

AUTO-1101: INTRODUCTION TO AUTOMOTIVE SERVICE PROCEDURES

Cuyahoga Community College

Viewing: AUTO-1101 : Introduction to Automotive Service Procedures

Board of Trustees:

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Academic Term:

Fall 2022

Subject Code

AUTO - Automotive Technology

Course Number:

1101

Title:

Introduction to Automotive Service Procedures

Catalog Description:

Designed to provide introduction to several basic service procedures required of the person beginning work in automobile service center. Oil change, transmission service, tire service, fasteners cooling system service, safety inspection, battery testing will be some of the tasks demonstrated and/or practiced after introduction to shop safety and safe operation of automobile equipment and hand tools.

Credit Hour(s):

3

Lecture Hour(s):

2

Lab Hour(s):

2

Requisites

Prerequisite and Corequisite

None.

Outcomes

Course Outcome(s):

Applying the terminology and engineering principles of the Introduction to Automotive Service subject matter, and using the correct tools, equipment and service information; students are introduced to automotive service procedures taking into account safety, work ethics and behaviors, proper repair techniques and customer needs.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

1. Review common fasteners and thread repair to include, remove broken bolt, restore internal and external threads, and repair threads with thread inserts.
2. Inspect engine cooling and heater system hoses, water pump and thermostat and gaskets for function.
3. Inspect drive belts, tensioners, and pulleys; check pulley and belt alignment.
4. Test coolant, and list steps to drain and recover coolant; flush and refill cooling system with recommended coolant; and bleed air as required.
5. Perform cooling system pressure tests; check coolant condition; inspect and test pressure cap, coolant recovery tank, and hoses; perform necessary action.
6. Perform chassis lubrication, engine oil, and filter change; use proper fluid type per manufacturer specification.

7. As part of an undercar inspection, drain and replace drive train fluids and filters.
8. As part of an undercar inspection, inspect, clean and lubricate drums and rotor brake systems.
9. Inspect shock absorbers.
10. Recognize common automotive tools and demonstrate their safe and proper usage.
11. Inspect tires; check and adjust air pressure.
12. Rotate tires according to manufacturer's recommendations.
13. Balance wheel and tire assembly (static and dynamic).
14. Dismount, inspect, and remount tire on wheel.
15. Reinstall wheel; torque lug nuts.
16. Inspect tire and wheel assembly for air loss; perform necessary action.
17. Perform battery state-of-charge test; determine necessary action.
18. Maintain or restore electronic memory functions.
19. Disable and enable supplemental restraint system (SRS).
20. Inspect, clean, fill, and replace battery.
21. Inspect and clean battery cables, connectors, clamps, and hold-downs; repair or replace as needed.
22. Start a vehicle using jumper cables and a battery or auxiliary power supply.
23. Practice wire repair techniques.
24. Identify high voltage circuits of electric or hybrid electrical vehicle and related safety precautions.
25. Identify location of hybrid vehicle high voltage circuit disconnect (service plug) location and safety procedures.
26. Identify hybrid vehicle auxiliary (12v) battery service, repair and test procedures.
27. Remove and reinstall door panel.
28. Identify the abilities, skills and tools necessary to perform the tasks required of an entry level automotive technician in an automotive service facility. Career opportunities in the automotive service and repair industry are linked to the abilities, skills and tools necessary in different auto service careers. Certification, licensure, and years of experience are related to career choice.
29. Inspect engine assembly for fuel, oil, coolant, and other fluid leaks; determine necessary action.

Course Outcome(s):

Shop and personal safety is a primary and ongoing concern while in the repair environment; including using tools and equipment, working around supplemental restraint (SRS) or high voltage circuits, wearing personal protection equipment, awareness of personal clothing, adornments and body, and knowledge of fire safety and evacuation routes.

Objective(s):

1. For every outcome and/or supporting objective in AUTO-1100 Introduction to Automotive Service Procedures the following safety requirements must be strictly enforced: 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.
2. Recognize common automotive tools and demonstrate their safe and proper usage.
3. Disable and enable supplemental restraint system (SRS).
4. List a minimum of fifteen safety concerns involving repair work on a vehicle, the individual working on the vehicle and/or the condition of the work area.
5. Identify high voltage circuits of electric or hybrid electrical vehicle and related safety precautions.
6. Identify location of hybrid vehicle high voltage circuit disconnect (service plug) location and safety procedures.
7. Identify hybrid vehicle auxiliary (12v) battery service, repair and test procedures.
8. Lift and support any vehicle using automotive lifts or a floor jack and jack stands.

Course Outcome(s):

While preparing a vehicle for service, customer and vehicle information along with prior service history is utilized to insure proper work order documentation of concern, cause and correction while maintaining a clean vehicle exterior and interior.

Objective(s):

1. Obtain from the correct service manual or service information system, the repair procedures and specifications entry-level tasks performed in an automotive service facility.
 2. Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.
 3. Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, and calibration decals).
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Course Outcome(s):

Assess different outcomes in the field of automotive technology while a personal career and academic plan.

Objective(s):

1. Discuss the possible career choices in the automotive technology field.
 2. Communicate and work with a counselor and complete a locked academic plan.
 3. Identify the abilities, skills and tools necessary to perform the tasks required of an entry level automotive technician in an automotive service facility.
 4. Discuss certification, licensure, and years of experience as they relate to career choices
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Methods of Evaluation:

1. Participation and discussion
2. Observation
3. Written assignments
4. Exams
5. Quizzes

Course Content Outline:

1. Automotive repair facility safety
 - a. Eye protection
 - b. Hand tools and power equipment
 - c. Safe working conditions
 - d. Vehicle lifting
 - e. Fire prevention
 - f. Hazardous materials
2. Vehicle component identification
 - a. Vehicle identification numbers
 - b. Engine, engine accessories, and transmission identification
 - c. Basic suspension component identification
3. Lubrication services
 - a. Engine oil change
 - b. Chassis lubrication
 - c. Automatic/Manual transmission service
4. Suspension and steering service
 - a. Wheels and tires
 - b. Struts/Shock absorbers
 - c. Power and rack-and-pinion steering systems
5. Threaded fasteners and repair procedures
 - a. measuring length, diameter, and pitch
 - b. thread repair methods
6. Cooling system service
 - a. Engine drive belts and pulleys
 - b. Coolant lines and hoses
 - c. Antifreeze protection concerns
 - d. Thermostat and radiator repair
 - e. Coolant replacement
7. Vehicle safety inspections
 - a. Fluid leaks detection procedures
 - b. Tires, suspension
 - c. Drum and disc braking systems
 - d. Horn, wiper and accessories
 - e. Fuel and exhaust systems
 - f. Lighting system inspection
8. Supplemental restraint systems (SRS)
 - a. Disabling
 - b. Enabling
9. Introduction to service and repair information

- a. AllData and ProDemand
 - b. Locating repair information
 - c. Vehicle maintenance schedules
10. Automotive electrical system service
- a. Battery service
 - b. Battery jumper cable procedures
 - c. Wire repair basics
 - d. Hybrid vehicle identification and safety
11. Interior door panel removal and installation
12. Careers in automotive service
- a. Opportunities in auto service field
 - b. Education, training, certification and work experience requirements
 - c. Work ethic, responsibility and other workplace behaviors
 - d. Academic planning
 - e. Career planning

Resources

Gilles, Tim. *Automotive Service: Inspection, Maintenance, Repair*. 6th ed. Boston, MA: Cengage Learning, 2020.

Chuck Rockwood, Tim Gilles . *Lab Manual Automotive Service: Inspection, Maintenance, Repair* . 6th ed. Boston, MA: Cengage Learning, 2020.

Stockel, Martin W., Martin T. Stockel, and Chris Johanson. *Auto Fundamentals*. 12th ed. Tinley Park, IL: Goodheart-Willcox, 2018.

"AutoWeek"

"Automotive Engineering International"

"Automotive News"

Resources Other

1. Automobile service manuals.
2. http://autorepair.about.com/od/glossary/u/path_BasicInfo.htm - Auto Repair & Troubleshooting Reference Information & Specs
3. <https://www.automd.com/diagnose/> - Diagnose Your Vehicle
4. <http://checklist.com/vehicle-safety-checklist/> - Vehicle Safety Check List

Instructional Services

CTAN Number:

Career Technical Assurance Guide CTAUT005

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