DEPT. AUTO  COURSE NUMBER:  1136

NUMBER OF CREDITS:  4  Lecture:  1  Lab:  3  OJT 0

Course Title:
Engine Technology and Lab

Catalog Description:
Engine Technology and Lab explains and demonstrates the theory of engine cooling and lubrication systems. Students will inspect, repair, and/or adjust the following engine components and systems: valves, cylinder heads, blocks, crank shafts, cooling and lubrication systems. Students will also learn to identify the basic operation, nomenclature and function of engines.

Prerequisites or Necessary Entry Skills/Knowledge:
None

FULFILLS MN TRANSFER CURRICULUM AREA(S) (*Leave blank if not applicable*)
☐ Goal 1: Communication: By meeting the following competencies:
☐ Goal 2: Critical Thinking: By meeting the following competencies:
☐ Goal 3: Natural Sciences: By meeting the following competencies:
☐ Goal 4: Mathematics/Logical Reasoning: By meeting the following competencies:
☐ Goal 5: History and the Social and Behavioral Sciences: By meeting the following competencies:
☐ Goal 6: The Humanities and Fine Arts: By meeting the following competencies:
☐ Goal 7: Human Diversity: By meeting the following competencies:
☐ Goal 8: Global Perspective: By meeting the following competencies:
☐ Goal 9: Ethical and Civic Responsibility: By meeting the following competencies:
☐ Goal 10: People and the Environment: By meeting the following competencies:

Topics to be Covered
- Piston engine operation
- Cooling and lubrication systems
- Engine problems
- Engine disassembly
- Engine inspection
- Servicing cylinder heads and engine blocks
- Engine reassembly

Student Learning Outcomes
Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins.

- Verify operation of the instrument panel engine warning indicators.
- Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action.
- Install engine covers using gaskets, seals, and sealers as required.
- Verify engine mechanical timing.
- Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert.
- Identify service precautions related to service of the internal combustion engine of a hybrid vehicle.
- Adjust valves (mechanical or hydraulic lifters).
- Identify components of the cylinder head and valve train.
- Perform cooling system pressure and dye tests to identify leaks; check coolant condition and level; inspect and test radiator, pressure cap, coolant recovery tank, heater core, and galley plugs; determine necessary action.
- Inspect, replace, and/or adjust drive belts, tensioners, and pulleys; check pulley and belt alignment.
- Remove, inspect, and replace thermostat and gasket/seal.
- Identify components of the lubrication and cooling systems and inspect and test coolant; drain and recover coolant; flush and refill cooling system; use proper fluid type per manufacturer specification; bleed air as required.
- Remove engine; disassemble, inspect, reassemble engine assembly; and reinstall engine into automobile
- 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

*The required outcomes follow the Auto Service Technician (AST) model of the Board of the National Institute for Automotive Service Excellence (ASE)

| Is this course part of a transfer pathway: Yes ☐ No ☒ |

Revised Date: 04/2022