ELEI/ENSC 114
Principles of Electronics/Electricity
3 Credits (3 lecture hours and 2 lab hours)

Community College of Baltimore County
Common Course Outline

Description

ELEI/ENSC 114 – 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, potential difference, electrical components, conductors, and alternating current (AC) and direct current (DC) circuits. Topics include resistors, color-coding, Ohm's Law, Kirchhoff's Law, and calculating voltage, series, parallel, and series/parallel circuits. Proper use of soldering tools and test equipment is reviewed.

Co-requisite: MATH 135 or MATH 165 or higher

Overall Course Objectives

Upon completion of this course, students 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. 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 to prove Ohm's Law; and
11. determine the value of resistors by using the industry standard color code.

Major Topics

I. Electric current
II. Magnetism
III. Current resistance and potential difference
IV. Electrical components
V. Conductors, DC circuits, and AC circuits
VI. Ohm's Law and Kirchhoff's Law
VII. Soldering tools and techniques
VIII. Multimeters and test equipment

Course Requirements

Grading will be determined by the individual faculty member, but shall include the following, at a minimum:

- Seven Homework Assignments
- Two exams
- Four Lab Assignments
- Final Exam

Other Course Information

Labs may involve exposure to electric currents and voltages and require soldering. In order for ENSC 114 to transfer to a BS/BA Engineering Program, ENSC 245 must also be taken. ENSC 114 is the non-calculus portion of Principles of Electronics/Electricity, whereas ENSC 245 is the calculus portion.

Date Revised 02/10/2021