



Course Name: ELT-201 Electricity and Electronics

Date Updated: 4/2022

Credit Hours/week: 4 hrs./wk. – 4 cr.

BEGINNING: SPRING 2022

Catalog Description: This course is a fundamental study of electricity and electronics for Engineering Technology majors. The principles of electrical components and circuits are studied in class and laboratory. Topics include DC, AC series and parallel circuits, transformers and power supplies, solid state amplifiers and control components. The laboratory enables the student to apply the theory discussed in class and to gain some proficiency in the use of electronic measuring equipment.

Prerequisite: MAT 110 or equivalent and ENR 124. MAT 110 provides a study of topics essential to continuing courses in engineering and physical sciences, including: trigonometric, exponential, and logarithmic functions, the theory of equations, and introductions to statistics and complex numbers. (Reference CCM Catalog)

Text: None

Supplementary Material: None

Syllabus:

Period	Text Sections	Topics
		None Listed

Students are expected to adhere to the policies of the County College of Morris. These can be accessed at: (insert link here)

Statement of Expected Course LEARNING OUTCOMES

- Define voltage, current and resistance
- Use Ohm's Law to solve problems involving voltage, current and resistance
- List the characteristics of current, voltage and resistance in a series circuit
- List the characteristics of current, voltage and resistance in a parallel circuit
- Use Kirchoff's Laws to solve unknown electrical quantities in circuits
- Define electrical power
- Explain the difference between a DC and AC source
- Explain the principles of reactance
- Demonstrate the proper use of a Multimeter to measure voltage, current and resistance

Math Requirements for ELT-201:

Basic Algebra

- Solving and manipulating Equations
- Use of exponents (scientific notation)
 - Interpreting results

Graphs

- Creating and analyzing graphical presentations of data
 - Creating and interpreting simple Y vs. X graphs
 - Creating and interpreting semi-log Y vs. X graphs
- Use of Excel or a similar data base to compile data and create graphical representations

Exponential Equations

- Solving exponential equations involving "e" and "natural Logarithms"
 - Solving exponential equations involving "common logarithms"
- Solving equations involving fractional, negative and decimal exponents

Complex Numbers and Arithmetic

- An understanding of basic arithmetic operations (+, -, x, /) using complex numbers
- Conversion of complex numbers between "rectangular" and "polar" format
 - Graphical (vector) representation and analysis of complex numbers

Basic trigonometric calculations

- Use of the Sin, Cos, and Tan functions
 - Use of radian and degrees notation
- Use of trig functions in algebraic equations