

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 : 01.07.2026 To Date : 05.11.2026	
MONTH	Week	Day	Unit	Topics	
JULY	1ST	5TH	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	
		6TH		Hydraulic Pumps- Classification -Pump Types- Piston Pumps –Axial Piston Pump- Radial Piston Pumps- Graphical Symbols – Working Principles only	
	2ND	2ND		Gear Pumps- External Gear Pump- Internal Gear Pumps. Graphical Symbols – Working Principles only.	
		5TH		Vane Pump- Unbalanced Vane Pump – Balanced Vane Pump- Graphical Symbols– Working Principles only	
	3RD	2ND	UNIT-2	2.Linear actuators and Rotary actuators	
				Linear Actuators- Hydraulic Cylinders - Cylinder Types-Single Acting cylinder-Symbols and working principles only	
		5TH		Gravity Return cylinder–Spring Return cylinder-Symbols and working principles only	
		6TH		Telescopic Cylinder – Hydraulic Ram –Tandem Cylinder, Symbols and working principles only	
	4TH	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.	
		6TH	UNIT-3	3.Direction control valve, pressure control valve and Flow control valve	
	5TH			Directional Control Valves: Check Valve-Shuttle Valves-Actuation types-Symbols - Working Principles	
		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,	
AUGUST	1ST	6TH		Directional Control Valves Actuation types, Classification, Types, Symbols & Working.	
	2ND	2ND		Pressure Reducing Valve-Symbols- Working Principles	
		5TH		Sequence Valve – Symbols- Working Principles.	
	3RD	2ND		MONTHLY TEST	
		5TH		Flow Control Valve & Type	
	4TH	2ND		Needle Valve –Pressure Compensated Flow Control Valve– Symbols- Working Principles.	
		5TH		Cushioned Cylinders –Flow Dividers– Symbols- Working Principles.	
	5TH	2ND		Balanced Spool Flow Divider- Rotary Flow Divider-Symbols- Working Principles.	
		5TH		4.Hydraulic components, Instrumentation and Measurement, Conduits and Fittings, Hydraulic circuits	
		6TH		Hydraulic Components –Accumulators – types	
				Diaphragm - Spring Loaded- Working Principles	

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

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