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