A. Course Description

- Credits: 3.00
- Lecture Hours/Week: 3.00
- Lab Hours/Week: 0.00
- OJT Hours/Week: 0
- Prerequisites:
  - MATS 0075: Number Sense
  - MATS 0100: Mathematics Skills Lab
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- 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: 8/1/02 – Present

C. Outline of Major Content Areas

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

D. Learning Outcomes

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

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

F. Learner Outcomes Assessment
   As noted on course syllabus

G. Special Information
   None noted