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 1121

NUMBER OF CREDITS:  2

COURSE TITLE: Advanced AC Concepts

CATALOG DESCRIPTION: This course will cover power supplies, transformers, 3 phase power and 3 phase motors. It will also include the design of 3 phase motor starter circuits. (Concurrent with ROBT 1126)

AUDIENCE

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

PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE:

LENGTH OF COURSE: (2 C/ 2 lect/pres, 0 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 to understand power supplies, transformers and 3 phase power circuits.

2) THINKING SKILLS: The student will systematically solve electrical problems

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. describe transformer function
2. describe half-wave rectification
3. describe full-wave rectification
4. describe full-wave center-tapped operation
5. describe bridge rectification
6. describe bridge rectifier operation
7. describe rectifier filtering effects
8. describe capacitive filter operation
9. describe inductive filtering networks
10. calculate power supply parameters
11. design filter circuit
12. describe 3 phase power characteristics
13. describe wye type 3 phase power system
14. describe 3 wire delta 3 phase power system system
15. describe 4 wire 3 phase power distribution system
16. describe 3 phase motor starter circuit
17. describe 3 phase induction motor operation
18. design 3 phase motor starter circuit
19. design 3 phase reversing motor starter circuit
20. describe 3 phase reversing motor starter circuit
*21. design complete 3 phase reversing motor starter control circuit
22. select transformers
23. describe motor starter selection factors
24. describe 3 phase motor selection factors
25. describe fuse selection factors
*26. design complete motor starter control circuit circuit
27. describe 3 phase motor wiring
*28. describe transformer coupling

LIST OF EXPECTED COURSE OUTCOMES: The students will understand the theory of power supplies, 3 phase electrical power and motor starters.

LEARNING/TEACHING TECHNIQUES used in the course are:

- Collaborative Learning
- Student Presentations
- Creative Projects
- Lecture
- Demonstrations
- Lab
- Problem Solving
- Interactive Lectures
- Individual Coaching
- Films/Videos/Slides
- Other (describe below)

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:

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