

AUT 260 : DIESEL PERFORMANCE II

Transcript title

Diesel Performance II

Credits

4

Grading mode

Standard letter grades

Total contact hours

80

Lecture hours

20

Lab hours

60

Prerequisites

AUT 105 and AUT 206.

Course Description

This is the second part of a diesel performance sequence. This course will provide the operational principles and theory of: Hydraulically actuated Electronically controlled Unit Injection *(HEUI) systems, the Electronic Unit Injection *(EUI) systems, and the Common Rail (CR) systems, as they are applied to Diesel Engine Performance. The course will include, in depth, Controller Area Networking (CAN),multiplexing, Controller Area Networking (CAN C) language (J1939 protocol), Software Updates, (J2534 re-flash), Vehicle Communication Interface (VCI), Selective Catalytic Reduction (SCR), Exhaust Gas Recirculation (EGR) systems, Variable Geometry Turbo-chargers (VGT), Constant Geometry Turbo-chargers (CGT) systems, Diesel Particulate Filter (DPF) variations, Diesel Oxidation Catalyst (DOC) systems, and diagnostic strategies, that will lead to accurate conclusions. The student will be exposed to multiple vehicle product lines during this course and,will be introduced to the proper techniques and procedures to repair them.

Course learning outcomes

1. Describe the operational principles and theory of the following diesel systems: hydraulically actuated electronically controlled unit injection system; electronic unit injection system; common rail system.
2. Describe the function of the controller area network communication and J1939.
3. Perform diagnosis and test on diesel exhaust gas recirculation systems.
4. Service, diagnose, and repair diesel turbo chargers and particulate filters.
5. Perform diesel vehicle diesel particulate filter cleaning and diesel-oxidation-catalyst testing.
6. Describe problems found on newer diesel vehicles and the proper methods to make repairs.
7. Describe and practice safety procedures while working in an automotive shop environment.

Content outline

1. Shop and Personal Safety
2. Introduction to Diesel Engines
3. Cylinder Block Assemblies
4. Timing Gear Train and Cylinder Head Assemblies
5. Intake and Exhaust Systems
6. Cooling and Lubrication Circuits
7. Fuel Sub Systems
8. Injector Nozzles
9. Pump-Line-Nozzle Injection Systems
10. Electronic Diesel Fuel
11. Charging and Starting Circuits
12. Engine Electronics
13. Emission Controls
14. Servicing and Maintenance
15. Diagnostics and Testing (Multiplexing, CAN)

Required materials

Required textbook and special gear, see syllabus for details.