

## **AUTO 131**

### **Automotive Electrical and Electronics I**

4 Credits: 2 Lecture, 6 Lab hours

Community College of Baltimore County  
Common Course Outline

#### **Description**

**AUTO 131 – Automotive Electrical and Electronics I:** introduces students to various automotive electrical and electronic components, operations, and service procedures. Topics include tools, basic electrical fundamentals, circuit laws, information systems and service publications.

**Pre-requisites:** AUTO 100 or written permission from the program coordinator

**Co-requisites:** ACLT 053 or (ESOL 052 and ESOL 054) and MATH 082

#### **Overall Course Objectives**

Upon completion of this course, students will be able to:

1. trace wiring diagrams during diagnosis of electrical circuit problems;
2. obtain and interpret digital multimeter readings;
3. measure available voltage and voltage drop in electrical/electronic circuits using a digital multimeter to determine needed repairs;
4. measure current flow in electrical/electronic circuits and components using an ammeter to determine needed repairs;
5. find shorts, grounds, opens, and resistance problems in electrical/electronic circuits and determine needed repairs;
6. inspect and test power and ground circuits and connections to determine service or replacement as needed;
7. inspect and test switches, connectors, relays, and wires of electrical/electronic circuits to determine repair or replacement as needed;
8. diagnose incorrect circuit operation and repair as needed; and
9. perform all required Automotive Service Excellence (ASE) Education Foundation tasks from the ASE master course list.
10. inspect and test fusible links, circuit breakers, fuses, and replace as needed;

#### **Major Topics**

- I. Battery/Starter diagnosis and service
- II. Available voltage and voltage drop
- III. Compare voltage, current, and resistance using Ohm's Law
- IV. Electrical circuits
- V. Integrated circuits testing

#### **Course Requirements**

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

The Common Course Outline (CCO) determines the essential nature of each course.

For more information, see your professor's syllabus.

- three quizzes
- weekly lab projects
- research paper (6-8 pages typed) or obtain the ASE Professional Certification
- three homework assignments
- active engagement in class activities
- one midterm exam
- one comprehensive final exam with a written component and a hands-on individual assessment

Written assignments and research projects: Students are required to use appropriate academic resources in their research and cite sources according to the style selected by their professor.

### **Other Course Information**

This class combines lab with lecture and students apply knowledge learned in a hands-on environment.

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