

GOVT. POLYTECHNIC MAYURBHANJ						
LESSON PLAN						
Discipline : MECHATRONICS ENGG.		Semester: 3RD		Name of the Teaching Faculty : Debasis Patra		
Subject : HPS TH4		No. of Days / per week class allotted : 03		Semester From date : 14.07.2025 To Date : 15.11.2025		
MONTH	Week	Day	Unit	Topics		
JULY	3RD	2ND	UNIT-1	1.Fluid Power, Pumps		
				Fluid Power –Definition –Pascal’s Law- Basic Properties of Hydraulic Fluids- Mass, Weight, Density, Specific Weight, Specific Gravity, Viscosity, Bulk Modulus		
		5TH		Hydraulic Pumps- Classification -Pump Types- Piston Pumps –Axial Piston Pump- Radial Piston Pumps- Graphical Symbols – Working Principles only		
	4TH	6TH	UNIT-2	Gear Pumps- External Gear Pump- Internal Gear Pumps. Graphical Symbols – Working Principles only.		
		2ND		Vane Pump- Unbalanced Vane Pump – Balanced Vane Pump- Graphical Symbols– Working Principles only		
		5TH		2.Linear actuators and Rotary actuators		
	5TH	2ND	UNIT-3	Linear Actuators- Hydraulic Cylinders - Cylinder Types-Single Acting cylinder-Symbols and working principles only		
AUGUST	1ST	5TH		Gravity Return cylinder–Spring Return cylinder-Symbols and working principles only		
		6TH		Telescopic Cylinder – Hydraulic Ram –Tandem Cylinder, Symbols and working principles only		
	2ND	2ND		Rotary actuators-motor types –gear motor-balanced vane motor-piston motor-symbols –applications – specifications.		
		5TH		two vane rotor actuator-rack AND pinion rotary actuator-motor torque – speed – power –efficiency –symbols –applications – specifications.		
	3RD	2ND		3.Direction control valve, pressure control valve and Flow control valve		
		6TH		Directional Control Valves: Check Valve-Shuttle Valves-Actuation types-Symbols - Working Principles		
	4TH	2ND		Two Way Directional Control Valves -Three Way Directional Control Valves-Symbols Actuation types - Working Principles		
		5TH		Four Way Directional Control Valves – -Symbols - Working Principles,		
	5TH	2ND		Directional Control Valves Actuation types, Classification, Types, Symbols & Working.		
		5TH		CLASS TEST		
		6TH		Pressure Reducing Valve-Symbols- Working Principles		
SEPTEMBER	1ST	2ND	UNIT-3	Sequence Valve – Symbols- Working Principles.		
		6TH		Flow Control Valve & Type		
	2ND	2ND		Needle Valve –Pressure Compensated Flow Control Valve– Symbols- Working Principles.		
		5TH		Cushioned Cylinders –Flow Dividers– Symbols- Working Principles.		
		5TH		Balanced Spool Flow Divider- Rotary Flow Divider-Symbols- Working Principles.		
	3RD	5TH		4.Hydraulic components, Instrumentation and Measurement, Conduits and Fittings, Hydraulic circuits		
				Hydraulic Components –Accumulators – types		
				Diaphragm - Spring Loaded- Working Principles		

SI	3RD	6TH	UNIT-4	Weight Loaded -Pressure Intensifiers- Working Principles
	4TH	2ND		Hydraulic Reservoirs-Heat Exchanger types
		5TH		INTERNAL EXAM-1
OCTOBER	2ND	5TH		Air cooled –Water cooled – Filters- Working Principles
	3RD	2ND		Instrumentation and Measurement: Pressure Gauges-Flow meters- Temperature Gauges- Description
		5TH		Conduits and Fittings-Pipe - Tubing –Hose - Seals and Bearings – Hydraulic Fluids- Description
		6TH		Hydraulic Circuits: Counterbalance Circuit –Sequence Circuit- Working
	4TH	5TH		Speed Control Circuit- Meter in Circuit –Meter Out Circuit- Working
	5TH	2ND		Intermittent Feed Control-Speed Control For Continuous Processing- Working
		5TH		INTERNAL EXAM-2
		6TH		
NOVEMBER	1ST	6TH	UNIT-5	Booster and Intensifier Circuits-Force Multiplication –Pressure Intensification- Working
	2ND	2ND		5-Pneumatics system, electronic control for Fluid power Pneumatics
		5TH		Basic principles of pneumatics-difference between hydraulics and pneumatics
		1ST		compressor types-two stage piston compressor –rotary vane compressor-rotary screw compressor –Working
	3RD	5TH		vacuum pumps- double acting pneumatic cylinder–gear motor pressure regulator-Working
		5TH		filters-lubricators-FRL unit-water removal – air preparation and distribution- Working
		6TH		Electronic control of fluid power - solenoid valves-servo valves pump controls.

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