

Department:

Auto Technology

Course Description:

In this course students will study and perform tasks from the National Automotive Technicians Education Foundation's (NATEF) Maintenance and Light Repair (MLR) Program. Covers major vehicle operations; basic maintenance, lubrication, cooling, lighting, brakes, tires, ignition systems, and electrical/electronics. After completion of this course, students will have a basic understanding of vehicle service requirements and safety procedures.

Course Competencies:

Upon completion of the course, the student should be able to:

1. The student will verify operation of the instrument panel engine warning indicators.
2. The student will inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action.
3. The student will 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.
4. Inspect, service, or replace air filters, filter housing, and air intake system components.
5. Check manual drive train fluid levels.
6. Check power steering fluid level; determine fluid type and adjust fluid level; identify system type (electric and hydraulic).
7. Identify tire condition, tread depth, size and application.
8. Inspect brake hoses, brake lines, valves, and fittings for routing, leaks, dents, kinks, rust, cracks, or wear; inspect for loose fittings and supports; determine needed repairs.
9. Remove and replace spark plugs; inspect secondary ignition components for wear and damage.
10. The student will inspect, replace, and adjust drive belts, tensioners, and pulleys; check pulley and belt alignment.
11. The student will inspect and test coolant; drain and recover coolant; flush and refill cooling system with recommended coolant.
12. The student will inspect engine cooling and heater systems hoses; perform necessary action.
13. The student will inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets; perform necessary action.
14. Check voltages, grounds, and voltage drops in electrical circuits; interpret readings.
15. Perform battery tests; determine needed service.
16. Inspect, clean, and repair or replace battery cables, connectors, clamps, and hold-downs.
17. Jump-start a vehicle with booster battery or auxiliary power supply.
18. Inspect, replace, and aim headlights/bulbs and auxiliary lights (fog lights/driving lights).
19. Verify instruments gauges and warning/indicator light operation; reset maintenance indicators.
20. Verify wiper and washer operation; replace wiper motor, blades, washer pump and hoses and nozzles as needed.

Course Content:

- A. General Engine Repair and Service
 - 1. Engine operation
 - 2. Vehicle service history
 - 3. Service precautions
- B. Instrument panel indicators
- C. Engine leaks
 - 1. Cooling system
 - 2. Fuel system
 - 3. Oil
- D. Engine seals
 - 1. Gaskets
 - 2. Seals
 - 3. Sealers
- E. Timing belt service
- F. AC Inspection
- G. Fastener repair
 - 1. Broken bolt
 - 2. Restore internal and external tread
 - 3. Repair threads with insert
- H. Coolant and Lubrication Service
- I. Battery
 - 1. Test
 - 2. Inspect/service
- J. Basic Electricity/Electronic functions
- K. Tire Inspection and Service
- L. Belts
 - 1. Replace
 - 2. Adjust
 - 3. Tensioners
 - 4. Pulleys
 - 5. Alignment

Learning Assessments:

Competencies will be assessed by assignments, case problems, quizzes, tests, hands-on projects, instructor observations, and lab assignments. The test can be in the objective format or in a problem-solving format.

Instructional Materials:

Textbook: Halderman, J. (2015). *Automotive Technology: Principles, Diagnosis, and Service* (5th ed.). Pearson. ISBN-13: 978-0133994612

Lab Manual: Halderman, J. (2015). *NATEF Correlated Task Sheets for Automotive Technology* (5th ed.). Pearson. ISBN-13: 978-0133995671

Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the “Disabilities Self-Identification Form” on our [Disability Services website](#).

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an [online report](#) about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our [Equity Grievance Policy](#).