AUTO 161
Repairing Automotive Electronics
5 Credits: (2 hours lecture, 8 hours lab)

Community College of Baltimore County
Common Course Outline

Description

AUTO 161 – Repairing Automotive Electronics: introduces diagnosis and repair of automotive electronic systems and components. Topics include diagnosis, inspection, disassembly, and repair of electronic components such as computerized engine control, electronic ignition, fuel injection, and other electronic accessories.

Pre-requisites: AUTO 131 and AUTO 141

Overall Course Objectives

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

1. trace wiring diagrams during diagnosis of electrical circuit problems;
2. diagnose drivability and emissions problems resulting from failures of inter-related systems such as cruise control, security alarms, torque controls, suspension controls, traction controls, torque management, A/C, automatic transmissions, and similar systems and determine needed repairs;
3. diagnose engine mechanical, electrical, electronic, fuel, and ignition problems with an oscilloscope and engine diagnostic equipment and determine needed action;
4. retrieve and record stored diagnostic trouble codes;
5. inspect, test, adjust, and replace computerized engine control system sensors, powertrain control module (PCM), actuators, and circuits;
6. obtain and interpret digital multimeter readings;
7. diagnose no start, drivability, and emissions problems on vehicles with electronic ignition systems and determine needed repairs;
8. inspect and test ignition coil(s) and replace as needed;
9. inspect and test mechanical and electrical fuel pumps and pump control system and replace as needed;
10. inspect and test fuel pressure regulation system and components of injection-type fuel systems and adjust or replace as needed;
11. inspect and test fuel injectors and clean or replace;
12. diagnose emissions and drivability problems caused by failure of the exhaust gas recirculation (EGR) system; and
13. perform all required Automotive Service Excellence (ASE) Education Foundation tasks from the ASE master course list.

Major Topics
I. Theory and operation of the internal combustion engine
II. Theory and operation of automotive computer systems

The Common Course Outline (CCO) determines the essential nature of each course.
For more information, see your professor's syllabus.

III. Fuel systems controls and operation
IV. Ignition systems controls and operation
V. Exhaust systems controls and treatment

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

- Three quizzes
- Weekly lab projects
- Research paper (6-8 pages typed) or obtain the ASE Professional Certification
- Three homework assignments
- Class participation
- Midterm exam
- Comprehensive final 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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