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

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<th>Student Learning Outcomes</th>
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<tr>
<td>Address safety issues related to hydraulics systems</td>
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<td>Identify different components of a hydraulic system.</td>
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<td>Describe hydraulic principles.</td>
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<td>Discuss Pascal’s Law, Bernoulli’s Principle and Bernoulli’s Theorem.</td>
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<td>Apply calculations and equations to basic hydraulics.</td>
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<td>Utilize hydraulic symbols and schematics.</td>
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<th>Is this course part of a transfer pathway:</th>
<th>Yes ☐ No ☒</th>
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*If yes, please list the competencies below

Revised Date: 1/26/2022