

# Dakota County Technical College

## MATS 1205: Math for Electricians

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites:

This course requires either of these prerequisite categories

1. MATS 0100 - Mathematics Skills Lab

Or

2. A score of 56 on test Accuplacer Arithmetic

Corequisites: None

MnTC Goals: None

A first-semester course for students in the Electrical Construction program. Derivation and application of power-wheel formulas; significant figures and engineering notation; circuit analysis using Kirchhoff's laws and systems of equations; right triangle trigonometry with applications; vectors and vector addition; AC sine waves; phasor analysis of an RLC circuit; binary, octal, and hexadecimal number systems; signal distribution; direct and inverse proportions. Attention: This course does not fulfill the union requirement of a year of high school algebra. Students looking to fulfill this requirement should enroll in MATS0310.

**B. COURSE EFFECTIVE DATES:** 08/01/2002 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Review fraction operations
2. Power wheel formulas
3. Systems of equations and Kirchhoff's law
4. Right Angle Trigonometry
5. Introduction to AC Circuit Analysis
6. Alternate Number Systems

### D. LEARNING OUTCOMES (General)

1. Work with units of electrical pressure, flow, resistance, power, and so on.
2. Use physical analogies to explain basic concepts such as Ohm's law and Kirchhoff's laws
3. Distinguish resistance vs. reactance, and true power (Watts) vs. apparent power (VoltAmps)
4. Substitute into complicated electrical formulas
5. Interpret "directly proportional" vs. "inversely proportional"
6. Count in base-2, base-8, and base-16

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

None

### F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted