MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE
COURSE OUTLINE

Faculty 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 Collegewide Curriculum Committee.

DEPT. Robotics COURSE NO. ROBT 2140

NUMBER OF CREDITS: 2

COURSE TITLE: Proportional and Servo Systems

CATALOG DESCRIPTION: This course will introduce students to basic proportional and servo valves and their functions.

AUDIENCE

FULFILLS MN TRANSFER CURRICULUM AREA(S) (*Leave blank if not applicable*)

PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE:

LENGTH OF COURSE: (2 C/ 1 lect/pres, 1 lab, 0 other)

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

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

1) ACADEMIC CONTENT: The student will receive the knowledge and skills pertaining to servo and proportional valves in industry.

2) THINKING SKILLS: The student will understand the theory of operation of proportional and servo valves used in industry.

3) COMMUNICATIONS SKILLS: The student will begin to demonstrate appropriate communications both oral and written.

4) HUMAN DIVERSITY: The student will gain self awareness regarding their feelings towards people of different cultures, value systems and socioeconomic status.

TOPICS TO BE COVERED:

1. list student responsibilities
2. explain proportional valve terms
3. explain proportional valve
4. list proportional system components
5. explain proportional solenoid operation
6. explain proportional directional control valve operation
7. explain proportional pressure control valve operation
8. explain proportional valve operational characteristics
9. explain proportional flow control valve operation
10. explain proportional valve amplifier operation
11. explain proportional controlled pump operation
12. explain ramp generator operation
13. explain positional proportional valve system operation
14. explain input device operation
15. explain velocity proportional valve system operation
16. explain feedback device operation
17. explain proportional system troubleshooting procedures
18. explain proportional valve system power unit requirements
19. list servo system components
20. explain servo system terms
21. explain mechanical servo system operation
22. explain flapper nozzle servo operation
23. explain jet pipe servo operation
24. explain torque motor operation
25. explain miscellaneous servo valve operation
26. explain two-stage servo valve operation
27. explain servo amplifier operation
28. explain servo systems input device operation
29. explain servo systems feedback device operation
30. explain velocity servo system operation
31. explain positional servo system operation
32. explain servo controlled pump operation
33. explain servo system troubleshooting procedures
34. explain servo system power unit requirements
35. explain portable servo valve analyzer use
36. explain servo valve flushing procedure

LIST OF EXPECTED COURSE OUTCOMES:

LEARNING/TEACHING TECHNIQUES used in the course are:

☐ Collaborative Learning       X ☐ Problem Solving
☐ Student Presentations       ☐ Interactive Lectures
☐ Creative Projects           ☐ Individual Coaching
X ☐ Lecture                   X ☐ Films/Videos/Slides
X ☐ Demonstrations            ☐ Other (describe below)
X ☐ Lab
ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:

X Reading  X Tests  X Individual Projects
☐ Oral Presentations  X Worksheets  ☐ Collaborative Projects
☐ Textbook Problems  ☐ Papers  ☐ Portfolio
☐ Group Problems  ☐ Term Paper
☐ Other (describe below)

EXPECTED STUDENT LEARNING OUTCOMES:

To receive accommodations for a documented disability, please contact the campus Student Services Advisor as soon as possible. Students are also encouraged to notify the instructor.

This document can be made available in alternative format by contacting Student Services, the Campus CEOs or calling Minnesota Relay Service at 1-800-627-3529. Reasonable accommodations will be provided upon request for documented disabilities. An Affirmative Action Equal Opportunity Educator/Employer. ADA Accessible.

The information in this course outline is subject to revision.