

Common Course Outline

EMET 145 Principles of Electronics/Electricity

3 Semester Hours

The Community College of Baltimore County

Description

EMET 145 – Principles of Electronics/Electricity

presents foundational concepts for safe use of electronics and electricity in the industrial environment. Relevant theoretical and practical information is covered, relating to current, magnetism, current resistance and potential difference, electrical component, conductors, and AC and DC circuits. Topics include resistors, color coding, Ohm's Law, and Kirchhoff's Law, calculating voltage, series, parallel and series/parallel circuits. Proper use of soldering tools and test equipment will also be covered.

3 Credit hours: 2 lecture hours per week; 2 lab hours per week

Pre-requisite: OSHT 106 – Hazard Recognition and Control; EMET 105 – Technical Blueprints and Schematics

Overall Course Objectives

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

1. explain the nature and behavior of electric current;
2. provide an overview of the history, characteristics, and uses of magnetism;
3. discuss current resistance and potential difference;
4. list and explain standard electrical components;
5. describe the properties of and uses for conductors, DC circuits, and AC circuits;
6. describe the development of electronics, and the standard components involved;

7. explain the principles and terminology related to a variety of meters used to gauge electricity and meter operation;
8. explain the principles and uses for multimeters and other test equipment;
9. calculate voltage drop across a load using Ohm's Law;
10. construct series and parallel circuits and prove Ohm's Law;
11. demonstrate proper soldering and splicing techniques; and
12. determine the value of resistors by using the industry standard color code.

Major Topics

The following major topics are covered in this course:

- I. Electric current
- II. Magnetism
- III. Current resistance and potential difference
- IV. Electrical components
- V. Conductors, DC circuits, AC circuits
- VI. Ohm's Law and Kirchhoff's Law
- VII. Soldering Tools and Techniques
- VIII. Multimeters and Test Equipment

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member and will be provided on the first day of class.

The following will be required for this course:

1. Written paper or suitable practical project
2. Midterm exam
3. Comprehensive final (including a practical exam).

In addition, students can expect additional grades from the following areas:

4. Quizzes
5. Lab Projects
6. Homework Assignments.

Other Course Information

EMET 145 - Principles of Electronics/Electricity is a required course in the Mechanical Engineering Technology option within the Engineering Technology A.A.S. program. The course is taught in both classroom and lab environments.