

AUT 102 : AUTOMOTIVE ELECTRIC I

Transcript title

Automotive Electric I

Credits

5

Grading mode

Standard letter grades

Total contact hours

110

Lecture hours

20

Lab hours

90

Prerequisites

AUT 101, AUT 106, AUT 107, AUT 110 and AUT 115.

Recommended preparation

MTH 060 or higher or minimum placement Math Level 10.

Course Description

Covers Automotive Electrical Skills. Introduces the testing, disassembly, and rebuilding of various electrical equipment. Troubleshooting and using various test equipment common to the Automotive trade will be stressed. Introduces the use of automotive scan tools for basic diagnostics. Introduces the use of intrusive and non-intrusive testing methods.

Course learning outcomes

1. Describe and apply OHM's law as it applies to automotive electrical systems including current flow, voltage drops, and electrical resistance measurements.
2. Perform battery testing and service.
3. Perform service on automotive electrical system components.
4. Diagnosis problems of electrical components using a Scan Tool.
5. Demonstrate the use of an amperage clamp and digital multi-meter to determine circuit current draw on an active electrical circuit.
6. Diagnose problems of an isolated circuit using a Power Probe Tool.
7. Demonstrate proper and safe work habits and procedures when exposed to electrical circuits.

Content outline

1. Electrical fundamentals
2. Electrical circuits and Ohms's law
3. Series, parallel, and series/parallel circuits
4. Circuit testers and digital meters
5. Automotive wiring and wire repair
6. Wiring schematics and circuit testing
7. Batteries

8. Battery testing and service
9. Parasitic battery drain
10. Capacitance and capacitors
11. Magnetism and electromagnetism
12. Cranking systems
13. Cranking system diagnosis and service
14. Charging system operation and diagnosis
15. Lighting and signaling circuits
16. Driver information and navigation systems
17. Horn, wipers, and blower motor circuits
18. Accessory circuits

Required materials

Required text book. Requires special gear, see syllabus for details.