AUTO 1228: Engine and Diesel Performance Theory

A. COURSE DESCRIPTION

Credits: 2
Lecture Hours/Week: 2
Lab Hours/Week: *.*
OJT Hours/Week: *.*
Prerequisites: None
Corequisites: None
MnTC Goals: None

This course teaches the theory and operating principles of automotive computers, sensors, and control devices. It will include fuel injection theory as well as advanced test equipment and procedures that will lead to developing skills in diagnostics, testing, and correcting problems related to engine performance. (Prerequisites: AUTO1105, AUTO1106, AUTO1118, AUTO1208, or instructor approval) (2 Credits: 2 lecture/0 lab)

B. COURSE EFFECTIVE DATES: 04/27/1998 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Safety Procedures
2. Theory and Operating Principles of Automotive Computers, Sensors, and Control Devices
3. Advanced Carburation and Fuel Injection Theory
4. Testing Equipment and Procedures
D. LEARNING OUTCOMES (General)
  1. Identify safety procedures
  2. Identify technical information sources
  3. Describe customer complaint procedures
  4. Review basic engine system testing
  5. Explain emission system operation
  6. Explain emission system testing
  7. Explain exhaust backpressure test
  8. Explain vacuum leak testing procedures
  9. Explain cylinder balance testing procedures
 10. Explain scan tool operation
 11. Explain lab scope test procedures
 12. Explain data stream information
 13. Explain exhaust gas data related to engine performance and driveability
 14. Explain operation of fuel delivery systems
 15. Explain spark management operation
 16. Explain mode operation
 17. Explain computer operation
 18. Explain sensor operation and testing
 19. Explain computer output actuators and testing procedures
 20. Identify computer system schematics
 21. Identify computer control system components
 22. Complete mid-term exam
 23. Explain torque converter clutch operation
 24. Explain electronic shift
 25. Explain computer system diagnosis
 26. Explain OBD II drive cycle
 27. Identify fuel injection systems and operation
 28. Explain injector balance test
 29. Explain diagnostic connector
 30. Explain turbocharger operation
 31. Explain supercharger operation
 32. Explain multiplexing
 33. Explain OBD II operation
 34. Complete final exam

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted