

**ELEI 112**  
**BASIC ELECTRICITY/ELECTRONICS FOR MAINTENANCE**  
**TECHNICIANS**  
**4 Semester Hours**

**The Community College of Baltimore County**

**Description**

Basic Electricity/Electronics for Maintenance Technicians

Discusses A.C. and D.C. Circuit fundamentals; discusses basic wiring and construction principles, commercial and industrial wiring, and residential wiring, the purpose and use of the National Electrical Code, and the How's and Why's of basic wiring and construction.

Pre-requisites: Math Skills 1, Reading Skills 1, English Skills 1

**Overall Course Objectives.**

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

Demonstrate an understanding of basic electricity. Demonstrate basic industrial wiring. Demonstrate a working knowledge, through a laboratory setting, of theory as it applies to an experimental situation. Demonstrate the ability to safely and accurately read a voltmeter, ammeter, and ohmmeter. Identify the various classes of single phase and three phase motors. Explain the effects of opens and shorts in series and parallel circuits.

Demonstrate basic knowledge of wire pulling ,conduit bending , conduit installation, installation of various types of boxes, fixtures and devices.

**Major Topics**

Basic electrical theory, Ohms law, voltage, current, resistance, and power. Electrical circuits, series circuit, parallel circuit, series-parallel circuit, circuit calculations. Electrical services, Service entrances, main panel, sub panels, circuit breakers, fuses, GFI devices, grounding, Electrical Code. Basic control circuits, electrical symbols, wiring diagrams and schematics. Single-phase motors, operating principles of single-phase motors, types of single-phase motors, single-phase motors control. Three phase motors, operating principles of three phase motors, types of three phase motors, three phase motors control. Components of control circuits, control transformer, thermostat, relays, contactors, solenoid valves, pressure switch, flow switch, limit switch, and overload protection devices.

**Course Requirements**

The instructor will administer a midterm exam 15%, a final exam 15%, a lab practical exam 55%, attendance classroom participation and quizzes 15%.

**Other Course Information**

**Additional Information about this course or any other Industrial electricity/electronics course may be obtained by contacting the IEE/Telecommunications Program Director.**