

**Common Course Outline**  
**AUTO 131**  
**Servicing Electrical and Electronic Systems**  
**4 Credits**  
**Community College of Baltimore County**

**Description**

**AUTO 131 – Servicing Electrical and Electronic Systems** introduces students to various automotive electrical and electronic components, operations, and service procedures; includes service of the battery, starting systems, charging systems, accessories, chassis wiring, and electronic engine controls.

**4 credits:** 3 lecture hours; 9 laboratory hours

**Prerequisite:** AUTO 100 or written permission from program coordinator required

**Corequisite:** ACLT 052 or ACLT 053 or (ESOL 052 and ESOL 054) and MATH 081

**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 (DMM) readings;
3. measure available voltage and voltage drop in electrical/electronic circuits using a digital multimeter (DMM) and determine needed repairs;
4. measure current flow in electrical/electronic circuits and components using an ammeter and 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. perform battery state-of-charge test and determine needed service;
9. perform battery capacity (load, high-rate discharge) test and determine needed service;
10. diagnose incorrect horn operation and repair as needed; and
11. perform all other up-to-date NATEF (National Automotive Technicians Education Foundation) tasks from the master course list.

## **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/Exams:**

Grading procedures will be determined by the individual faculty member but will include the following:

- A minimum of 4 quizzes
- A minimum of 8 lab projects
- A minimum of 1 written paper
- A minimum of 4 homework assignments
- One mid-term exam
- Class participation
- Comprehensive final skills assessment (required)

### **Written Paper**

1. Topic of the paper will be selected by the student and should relate to the subject material of the course.
2. The paper should be 6 to 8 pages in length, typewritten, and double-spaced. It should include in addition to the 6 to 8 pages of text, an author and title page and bibliography utilizing a minimum of three reference resources excluding classroom materials.
3. All papers are due when 80% of the class sessions are completed. Papers submitted late will be deducted one letter grade.

Written Assignments: Students are required to utilize appropriate academic resources.

## **Other Course Information**

AUTO 131 approaches automotive electrical and electronic systems as a learning process that incorporates theory with laboratory experience. To complete the course successfully, practical ability as well as knowledge of theory must be demonstrated.

This is an Automotive Technology core course and is taught in an 8-week format.