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Department of Mechanical Engineering	
Hydraulic &Pneumatic Systems (67483)	
Total Credits	**3**
major compulsory	
Prerequisites	P1 : Mechanics of Machinery (67323) OR Theory of Machines (67310) P2 : Fluid Mechaics I (67320) OR Principles of Thermo-Fluids &Heat Transfer (67261) OR Fluid Mechanics (67313)

Course Contents

Introduction to fluid power systems design and operation. Characteristics of hydraulic fluids and standard tests. Characteristics and selection of positive and non-positive displacement pumps. Characteristics and standards of filters. Linear and rotary hydraulic Actuators. Characteristics and design of hydraulic and pneumatic distribution systems. Hydraulic and pneumatic control valves. Design, sizing and analysis of hydraulic and pneumatic circuits.

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Recognize the specifications, properties, standards and testing of hydraulic fluids and hydraulic filters.	A	30 %
2	Selection of hydraulic and pneumatic systems components including the distribution system, pumps, control valves, hydraulic and pneumatic cylinders and motors.	C	30 %
3	Analyses of incompressible and compressible flow.	E	20 %
4	Designing complete fluid power systems.	C	20 %

Textbook and/ or Refrences

James A. Sullivan (1998). Fluid Power: Theory and Applications. 4th Edition, Prentice Hall

Assessment Criteria	Percent (%)
First Exam	25 %
Second Exam	25 %
Final Exam	50 %

Course Plan

Week	Topic
1	Introduction.
2 , 4	Properties of Hydraulic Fluids.
5	Energy and Power in Hydraulic System. Midterm Exam I (Monday 5 / 3 / 2012)
6	The Distribution System..
7 , 8	Hydraulic Flow in Pipes Fluid Power Actuators.
9 , 10	Fluid Power Actuators Midterm Exam II (Monday 9 / 4 / 2012)
11 , 12	Control Components (Hydraulic and Pneumatic Valves).
13 ,14	Hydraulic Circuit Design and Analysis. Final Exam