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 1106

NUMBER OF CREDITS: 2

COURSE TITLE: Electrical Theory I

CATALOG DESCRIPTION: Electrical Theory I is a foundation course for all students enrolled in the Robotics program. It provides students with an understanding and application of basic electricity and resistive circuits. DC voltage sources, electrical law, and theorems involving resistive type circuits will be covered in lecture and applied in the associated laboratory course. (Concurrent with ROBT 1111)

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 X spring ☐ 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 basic DC and AC 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. define current
2. define voltage
3. define resistance
4. apply Ohm's Law
5. interpret resistor color codes
6. apply voltage divider circuits
7. relate IVR/parallel circuit
8. apply current divider circuits
9. define power/energy
10. describe resistive power rating
11. define meter functions
12. define magnetism laws
13. define sine wave parameter
14. describe rc circuits phase relationships
15. explain induced current/voltage
16. describe ac voltage generator
17. define self-inductance
18. compute inductor values
19. describe rc time constants
20. describe rl time constants
21. compute i/v in ac resistive circuits
22. compute total circuit capacitance
23. describe sine wave
24. describe capacitor application
25. compute i/v in ac inductive circuits
26. identify capacitors
27. compute capacitor values
28. describe phase relationships in rl circuit
29. define impedance
30. define inductive reactance
31. define capacitor reactance

LIST OF EXPECTED COURSE OUTCOMES: The student will understand the basic theory of DC and AC circuits, and how the components interact with each other.

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:
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.