
Course Prefix/No.: EEM 117
Course Title: AC/DC Circuits I
Lecture Hours/Week: 3.0
Lab Hours/Week: 3.0
Credit Hours/Semester: 4.0

[Distance Learning Attendance/VA Statement](#)
[Textbook Information](#)

COURSE DESCRIPTION

This course is a study of direct and alternating theory, Ohm's Law, series, parallel, and combination circuits. Circuits are constructed and tested.

COURSE COMPETENCIES

Upon successful completion of this course, the student should be able to:

Module 1 – Basic Electricity & Ohms Law

- Discuss the structure of atoms
- Discuss the differences between conductors and insulators
- Discuss common electrical quantities
- Determine a resistor's value by its color code
- Perform Ohm's law calculations

Module 2 – Series Circuits & Parallel Circuits

- Provide the definition of a series circuit
- List the rules of a series circuit
- Define parallel circuits
- List the rules of a parallel circuit
- Determine electrical values in a series and parallel circuits

Module 3 – Combination Circuits

- Determine the current path(s) through a combination circuit
- Determine the total resistance through a combination circuit
- Determine voltage drops across elements of a combination circuit

Module 4 – Basic Alternating Circuits

- Discuss the differences between direct current and alternating current
- Discuss and recognize different types AC waveforms
- Determine values of peak, RMS, and average voltages
- Explain wavelength
- Discuss different types of AC loads

Module 5 – Inductance in an AC Circuit

- Discuss inductance
- Calculate inductance
- Calculate inductive reactance
- Calculate impedance
- Discuss voltage and current relationships in an inductive circuit

Module 6 – Capacitors

- Define capacitance
- List the factors that determine the capacitance of a capacitor
- Discuss capacitor voltage ratings
- Discuss the difference between polarized and nonpolarized capacitors
- Determine the charge and discharge time of a capacitor

Module 7 – Capacitors in an AC Circuit

- Discuss how current appears to flow through a capacitor
- Calculate capacitive reactance
- Determine values of reactance, current, and power in a purely capacitive circuit
- Discuss voltage and current relationships in a purely capacitive circuit

Module 8 – Basic RLC Circuits

- Define an RLC circuit
- Vector an inductive circuit
- Vector a capacitive circuit
- Vector an RLC Circuit

STANDARDS

Assignments and attendance must be completed as designated in “Evaluation Strategies/Grading.” Criteria for minimal acceptable performance will be provided by the instructor.

REQUIREMENTS

Attendance Policy

The college attendance policy, stated in the college handbook, will be honored. The instructor will provide specific requirements for the course.

Academic Honesty

Students are expected to adhere to the college policy regarding student conduct as stated in the college handbook.

Assignments

Students are expected to complete all assignments and any supplementary exercises designated by the instructor.

EVALUATION STRATEGIES/GRADING

Students must complete all modules, including assignments, projects, labs, and tests. Students must earn at least a “C” in order for the course to serve as a prerequisite and for the course to apply towards a certificate.

Grading Scale

A = 90.0 – 100

B = 80.0 – 89.9

C = 70.0 – 79.9

D = 60.0 – 69.9

F = 00.0 – 59.9

Evaluation Method

Tests/Projects (minimum of four total) 50% of each module

Lab Work 25% of each module

Work Attitude 25% of each module

Each module counts 12.5% of final grade

Work Attitude is defined as:

- | | |
|--|--|
| <input type="checkbox"/> Participation | <input type="checkbox"/> Responsibility |
| <input type="checkbox"/> Cooperation | <input type="checkbox"/> Professionalism |
| <input type="checkbox"/> Appearance | <input type="checkbox"/> Attendance |
| <input type="checkbox"/> Effort | <input type="checkbox"/> Self Motivation |
| <input type="checkbox"/> Safety | <input type="checkbox"/> Works Independently |

ENTRY LEVEL SKILLS

The student must be able to read and solve basic mathematical equations.

PREREQUISITES: RDG 031 or equivalent, MAT 031

CO-REQUISITES: None

Disabilities Statement: Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.

Effective: 2007SU