DEPT. MECH  

COURSE NUMBER: 2105

NUMBER OF CREDITS: 4  
Lecture: 2 Lab: 2 OJT: 0

Course Title:  
Advanced Fluid Power Systems I

Catalog Description:  
Advanced Fluid Power Systems I provides students the opportunity to design, plumb, and operate various advanced hydraulic, pneumatic, and electrical control circuits.

Prerequisites or Necessary Entry Skills/Knowledge:  
Successful completion of year one in the Mechatronics diploma or A.A.S. degree program or equivalent work experience.

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  
Component specifications, descriptions and diagrams  
Design and operate fluid power circuits per specifications.  
Fluid power component testing.  
Hydraulic circuit applications.  
Pneumatic circuit applications.  
Electro-pneumatic circuits.  
Hydraulic circuit controls.  
Pneumatic circuit controls.  
Open loop hydraulic pumps.
### Troubleshoot fluid power systems.

#### Student Learning Outcomes

- Identify and control potential safety hazards and implement safe working practices.
- Design and test the functions of specified hydraulic and pneumatic components.
- Determine proper function of components in a fluid power system.
- Research fitting and product specifications, model numbers, and drawings.
- Design and draw fluid power circuits per specifications.
- Design and test various pump and motor circuits.
- Design and operate electro-pneumatic circuits.
- Design and operate specified pneumatic circuits using appropriate actuators, pressure control, directional control, and flow control components.
- Perform performance and reliability testing on fluid power conductors and components.
- Troubleshoot fluid power systems

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<th>Is this course part of a transfer pathway:</th>
<th>Yes ☐ No ☒</th>
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<td><em>If yes, please list the competencies below</em></td>
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Revised Date: 1/26/2022