

## Engine Performance I

### Course Information

**Developers:** Automotive Technology State Curriculum Committee

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**KBOR Facilitators:** Shirley Antes/ April Henry

**Credit Hours:** 3

### Description:

In this learning plan students will: complete work order and check history; identify engine mechanical integrity; explore the fundamentals of fuel system theory; identify fuel system concerns; explore the fundamentals of ignition theory; identify ignition system concerns; identify induction system concerns; identify exhaust system concerns; identify engine mechanical integrity through a variety of learning and assessment activities.

### Competencies

- A. General
- 1. Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins. P-1
- 2. Perform engine absolute (vacuum/boost) manifold pressure tests; determine necessary action. P-1
- 3. Perform cylinder power balance test; determine necessary action. P-2
- 4. Perform cylinder cranking and running compression tests; determine necessary action. P-1
- 5. Perform cylinder leakage test; determine necessary action. P-1

6. Verify engine operating temperature. P-1
7. Remove and replace spark plugs; inspect secondary ignition components for wear and damage. P-1

#### B. Computerized Controls

1. Retrieve and record diagnostic trouble codes, OBD monitor status, and freeze frame data; clear codes when applicable. P-
2. Describe the importance of operating all OBDII monitors for repair verification. P-1

#### C. Fuel, Air Induction, and Exhaust Systems

1. Replace fuel filter(s). P-1
2. Inspect, service, or replace air filters, filter housings, and intake duct work. P-1
3. Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; determine necessary action. P-1
4. Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; repair or replace as needed. P-1
5. Check and refill diesel exhaust fluid (DEF). P-3

#### D. Emissions Control Systems

1. Inspect, test, and service positive crankcase ventilation (PVC) filter/breather cap, valve, tubes, orifices, and hoses; perform necessary action. P-2