Course Number and Name
BME503 - FLUID POWER SYSTEMS
Credits and Contact Hours
3&45
Course Coordinator's Name
Mr.S.Thirumavalavan
Text Books and References

TEXT BOOKS:

1. Andrew Parr, Hydraulics And Pneumatics (HB), Jaico Publishing House, 2005
2. R.Srinivasan, Hydraulic and Pneumatic Controls, Second Edition, Vijay Nicole Imprints PVT, 2006.

REFERENCES:

1. Anthony Esposito, Fluid Power with applications – Prentice Hall, 2006
2. Dudleyt A. Pease and John j. Pippenger, Basic Fluid Power, Prentice Hall, 1987.
3. Jamco L.Johnson, Introduction to fluid Power, Eswar Press, 2003.
4. Majumdar S.R,"Pneumatic systems-Principles and Maintenance", Tata McGraw Hill, 1995.
5. www.engineeringstudymaterial.net/**ebook**/**fluid**-**power**-with-applications/

Course Description
To know the advantages and applications of Fluid Power Engineering and Power Transmission System. To learn the Applications of Fluid Power System in automation of Machine Tools and others Equipments.

Prerequisites	Co-requisites
Fluid Mechanics & Machinery	Nil

required, elective, or selected elective (as per Table 5-1)
Required

Course Outcomes (COs)	
CO1	Identify hydraulic and pneumatics components.
CO2	Ability to design hydraulic and pneumatic circuits
CO3	Design hydraulic circuits
CO4	Learn the concepts of pneumatic power and design
CO5	Learn to select materials
CO6	Students will learn to design

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k	l
CO1	H	H	L					M	M		H	H
CO2	H	H	L					M	M		H	H
CO3	H	H						M	M		H	H
CO4	H	M	L					M	M		H	H
CO5	M	H	L					M	M		M	M
CO6	M	H	L					M	M		M	M

List of Topics Covered

UNIT 1: GENERAL INTRODUCTION AND CONTROL SYSTEM COMPONENTS 9

Introduction to Fluid Power, Advantages, Applications –Fluids – Properties of Fluids - Basic Principle of Fluid Power. Hydraulic pumps, Classification Performance, characteristics, pump selection, - Hydraulic Actuators-Linear, Rotary, Selection, and Characteristics. Control system components-Hydraulic valves – Pressure, Flow, and Direction control - Applications

UNIT II :HYDRAULIC CIRCUITS 9

Fluid power symbols **-** Hydraulic circuits - Location of Flow control valves Regenerative, Synchronizing, Sequencing, Intensifier- Accumulator– Types, Applications

UNIT III: HYDRAULIC CIRCUIT DESIGN 8

Design of Hydraulic circuits - selection of components - Hydraulic circuit for shapers, Surface Grinding machine Vertical milling machine, Forklift ,Hydraulic press, Safety circuits -Automatic reciprocating system, Robot Arm – Hydrostatic Transmission – Power Pack.

UNIT 1V: PNEUMATIC SYSTEMS 10

Basic concepts and principles of pneumatic circuits, Relative merits and demerits over hydraulic Systems, Pneumatic conditioners – filters, regulators, lubricators, mufflers, Air dryers. Pneumatic actuators, pneumatic circuits, Hydro Pneumatics- Pneumatic logic controls, Electro hydraulic systems – Servo Systems

UNIT V: DESIGN & SELECTION 9

Design of pneumatic circuits – classic – cascade – step counter – selection criteria for pneumatic components – PLC applications in fluid power control. Installation and Maintenance of Hydraulic and Pneumatic power packs – fault finding – principles of low cost automation, case studies.