

MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE

COURSE OUTLINE

DEPT. MECH

COURSE NUMBER: 1103

NUMBER OF CREDITS: 3

Lecture: 3 Lab: 0 OJT: 0

Course Title:

Basic Hydraulics

Catalog Description:

Basic Hydraulics introduces the students to basic concepts, formulas and applications of hydraulic system components. Studies the use of directional, flow and pressure control devices in circuits. Also provides students with the knowledge and understanding of the operation, function, and application of hydraulic pumps and actuators.

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

Pascal's Law

Bernoulli's Principle and Bernoulli's Theorem

Energy transition through fluid

Torque, Pressure and Velocity

Pressure in series/parallel circuits

Force, Work, and Power

Flow

Pressure drop

Directional, flow and pressure control devices

Hydraulic pumps, motors, and cylinders

Student Learning Outcomes

Address safety issues related to hydraulics systems

Identify different components of a hydraulic system.

Describe hydraulic principles.

Discuss Pascal's Law, Bernoulli's Principle and Bernoulli's Theorem.

Apply calculations and equations to basic hydraulics.

Utilize hydraulic symbols and schematics.

Is this course part of a transfer pathway: Yes No

***If yes, please list the competencies below**

Revised Date: 1/26/2022