DEPT. MECH  
COURSE NUMBER: 2126

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

**Course Title:**
Systems Analysis

**Catalog Description:**
Systems Analysis provides students with the knowledge of how fluid power components interact with each other in systems and determine causes of malfunction.

**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**
- Pump unloading systems.
- Load locking circuits.
- Filtration.
- Component failure analysis.
- Open/closed center circuits.
- Circuit safety measures.
- Circuits with open and closed loop pumps
- Counterbalance, sequencing, mobile vehicles and braking circuits.
- Internal/external drain and pilot for control valves.
Pneumatic speed control circuits.
Compressor controls.
Pressure drop in air distribution systems
Circuits incorporating accumulators and gear reducers.

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<th>Student Learning Outcomes</th>
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<td>Determine information required to analyze hydraulic and pneumatic systems.</td>
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<td>Identify how circuit components affect one another.</td>
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<td>Describe the effects of various pressure, flow, and directional control.</td>
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<td>Troubleshoot fluid power components and systems.</td>
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<td>Determine uses for various types of control.</td>
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<td>Implement fluid power safety techniques.</td>
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<td>Identify component failure.</td>
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<td>Demonstrate pump unloading techniques.</td>
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<td>Calculate filtration requirements.</td>
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<td>Analyze electro-pneumatic systems.</td>
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Is this course part of a transfer pathway: Yes ☐ No ☒
*If yes, please list the competencies below

Revised Date: 1/27/2022