

# Dakota County Technical College

## ELEC 1120: A.C. Electricity Theory and Lab

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 1

Lab Hours/Week: 2

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course covers investigation of alternating current and its behavior in resistive and reactive series, parallel, and series/parallel circuits; use of test instrumentation; electromagnetic induction; and resonance.  
Prerequisites: None.

**B. COURSE EFFECTIVE DATES:** 01/13/2003 - Present

**C. OUTLINE OF MAJOR CONTENT AREAS**

#### **D. LEARNING OUTCOMES (General)**

1. Analyze AC voltage and current circuits
2. Analyze CR time constant
3. Analyze LR time constant
4. Analyze capacitors in parallel
5. Analyze capacitors in series
6. Analyze inductors in parallel
7. Analyze inductors in series
8. Analyze motor operation
9. Analyze oscilloscope operation
10. Analyze parallel circuits with conductance
11. Analyze transformer operation
12. Compute power in passive AC circuits
13. Define AC voltage and current parameters
14. Define capacitance
15. Define frequency
16. Define inductance
17. Define mutual inductance
18. Define period time
19. Define resonance
20. Describe AC alternator operation
21. Describe LR circuit operation
22. Describe effect of self-inductance
23. Describe electrical safety
24. Describe factors effecting capacitance
25. Describe factors effecting inductance
26. Describe motor controls
27. Describe oscilloscope controls
28. Exhibit inductive reactance
29. Explain capacitive reactance
30. Identify multimeter controls
31. Record parallel resonant characteristics
32. Record series resonant characteristics
33. Use DC power supply
34. Use audio generator
35. Use digital multimeter
36. Use oscilloscope

#### **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

None

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted