

GOVT. POLYTECHNIC MAYURBHANJ

LESSON PLAN

Discipline : MECHATRONICS ENGG.		Semester: 5TH		Name of the Teaching Faculty : Debasis Patra	
Subject : PH&S TH3		No. of Days / per week class allotted : 03		Semester From date : 01.07.2026 To Date : 05.11.2026	
MONTH	Week	Day	Unit	Topics	
JULY	1ST		1	Basic Concepts of PLC	
		3RD		Introduction to Programmable Logic controller	
	2ND	1ST	Hardwired circuits versus PLC control & Advantages of PLC control		
		2ND	Relays – Different relay logic circuits using push buttons(NO/NC), relays and dc loads		
		3RD	Block diagrams of PLC		
	3RD	1ST	Parts of PLC – Processor – Memory – Input and output modules		
		2ND	Digital and Analog I/O's		
		3RD	PLC scan cycle- Input, output and memory addressing-PLC wiring(sinking/sourcing)		
	4TH	1ST	Boolean algebra		
		2ND	combinational Logic circuits.		
			2	Programming and Applications of PLC	
	3RD	Programmable Logic Controllers (PLC) based control system			
	5TH	1ST	programming languages. Ladder diagram for Logic functions (OR, AND, NAND, EX-OR & EX –NOR)		
		2ND	Ladder Programming using Bit logic instruction – timer- counter		
		3RD	Ladder Programming using Bit logic instruction – MOVE operation		
AUGUST	2ND	1ST	Arithmetic Operation-Comparators		
		2ND	data handling instruction – simple ladder diagrams for star- delta starter		
		3RD	Ladder diagrams for DOL starter –		
	3RD	1ST	Cylinder sequence Application		
		2ND	CLASS TEST		
		3RD			
	4TH	1ST	Cylinder sequence Application		
		2ND	Ladder diagram using Latch circuit		
		3RD	Ladder diagram using Timer		
	5TH	1ST	Ladder diagram using counter		
		2ND	sequence of the operation and ladder diagram for multi cylinder application		

		3RD		sequence of the operation and ladder diagram for 4-way traffic light control
SEPTEMBER	1ST	2ND		Creating ladder diagrams for process control-LAD, STL& FBD
		3RD		Analog PLC operations (Normalization and scaling) and Final Control Elements: Signal converters – P to I Converter
	2ND	1ST		1ST INTERNAL ASSESSMENT
		2ND		
		3RD		Analog PLC operations (Normalization and scaling) and Final Control Elements: Signal converters – I to P Converter
	4TH	1ST		Actuators – Electrical, Pneumatic, Hydraulic and Electro pneumatic – Valve Positioners,
		2ND		Software and hardware troubleshooting in PLC circuit.
			3	Industrial networks and communication protocols
		3RD		Introduction to industrial networks
OCTOBER	2ND	1ST		Ensuring network security and reliability
		2ND		PLC to PLC communication, OPC UA, RFID Technology and Machine Vision.
			4	HMI & SCADA
		3RD		HMI & graphic design tools, Integrating HMI with PLC systems.
	3RD	1ST		Introduction to SCADA, typical SCADA architecture in block diagram, benefits of SCADA
		2ND		Various editors of SCADA; Interfacing SCADA system with PLC: typical connection diagram
		3RD		Object linking and embedding for process control architecture
	4TH	3RD		SCADA screen for simple object, steps for linking SCADA object with PLC ladder program using Process Control
	5TH	1ST		2ND INTERNAL ASSESSMENT
		2ND		
		3RD		Applications of SCADA: Traffic light Control
NOVEMBER	1ST	1ST		Applications of SCADA:water distribution
		2ND		Applications of SCADA:pipeline control
		3RD		QUESTION DISCUSSION

HOD,Mechatronics
Govt.Polytechnic
Mayurbhanj

Subject Expert
Govt.Polytechnic
Mayurbhanj

Academic Co-ordinator
Govt.Polytechnic
Mayurbhanj