MONROE COUNTY COMMUNITY COLLEGE

AST 203 Engine Performance II

Course Information

Division	ASET
Contact Hours	105
Theory	15
Lab Hours	90
Total Credits	4

Prerequisites – AST 202

Course Description

This course is a continuation of Automotive Engine Performance I It will reinforce the diagnostics and operational procedures introduced in the previous course, while expanding the students understanding of the On Board Diagnostic System (OBD II). Automotive emission and ignition system operation, design and diagnosis will be covered.

This course is a required core course for students pursuing a (n) AAS *in Automotive Technologies*

Program Outcomes Addressed by this Course:

Upon successful completion of this course, students should be able to meet the program outcomes listed below:

A. Demonstrate the correct method of utilizing automotive service tools and equipment
B. Identify all related system diagnostic/repair information within automotive service information
C. Employ safe and professional work habits while conducting typical automotive service procedures.
D. Explain how the various systems of an automobile work
E. Demonstrate correct service procedures in the various automotive systems
F. Test and diagnose the proper operation of the various automotive systems

Course Outcomes

In order to evidence success in this course, the students will be able to:

1. **Understand and demonstrate emissions control systems operation, diagnosis and repair**
   This outcome is relevant to program outcomes: (A) , (B),(C),(D), (E) and (F)
   a) Diagnose oil leaks, emissions, and drivability concerns caused by the positive crankcase ventilation (PCV) system; determine necessary action.
   b) Inspect, test, and service positive crankcase ventilation (PCV) filter/breather cap, valve, tubes, orifices, and hoses; perform necessary action.
   c) Diagnose emissions and drivability concerns caused by the exhaust gas recirculation (EGR) system; determine necessary action.

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d) Diagnose emissions and drivability concerns caused by the secondary air injection and catalytic converter systems; determine necessary action.

e) Diagnose emissions and drivability concerns caused by the evaporative emissions control system; determine necessary action.

f) Inspect and test electrical/electronic sensors, controls, and wiring of exhaust gas recirculation (EGR) systems; perform necessary action.

g) Inspect, test, service, and replace components of the EGR system including tubing, exhaust passages, vacuum/pressure controls, filters, and hoses; perform necessary action.

h) Inspect and test electrical/electronically-operated components and circuits of air injection systems; perform necessary action.

i) Inspect and test catalytic converter efficiency.

j) Inspect and test components and hoses of the evaporative emissions control system; perform necessary action.

k) Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; repair or replace as needed.

l) Perform exhaust system back-pressure test; determine necessary action.

2. **Understand and demonstrate diagnostic procedures and industry standards as they relate to servicing engine performance complaints.**
This outcome is relevant to program outcomes: (A) , (B),(C),(D), (E) and (F)

a) Interpret diagnostic trouble codes (DTCs) and scan tool data related to the emissions control systems; determine necessary action.

b) Diagnose drivability and emissions problems resulting from malfunctions of interrelated systems (cruise control, security alarms, suspension controls, traction controls, A/C, automatic transmissions, non-OEM installed accessories, or similar systems); determine necessary action.

c) Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; perform necessary action.

d) Test the operation of turbocharger/supercharger systems; determine necessary action.

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