17MB019INDUSTRIALHYDRAULICS&PNEUMATICS

COURSE CODE	COURSE TITLE	L	P	T	C
17MD019	INDUSTRIALHYDRAULICS&PNEUMATICS				

Course Description and Objectives:

This course equips the students with know how of hydraulic systems and pneumatic systems required for selection, design, operation and maintenance.

Course Outcomes:

Upon successful completion of this course student should be able to:

- Draw symbols used in hydraulic systems.
- Operate different types of valves used in hydraulic systems
- Classify the valves used in hydraulic systems.
- Maintain different valves and auxiliaries.
- Assemble pumps and motors to rectify problems.
- Develop efficient hydraulic circuits.
- Maintain the pneumatic and hydraulic system

SKILLS ACQUIRED: Students are able to

- Demonstrate various accessories and their uses in hydraulic system
- Draw graphical symbols
- use directional,pressure control valves for various applications.
- Demonstrate application of injection control circuit
- Understand the use of pressure intensifier.

UNIT-I

Basic Principles: Principles of Hydraulics, Hydraulic pumps and their characteristics, pumpselection, pumping circuits, Hydraulic actuators both linear &rotary, selection &characteristics of pumps, Hydraulicvalves,pressure&Flowdirectioncontrols,applications,Hydraulicfluids,symbols.

UNIT-II

Hydraulic Circuits: Reciprocating, Quick Return, Sequencing, Synchronizing andAccumulator, Safety circuits.

UNIT-III

Design & Selection: Design of Hydraulic circuits and selection of components.

UNIT-VI

Pneumatic fundamentals, control elements, logic circuits, sensing of position and pressure, switching. Electro-pneumatic and Electro Hydraulic circuits Robotic circuits.

UNIT-V

Design of pneumatic circuits: Classic, cascade, step counter and combination methods PLC,Microprocessors, uses, selection criteria for pneumatic components, Installation and maintenance of Hydraulic and pneumatic power packs–fault finding, principles of low cost automation and case students.

Activities:Students are able to

1. prepare chart of different hydraulic symbols.
2. collect information related troubleshooting various problems.
3. search animations on internet for understanding functioning of various hydraulic and pneumatic components
4. Demonstrate use of clamp control and reciprocating screw circuits.

TEXTBOOKS:

3. J.MichaelandG.Ashby,“PowerHydraulics”,2nd Edition,PrenticeHall,1989.
4. AndrewParr,“Hydraulics&Pneumatics”,2nd Edition,ElsevierPublications,2006.

REFERENCEBOOKS:

5. Dudley and Pippenger, "Basic Fluidic Power", 2nd Edition,PrenticeHall,1987.
5. Anthony Esposito, "Fluid Power with applications", 6th Edition, Prentice Hall, 2010.