

# AUTO 0140 - AUTOMOTIVE SKILL DEVELOPMENT

## Catalog Description

Prerequisite: Completion of AUTO 100 with grade of "C" or better

Hours: 110 (26 lecture, 84 laboratory)

Description: Covers basic automotive component diagnosis, service and repair for major vehicle systems including: brakes, suspension, heating, air conditioning, electrical, engines and transmissions. Shop activities are designed to further develop skill, speed, and experience capabilities of automotive majors to meet industry diagnostic and repair performance expectations. Emphasis is placed on shop service operations which meet Automotive Service Excellence (ASE) maintenance and light repair standards. This course will help students prepare for the ASE G1 service exam. (not transferable)

## Course Student Learning Outcomes

- CSLO #1: Explain and record professional automotive service information, including documentation of parts and labor, diagnostic and repair procedures, and other specifications.
- CSLO #2: Perform inspections, maintenance, service, and repairs of various automotive systems, including tires, brakes, transmission, suspension components, and batteries.
- CSLO #3: Identify and diagnose automotive issues and recommend repairs of automotive systems.
- CSLO #4: Write orders and reports for automotive repair and diagnosis based on research of online resources, manuals, and other resources.

## Effective Term

Spring 2021

## Course Type

Credit - Degree-applicable

## Contact Hours

110

## Outside of Class Hours

54

## Total Student Learning Hours

164

## Course Objectives

Lecture Objectives:

1. Review expectation standards for proper and safe use of general automotive repair hand tools and equipment.
2. Interpret customer's complaints and write automotive repair orders following bureau of automotive repair, (BAR) standards with parts and labor.
3. Review proper handling and disposal of various automotive chemicals following MSDS guidelines.

4. Research vehicle service information including technical service bulletins and one-time-use parts.
5. Discuss tire sidewall ratings, rotation patterns and tread wear patterns related to air pressure.
6. Compare major wheel alignment angles and relate to tire tread war patterns.
7. Discuss shock and strut inspection, testing and repair procedures.
8. Review brake inspection requirements and bleeding procedures.
9. Discuss disk brake and drum brake replacement and service.
10. Review basic automotive electrical systems and discuss the testing of batteries, starters and alternators.

Laboratory Objectives:

1. Conduct safety tour and lab work procedures.
2. Inspect engine components for oil leaks and perform leak repairs.
3. Perform engine cooling system pressure tests and inspect belts and hoses.
4. Remove and replace thermostat, drain flush and refill cooling system.
5. Inspect engine accessory drive belts and replace worn belts and tensioner components.
6. Remove and replace spark plugs; inspect secondary ignition components for wear.
7. Retrieve on-board diagnostic trouble codes and review computer data to diagnose basic engine problems.
8. Verify heating ventilation and air conditioning operation and identify A/C refrigerant type.
9. Inspect and replace suspension components including control arms, bushings, shocks and struts.
10. Inspect and replace constant velocity (CV) joints and front wheel drive axles.
11. Perform pre-alignment inspection and complete initial wheel alignment measurements.
12. Dismount, mount and balance low profile style tires and wheel assemblies.
13. Identify and test tire pressure monitoring systems (TPMS) and verify panel lamp operation.
14. Diagnose brake system for poor stopping, brake noises and a hard or spongy brake pedal.
15. Service and replace brake pads, rotors, drums and brake shoes.
16. Perform automatic or manual transmission inspection and service.
17. Jump start a vehicle with a booster battery or battery charger.
18. Test battery, starting and charging systems to diagnosis basic electrical problems.
19. Replace a standard 12v automotive battery.
20. Identify supplemental restraint systems (SRS) and high voltage electrical systems.
21. Perform a complete vehicle inspection, record results and service recommendations.

## General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

## Articulation Information

## Methods of Evaluation

- Objective Examinations
  - Example: Written examination on automotive braking system diagnostics and service procedures. Example: If the brake pedal

feels spongy, a possible cause could be \_\_\_\_\_. A) Brake fluid in the system B) Front brakes out of adjustment C) Axle seals leaking D) Air in the hydraulic brake system

- Skill Demonstrations
  - Example: Student will perform state of charge and state of health tests on a 12 volt automotive lead acid battery. Grade based on industry standard.

## Repeatable

No

## Methods of Instruction

- Laboratory
- Lecture/Discussion
- Distance Learning

Lab:

1. Following instructor demonstration, students will remove and replace spark plugs; inspect secondary ignition components for wear. (Lab Objective 7)

Lecture:

1. Instructor lecture on how to interpret customer's complaints, followed by a student discussion on what writing a complete automotive repair order following bureau of automotive repair, (BAR) standards with parts and labor looks like (Lecture Objective 2)

Distance Learning

1. Online instructor lecture and discussion on shock and strut inspections, followed by report by students outlining the steps to a proper shock and strut inspection. Reports are posted on LMS for instructor and student discussion. (Lecture Objective 7)

## Typical Out of Class Assignments

### Reading Assignments

1. Reading from assigned textbook on a weekly basis and be prepared to discuss in class. Example: Read the chapter on the procedures to replace a cooling system thermostat and be prepared to discuss in class. 2. Reading from supplemental material on a regular basis and be prepared to discuss in class. Example: Read the material on the procedures for tire pressure monitoring system reset and code retrieval and be prepared to discuss in class.

## Writing, Problem Solving or Performance

1. Answer review questions in the text chapter following the reading assignment. 2. Evaluate and compare the condition of engine belts, hoses and filters. 3. Demonstrate knowledge and proficiency in mounting and balancing low profile tires.

## Other (Term projects, research papers, portfolios, etc.)

Student will research a new automotive technology and write a paper documenting its use and possible impact on the automotive repair industry.

## Required Materials

- CDX Automotive Fundamentals of Automotive Technology
  - Author: VanGelder, K.
  - Publisher: Jones & Bartlett Learning
  - Publication Date: 2018
  - Text Edition: 2nd
  - Classic Textbook?: No
  - OER Link:
  - OER:

## Other materials and-or supplies required of students that contribute to the cost of the course.

Coveralls or appropriate shop clothing, safety glasses, and proper footwear