AUT 111 : COMPUTERIZED ENGINE CONTROLS

Transcript title
Computerized Engine Controls

Credits
5

Grading mode
Standard letter grades

Total contact hours
110

Lecture hours
20

Lab hours
90

Prerequisites
AUT 205.

Course Description
Studies advanced electrical systems found on late-model vehicles. Provides solid understanding of computerized automotive engine control systems and how they operate and the ability to diagnose, troubleshoot and repair computerized engine control systems.

Course learning outcomes
1. Perform a thorough pre-diagnostic engine inspection.
2. Analyze vehicle performance with the On Board Diagnostic Systems.
3. Measure parameters of all input and output devises used within a computerized engine control system.
4. Analyze, diagnose, and repair computer-controlled engine systems using frequency, pulse width, voltage, resistance, current, and duty cycle to interpret engine control systems in relationship to time; engine speed; and air temperature, pressure, and volume.
5. Demonstrate safety standards in all work within and automotive shop environment and specifically with computer controls.

Content outline
1. A review of electricity and electronics
2. Computers on cars
3. Common components for computerized control systems
4. Common operating principles for computerized electronic stability control (ECS)
5. Diagnostic concepts and diagnostic equipment
6. Exhaust gas analysis
7. Understanding on-board diagnostics (OBD-II)
8. Multiplexing concepts
9. Hybrid and electric vehicles
10. Modern systems
11. Approach to diagnostics
12. General motors electronic engine controls
13. Ford’s electronic engine controls
14. Chrysler corporation fuel injection systems
15. Bosch engine control systems
16. Asian computer control systems

Required materials
Requires textbook and special gear; see syllabus for details.