

GOVERNMENT POLYTECHNIC GARIYABAND

GARIYABAND (C.G.)

LESSON PLAN

SESSION - JULY-DEC 2025

NAME OF FACULTY : Prakash Vibhor Baghel

COURSE : Diploma in Engineering

SUBJECT:- Fluid Power Engineering

DESIGNATION : Lecturer (Mechanical)

DEPARTMENT : Mechanical Engineering

COURSE CODE : 2037575(037) **SEMESTER : V**

SESSION STARTS FROM : 25/08/2025

TOTAL CLASS PER WEEK:- 03

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
1	1	Unit1.0 Introduction to Fluid Power Systems Power transmission modes and their comparison, Concept of Fluid Power, Transmission of forces in fluid – Pascal’s law, multiplication of forces,	25/08/2025		
	2	Factors affecting the fluid flow – gravity, atmospheric pressure, applied forces, inertia & friction, Application and advantages of fluid power.	30/08/2025		
	3	Tutorial Class	01/09/2025		
	4	Basic components of a fluid power system – Reservoir or Receiver, Pump or compressor, Piping, tubing or hose,	02/09/2025		
	5	Directional control valve and Actuating device. ISO Symbols used in Hydraulic & Pneumatic system.	06/09/2025		
	6	Tutorial Class	08/09/2025		
	7	Oil, Hydraulic & Pneumatic systems: General layout, symbols used, Applications, Merits, Limitations.	09/09/2025		
	8	Hydraulic Fluids-Functions and properties, Types, ISO and SAE grades of oils, Selection of hydraulic fluids	13/09/2025		
	9	Tutorial Class	15/09/2025		

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
2	10	Unit2.0 Elements of Hydraulic Systems Pumps: Classification of pumps, Comparison of positive (Hydrodynamic) & non-positive displacement (Hydrostatic) pumps,	16/09/2025		
	11	Construction and working of Gear, vane, Screw pumps	20/09/2025		
	12	Tutorial Class	22/09/2025		
	13	Construction and working of piston pumps(axial and radial), Performance characteristics and Selection of pumps	23/09/2025		
	14	Actuators: Classification of actuators, Construction and working of hydraulic actuators,	27/09/2025		
	15	Tutorial Class	04/10/2025		
	16	Linear and rotary actuators (Motors) used for hydraulic applications. Control Valves for hydraulic system: Classification-Direction control valves- Check valve, 2/2,3/2,4/2,4/3,5/2,5/3,	06/10/2025		
	17	D.C. Valves used in Hydraulics, Standard centre positions, Methods of actuation,	07/10/2025		
	18	Tutorial Class	11/10/2025		
	19	Pressure control valves-relief, unloading, sequence, counter balance, pressure reducing valves	13/10/2025		
	20	Flow control valves- Non compensated, Pressure and temperature compensated Seals, Filters, Pipes, Hoses, Reservoirs, Accumulators and Pressure Intensifiers.	14/10/2025		
21	Tutorial Class	25/10/2025			

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
3	22	Unit3.0 Oil Hydraulic Circuits Control of single and Double acting Hydraulic cylinders.	28/10/2025		
	23	Speed control double acting cylinder-Meter-in, Meter-out, Bleed Off circuit	03/11/2025		
	24	Tutorial Class	04/11/2025		
	25	Unloading circuits, Regenerative circuits, Counter balance valve & circuit,	08/11/2025		
	26	speed control of bidirectional hydraulic motor, braking and replenishing of hydraulic motor,	10/11/2025		
	27	Tutorial Class	11/11/2025		
	28	Synchronizing circuits, Sequencing Circuits.	15/11/2025		
	29	Applications, ISO Symbols used in hydraulic circuits.	17/11/2025		
	30	Tutorial Class	18/11/2025		
	31	Hydraulic circuits for Milling machine and Shaper machine.	22/11/2025		
	32	Common troubles in hydraulic systems, their Causes and remedies	24/11/2025		
	33	Tutorial Class	25/11/2025		

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
4		Unit4.0 Elements of Pneumatic Systems			
	34	Air Compressors–Recall Types, construction & working of Reciprocating & Rotary compressors, Selection of compressor.	29/11/2025		
	35	Air treatment-Air receiver, Moisture separator and Air dryer, FRL unit, Pressure regulator.	01/12/2025		
	36	Tutorial Class	02/12/2025		
	37	Pneumatic actuators: Pneumatic Cylinders - Single & double acting cylinders, Air Motors –Vane, Gear motor, Turbine and Piston motor.	06/12/2025		
	38	Electrical actuators for pneumatic systems, comparison between Air, Hydraulic and Electric actuators.	08/12/2025		
	39	Tutorial Class	09/12/2025		
	40	Pneumatic control valves: Classification-Direction controlvalves- 2/2,3/2,4/2,4/3,5/2,5/3,Pressure control valves- relief, unloading, sequence, counter balance, pressure reducing valves,	13/12/2025		
	41	Flow control valves- Non compensated, Pressure and temperature compensated, Dual (twin) pressure valve, Shuttle valve, Quick exhaust valve, Time delay valve. Accessories: Pipes, hoses, fittings, Seals and gaskets, Accumulators, heat exchanger, muffler.	15/12/2025		
42	Tutorial Class	16/12/2025			

Unit No.	Lecture No.	Topics to be covered	Planned Date	Execution Date	Remark
5	43	Unit5.0 Pneumatic Circuits Direct/Indirect Control of single and Double acting Air cylinders, Actuation of Pneumatic motor (Air Motor)	20/12/2025		
	44	Speed control of double acting cylinder and Bi-directional Air motor. operation.	22/12/2025		
	45	Tutorial Class	23/12/2025		
	46	Sequencing circuits, Time delay , Hydro-pneumatic applications Air-Oil reservoir, Air-Oil cylinder, Air-Oil Intensifier,	29/12/2025		
	47	Pneumatic sensors, Common troubles in pneumatic systems, their causes and remedies	30/12/2025		
	48	Tutorial Class	03/01/2026		