Faculty members are required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

DEPT. MECH  COURSE NUMBER: 2110

NUMBER OF CREDITS: 3  Lecture: 3  Lab: 0

Course Title:
Circuit Design and Control Theory

Catalog Description:
Provides student instruction in design and function of hydrostatic drives, mobile valves, pump controls, and power steering.

FULFILLS MN TRANSFER CURRICULUM AREA(S)
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:

Prerequisites or Necessary Entry Skills/Knowledge:
MECH1110, MECH1103 and MECH1105
### Topics to be Covered

1. Power transmission types and purpose.
2. Open loop and closed loop hydraulic circuits.
3. Pump controls and applications.
4. Design and selection of hydrostatic system components.
5. Mobile and industrial valve identification and function.
6. Mobile valve components, circuits and applications.
7. Power steering components and applications.
8. Open and closed center circuit comparisons.
9. Hydraulic servo controls and components.
10. Pressure compensation.

### Student Learning Outcomes

1. Identify, calculate, and select components used to operate hydrostatic drives.
2. Determine proper function of mobile and industrial hydraulic valves.
3. Determine proper function of pump and system controls.
4. Identify components and operation of power steering systems.
5. Identify power transmission types and purpose.
6. Describe advantages/disadvantages of open or closed loop control.
7. Describe manual and electronic servo systems.
8. Draw symbols and schematics for mobile hydraulic applications.

### Is this course part of a transfer pathway:

- Yes [ ]
- No [x]

Revised Date: 05/2020