

Hydraulics-Pneumatics

MCH 243

Course Name

Course Number

PHILOSOPHY/GOALS:

The object of this course is to introduce the student to the basics of fluid power in the theory and practical aspects of hydraulics, which will enable him/her to solve job related problems.

METHODS OF ASSESSMENT (GRADING METHOD):

A = 76 - 100%

B = 66 - 75%

C = 55 - 65%

X = 0 - 54%

X rewrite test covering complete Hydraulics course to obtain C grading only.

TEXTBOOKS):

Vickers Hydraulics Manual

OBJECTIVES:

TOPIC 10-	PERIODS	TOPIC DESCRIPTION	REFEREICB
1		Fundamentals Pascals Law Pressure exerted by column of oil Cause of pressure Properties of air Absolute pressure Cavitation Aeration Oil compressibility Hydraulic symbols Vickers colour code Hydraulic lines (pressure pilot drain) Series and parallel circuits	
2		Plow losses Velocity limitations Speed of actuators Loads H.P. calculations Purpose of reservoirs Design of reservoirs Types of filters Viscosity	
3		Actuators (linear rotary) Cylinders (single acting, double acting, cushion, stop tube) Cylinder seals Hydrostatic pumps Hydrodynamic pumps Volumetric efficiency	
4		Hydraulic horsepower torque Hydraulic horsepower linear Mechanical horsepower Horsepower efficiency	
5		Directional controls Two way valve Pour way valve Major classifications Pilot valves Check valves Servo valve	

TOPIC HO.	PERIODS	TOPIC DESCRIPTIO*	REFERENCE
6		Hydraulic motors (gear, vane piston) Hydraulic pumps (gear, vane piston) Hydraulic compensators Combination pumps Motors, fixed and variable Pumps, fixed and variable Two stage pumps	
7		Unloading valves Compound relief valve Sequence valve Deceleration valve Braking valve Counter balance valve Flow control valves (bypass and restrictor type) Flow control valves (variable, pressure and temperature compensated)	
8		Draw the following hydraulic circuits using symbols Unloading, regenerative, braking, sequence, counter balance, closed circuit Trouble shooting on hydraulic circuits Connect basic hydraulic circuits on Vickers Panel Board	