



BAKER COLLEGE STUDENT LEARNING OUTCOMES

AST 1110A Engine Repair I 4 Semester Hours

Student Learning Outcomes & Enabling Objectives

1. Demonstrate general; engine diagnosis; removal and reinstallation techniques.
 - a. Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. P-1
 - b. Research vehicle service information including fluid type, internal engine operation, vehicle service history, service precautions, and technical service bulletins. P-1
 - c. Verify operation of the instrument panel engine warning indicators. P-1
 - d. Inspect engine assembly for fuel, oil, coolant, and other leaks; determine needed action. P-1
 - e. Install engine covers using gaskets, seals, and sealers as required. P-1
 - f. Verify engine mechanical timing. P-1
 - g. Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert. P-1
 - h. Inspect, remove and/or replace engine mounts. P-2
 - i. Identify service precautions related to service of the internal combustion engine of a hybrid vehicle. P-2

2. Demonstrate cylinder head and valve train diagnosis and repair techniques.
 - a. Remove cylinder head; inspect gasket condition; install cylinder head and gasket; tighten according to manufacturer's specification and procedure. P-1
 - b. Clean and visually inspect a cylinder head for cracks; check gasket surface areas for warpage and surface finish; check passage condition. P-1
 - c. Inspect pushrods, rocker arms rocker arm pivots and shafts for wear, bending, cracks, looseness, and blocked oil passages (orifices); determine needed action. P-2

- d. Adjust valves (mechanical or hydraulic lifters). P-1
- e. Inspect valve springs for squareness and free height comparison; determine needed action. P-3
- f. Replace valve stem seals on an assembled engine; inspect valve spring retainers, locks/keepers, and valve lock/keeper grooves; determine needed action. P-3
- g. Inspect valve guides for wear; check valve stem-to-guide clearance; determine needed action. P-3
- h. Inspect valves and valve seats; determine needed action. P-3
- i. Check valve spring assembled height and valve stem height; determine needed action. P-3
- j. Inspect valve lifters; determine needed action. P-2
- k. Inspect and/or measure camshaft for runout, journal wear and lobe wear. P-3
- l. Inspect camshaft bearing surface for wear, damage, out-of-round, and alignment; determine needed action. P-3

Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

These SLOs are not approved for experiential credit.

Effective: Fall 2018