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 1111

NUMBER OF CREDITS: 2

COURSE TITLE: Electric Circuit Fundamentals Lab

CATALOG DESCRIPTION: Electric Circuits Fundamentals Lab supplements the Electric Circuits Fundamentals course. It provides students with hands-on training. Resistors with capacitors, inductors, transformers, AC/DC source, and bench test equipment will be connected to allow students to test and troubleshoot various series and parallel circuits. (Concurrent with ROBT 1105)

AUDIENCE

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

PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE:

LENGTH OF COURSE: (2 C/ 0 lect/pres, 2 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 and skills to set up and test basic AC and DC circuits in lab.

2) THINKING SKILLS: The student will set up and systematically solve electrical circuit problems in the lab.

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. verify kirchhoff voltage law
2. set up bench equipment
3. measure resistance
4. verify ohm's law
5. determine i/v/r series circuit
6. develop voltage divider experimentally
7. determine resistance parallel circuit
8. troubleshoot dc parallel resistive circuits
9. verify rt compound circuits
10. verify experimentally compound circuit voltage drops
11. measure impedance of a parallel RC circuit
12. verify kirchhoff current law
13. measure RC time constants
14. measure impedance of a parallel RL circuit
15. measure impedance of a series RC circuit
16. troubleshoot compound circuits
17. measure RL time constants
18. measure voltage using the oscilloscope
19. measure circuit parameters in a parallel capacitive circuit
20. measure circuit parameters in a series capacitive circuit
21. measure voltage relationship in a series RL circuit
22. measure voltage relationship in a series RC circuit
23. measure capacitive reactance of a capacitor
24. measure inductive reactance of a coil
25. measure impedance of a series RL circuit
26. set up oscilloscope controls
27. measure sine wave voltage
28. set up RC circuits
29. set up RL circuit

LIST OF EXPECTED COURSE OUTCOMES: The student will be able to properly set up, measure and interpret DC and AC electrical circuits.

LEARNING/TEACHING TECHNIQUES used in the course are:

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