

MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE

COURSE OUTLINE

DEPT. MECH

COURSE NUMBER: 1110

NUMBER OF CREDITS: 2

Lecture: 2 Lab: 0 OJT: 0

Course Title:

Fluid Power Calculations

Catalog Description:

Fluid Power Calculations applies math concepts used to calculate basic system parameters such as lifting force, pressures, horsepower, time, velocities, and conductor sizes. Students will calculate efficiencies, flow, pressure, horsepower, speed, torque and displacement for basic fluid power systems.

Prerequisites or Necessary Entry Skills/Knowledge:

None

FULFILLS MN TRANSFER CURRICULUM AREA(S) (*Leave blank if not applicable*)

- Goal 1: Communication: By meeting the following competencies:
- Goal 2: Critical Thinking: By meeting the following competencies:
- Goal 3: Natural Sciences: By meeting the following competencies:
- Goal 4: Mathematics/Logical Reasoning: By meeting the following competencies:
- Goal 5: History and the Social and Behavioral Sciences: By meeting the following competencies:
- Goal 6: The Humanities and Fine Arts: By meeting the following competencies:
- Goal 7: Human Diversity: By meeting the following competencies:
- Goal 8: Global Perspective: By meeting the following competencies:
- Goal 9: Ethical and Civic Responsibility: By meeting the following competencies:
- Goal 10: People and the Environment: By meeting the following competencies:

Topics to be Covered

Cylinders/rod area/diameters.

Force/pressure/area.

Cylinder extend/retract time and flow/adjusted GPM.

Hydraulic HP/watts.

Cylinder extend/retract speed (velocity).

Fluid conductor sizes.

2-pump system HP.

Standardized components.

Pump efficiency and displacement.

Actual motor torque/rpm/hp
Circuit Input HP.
Hydraulic motor displacement, flow, and efficiency.

Student Learning Outcomes
Calculate parameters for hydraulic pumps and motors.
Calculate parameters for hydraulic pumps and motors.
Calculate force/pressure/area.
Calculate actuator cycle time and speeds.
Calculate extend/retract flow/adjusted GPM.
Calculate HP in various circuits.
Calculate fluid conductor sizes from circuit.
Calculate pump and motor displacement, volume efficiency, mechanical efficiency, and overall efficiency.

Is this course part of a transfer pathway: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<i>*If yes, please list the competencies below</i>

Revised Date: 1/26/2022