

**Course Outline**  
**AUTO 136**  
**Repairing Automotive Electrical Systems**  
**3 Credit Hours**  
**2 Lecture Hours**  
**3 Lab Hours**

**The Community College of Baltimore County**

**Description**

**Repairing Automotive Electrical Systems**

Discusses diagnosis and repair of automotive electrical systems and components; includes disassembly, overhaul and repair of starting systems, accessories, and chassis wiring, emphasizing diagnosis and repair of these systems.

\$20.00 fee required. Prerequisite: AUTO 131

**Overall Course Objectives**

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

1. Use wiring diagrams during diagnosis of electrical circuit problems.
2. Obtain and interpret digital multimeter (DMM) readings.
3. Check voltage and voltage drop in electrical/electronic circuits using a digital multimeter (DMM) and determine needed repairs.
4. Find shorts, grounds, opens, and resistance problems in electrical/electronic circuits and determine needed repairs.
5. Measure and diagnose the cause(s) of abnormal key-off battery drain 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 fusible links, circuit breakers, fuses, and replace as needed.
8. Inspect and test switches, connectors, relays, wires of electrical/electronic circuits and repair or replace as needed.
9. Perform battery state-of-charge test to determine needed service.
10. Perform battery capacity (load, high-rate discharge) test and determine needed service.
11. Inspect and clean battery cables, connectors, clamps, hold-downs, and repair or replace as needed.
12. Start a vehicle using jumper cables and a battery or auxiliary power supply.
13. Perform starter current draw and circuit voltage drop test to determine needed repairs.
14. Diagnose charging system problems that cause an undercharge, a no-charge, or an overcharge condition.

15. Inspect and adjust alternator drive belts and replace as needed.
16. All other NATAF Tasks from the master course list.

### **Major Topics**

1. Charging system diagnose
2. Starter system diagnose
3. Lighting system diagnose
4. Instrumentation system diagnose
5. Power accessories system diagnose

In AUTO 136 students are required to demonstrate an ability to solve problems related to automotive diagnosis of electrical circuit using multimeter and electrical wiring.

### **Course Requirements**

#### **One Term 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.

#### **Grading/Exams:**

Grading procedures will be determined by the individual faculty member and will be provided on the first day of class. A student can expect a minimum of eight grades from the following categories:

1. Quizzes
2. Lab projects
3. Written paper
4. Homework assignments
5. Midterm exam
6. Class participation
7. Comprehensive final (required)

### **Other Course Information**

This course is an Automotive Technology core course.