

# MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE

## COURSE OUTLINE

DEPT. ELCO

COURSE NUMBER: 1120

NUMBER OF CREDITS: 3

Lecture: 1 Lab: 2 OJT 0

### Course Title:

AC/DC II

### Catalog Description:

AC/DC II introduces students to the basic concepts of AC circuits, safety practices, basic studies of resistive, inductive, and capacitive circuits, circuit analyzing, oscilloscope operations, capacitance, capacitive reactance, inductance, inductive reactance, RC and RL time constants, Transformers, and three-phase circuits.

### Prerequisites or Necessary Entry Skills/Knowledge:

ELCO 1110

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

- Goal 1: Communication: By meeting the following competencies:
- Goal 2: Critical Thinking: By meeting the following competencies:
- Goal 3: Natural Sciences: By meeting the following competencies:
- Goal 4: Mathematics/Logical Reasoning: By meeting the following competencies:
- Goal 5: History and the Social and Behavioral Sciences: By meeting the following competencies:
- Goal 6: The Humanities and Fine Arts: By meeting the following competencies:
- Goal 7: Human Diversity: By meeting the following competencies:
- Goal 8: Global Perspective: By meeting the following competencies:
- Goal 9: Ethical and Civic Responsibility: By meeting the following competencies:
- Goal 10: People and the Environment: By meeting the following competencies:

### Topics to be Covered

Safety

Introduction to alternating current

Training and equipment the familiarization

Generating AC electricity

Non-sinusoidal sine waves

Resistance in AC circuits

Inductors

RL series, parallel, and troubleshooting circuits

Capacitors

RC series, parallel, and troubleshooting circuits
RLC series, parallel, and troubleshooting circuits
Transformer action and troubleshooting
Three-phase circuits

<b>Student Learning Outcomes</b>
Analyze the theory of AC by using oscilloscopes, training equipment, volt-ohm meters.
Apply safe electrical tactics on the job with electricity.
Calculate and use AC electrical terms.
How to troubleshoot series, parallel circuits in RL inductance.
How to troubleshoot series, parallel circuits in RC capacitance
How to troubleshoot series, parallel circuits in RLC combination
How to troubleshoot series, parallel circuits in resistance
Understand how to measure capacitors in microfarads
Understanding and respecting AC electricity
Understand how to color code capacitors

<b>Is this course part of a transfer pathway: Yes</b> <input type="checkbox"/> <b>No</b> <input checked="" type="checkbox"/>
<i>*If yes, please list the competencies below</i>

Revised Date: 1/1/2022