Faculty is 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: 2130

NUMBER OF CREDITS: 4 (2 lect., 2 lab)

COURSE TITLE: Advanced Fluid Power Systems II

CATALOG DESCRIPTION: Provides students advanced theory and lab jobs in the following job related areas: sales, air logic, engineering, lab technician, servo/proportional valves, fabrication, and service.

AUDIENCE: Mechatronics students

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)
Area: by meeting the following competencies:
Area: by meeting the following competencies:
Area: by meeting the following competencies:

PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE:
Successful completion year one of the Mechatronics diploma or A.A.S. degree program or equivalent work experience.
FLPW2105 Advanced Fluid Power Systems I

LENGTH OF COURSE: 1 Semester

THIS COURSE IS USUALLY OFFERED:
Every other year ☐ fall ☐ spring ☒ summer ☐ undetermined ☐

Four goals are emphasized in course at Minnesota West Community & Technical College:

ACADEMIC CONTENT: The academic objectives of this course are:
Demonstrating knowledge and skills of advanced fluid power circuits.

THINKING SKILLS: This course will help students improve the effectiveness of their thinking skills through:
Performing tests with an examination (discussion) on information required to apply hydraulic, pneumatic and electrical components in circuits and how they affect one another.
COMMUNICATIONS SKILLS: This course will help students improve their oral and written communication skills through:
   a. Participating in class discussions and reports
   b. Participating in assignments, worksheets, and reports

HUMAN DIVERSITY: This course will help students recognize, understand, and appreciate human diversity through:
   a. Participating in classroom discussions
   b. Working with other students on research and lab activities
   c. Working with students from other cultures

TOPICS TO BE COVERED:

1. Light, medium and heavy duty hydrostatics
2. Noise levels
3. Hydraulic joystick controllers
4. Model number structures
5. Research product specifications
6. Horse power limiter pumps
7. Load sensing controllers
8. Pressure compensated pumps
9. Design and testing of hydraulic motors
10. Mobile open and closed center valves/systems
11. Mobile power beyond valves
12. Filtration circuits
13. Pilot controlled dcv
14. Component conversions
15. Dew points
16. Proximity switches
17. Load control valves
18. Programming cylinder positioning
19. Accumulators
20. Air logic
21. Venting compound relief valve
22. On-line search for system components and pricing
23. Computer inventory systems
24. Component repair
25. Design circuit per specifications

COURSE LEARNING OUTCOMES (GENERAL):

1. Determine information required to apply the hydraulic, pneumatic and electrical components in circuits.
2. Identify how circuit components affect one another.
3. Test various fluid power components
4. Design fluid power circuits
5. Troubleshoot hydraulic and pneumatic components and circuits
STUDENT LEARNING OUTCOMES (SPECIFIC):
1. Identify hydrostatic components
2. Research product specifications
3. Understand various fluid power controls and sensing
4. Compare mobile open/closed center valves and systems
5. Rebuild and repair fluid power components
6. Demonstrate various pump controls
7. Determine system filtration requirements
8. Design various hydraulic and pneumatic circuits
9. Perform component conversions
10. Utilize online tools to find availability and pricing

LEARNING/TEACHING TECHNIQUES used in the course are:
- Collaborative Learning
- Problem Solving
- Student Presentations
- Interactive Lectures
- Creative Projects
- Individual Coaching
- Lecture
- Films/Videos/Slides
- Demonstrations
- Other (describe below)
- Lab

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:
- Reading
- Tests
- Oral Presentations
- Individual Projects
- Textbook Problems
- Worksheets
- Group Problems
- Collaborative Projects
- Other (describe below)
- Term Paper

Veteran Services: Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.

The information in this course outline is subject to revision

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or via your preferred Telecommunications Relay Service.