot, Car park barrier, Car engine management system, Automatic Camera and Automatic
		2nd		pick-and-place robot, Car park barrier, Car engine management system, Automatic Camera and Automatic
		5TH		pick-and-place robot, Car park barrier, Car engine management system, Automatic Camera and Automatic
	5TH	1ST		Washing Machine only.Sensors for Condition Monitoring Systems of Production System
		2nd		Washing Machine only.Sensors for Condition Monitoring Systems of Production System
		5TH		INTERNAL EXAMINATION-2
APRIL	1ST	1ST		Examples of Monitoring methods: Vibration monitoring, Temperature monitoring
		2nd		Examples of Monitoring methods: Vibration monitoring, Temperature monitoring
		5TH		Wear behavior monitoring; Mechatronics control in automated manufacturing:
	2nd	1ST		Monitoring of Manufacturing processes, On-line quality moni- toring
		2nd	CHAPTER-6	Model based systems, Hardware in-the-loop simulation
		5TH		Supervisory control in manufacturing inspection, Integration of heterogeneous syste
	3rd	1ST		REVISON
		2nd		REVISON
		5TH		**CLASS TEST-2**

22/12/25

SUBJECT EXPERT
G.P MAYURBHANJ

22/12/25

HOD
MECHANICAL ENGINEERING
G.P MAYURBHANJ

22/12/2025

ACADEMIC COORDINATOR
G.P MAYURBHANJ