

# Course Syllabus

School of \_\_\_\_\_

**Program Name:** Transportation Technologies

**Course Name:** Automotive Service Fundamentals

**Course Number:**

**Credits:** 2

**Contact Hours:** 1 Lecture 3 Lab

**Instructor's Name:**

**Office Hours & Location:**

**Campus Phone:**

**Campus E-mail:**

**Additional Contact Information:**

**Catalog Description:** Provides the student with a foundation in the field of Automotive Technology, including basic service operations such as lubrication, oil change, preventative maintenance, and tool and equipment usage. Experience is gained working on customer vehicles under close supervision of the instructor. Students in the class will learn to operate automotive scan tools used to diagnose computer-controlled systems found on late model automobiles and light trucks. Both original equipment and aftermarket scan tools will be used in this course.

**Prerequisites/Co-Requisites:** None

**Lab Fees:** \$65.00

**Current Textbooks, Materials, Equipment (software/hardware requirements):**

**Course Outcomes:**

1. Identify and explain the operation of and demonstrate the servicing of an automotive cooling system.
2. Perform a lubrication, change oil and filter and service an auto.
3. Name the various systems of the automobile and identify their components.
4. Demonstrate the use of shop manuals and reference manuals.
5. Identify and explain the use of fasteners, sealants.

6. Identify and explain the use of precision measuring tools.
7. Identify typical job opportunities within the major career areas.
8. Demonstrate shop clean-up, maintenance and safety.
9. Demonstrate proper basic scanner and DVOM use.

**Student Learning Outcomes:**

TASK LIST

Throughout the term of this course, students will perform or have demonstrated to them the following tasks. All tasks must be performed according to manufacturer's instruction/ requirements, any deviation must be approved by the instructor prior to the next step.

1. Perform cooling system, cap, and recovery system tests (pressure, combustion leakage, and temperature); determine necessary action.
2. Inspect, replace, and adjust drive belts, tensioners, and pulleys.
3. Inspect and replace engine cooling and heater system hoses.
4. Inspect, test, and replace thermostat and housing.
5. Test coolant; drain and recover coolant; flush and refill cooling system with recommended coolant; bleed air as required.
6. Inspect, test, remove, and replace water pump.
7. Remove and replace radiator.
8. Inspect, and test fan(s) (electrical or mechanical), fan clutch, fan shroud, and air dams.
9. Inspect auxiliary oil coolers; replace as needed.
10. Inspect, test, and replace oil temperature and pressure switches and sensors.
11. Perform oil and filter change.
12. Lubricate suspension and steering systems.

13. Reinstall wheel; torque lug nuts
14. Install wheel, torque lug nuts, and make final checks and adjustments.
15. Perform cooling system, cap, and recovery system tests (pressure, combustion leakage, and temperature); determine necessary action.
16. Inspect engine cooling and heater system hoses and belts; perform necessary action.
17. Inspect, test, and replace thermostat and housing.
18. Determine coolant condition; drain and recover coolant.
19. Flush system; refill system with recommended coolant; bleed system.
20. Inspect and test fan, fan clutch (electrical and mechanical), fan shroud, and air dams; perform necessary action.
21. Inspect and test electrical fan control system and circuits.
22. Inspect and test heater control valve(s); perform necessary action.
23. Access and use electronic service information (ESI).
24. Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, and calibration decals).
25. Inspect exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shield(s); perform necessary action.
26. Verify engine operating temperature; determine necessary action.
27. Perform cooling system pressure tests; check coolant condition; inspect and test radiator, pressure cap, coolant recovery tank, and hoses; perform necessary action.
28. Inspect and test thermostat, by-pass, and housing; perform necessary action.
29. Inspect and test mechanical/electrical fans, fan clutch, fan shroud/ducting, air dams, and fan control devices; perform necessary action.
30. Inspect and repair tire.
31. Identify general shop safety rules and procedures.
32. Utilize safe procedures for handling of tools and equipment.

33. Identify and use proper placement of floor jacks and jack stands.
34. Identify and use proper procedures for safe lift operation.
35. Utilize proper ventilation procedures for working within the lab/shop area.
36. Identify marked safety areas.
37. Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment.
38. Identify the location and use of eye wash stations.
39. Identify the location of the posted evacuation routes.
40. Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities.
41. Identify and wear appropriate clothing for lab/shop activities.
42. Secure hair and jewelry for lab/shop activities.
43. Locate and demonstrate knowledge of material safety data sheets (MSDS).
44. Identify tools and their usage in automotive applications.
45. Identify standard and metric designation.
46. Demonstrate safe handling and use of appropriate tools.
47. Demonstrate proper cleaning, storage, and maintenance of tools and equipment.
48. Demonstrate proper use of precision measuring tools (i.e. micrometer, dial-indicator, and dial-caliper).
49. Identify information needed and the service requested on a repair order.
50. Identify purpose and demonstrate proper use of fender covers, mats.
51. Review vehicle service history.
52. Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.

53. Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.).
54. 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.
55. Identify causes of engine overheating.
56. Inspect, replace, and adjust drive belts, tensioners, and pulleys; check pulley and belt alignment.
57. Inspect and test coolant; drain and recover coolant; flush and refill cooling system with recommended coolant; bleed air as required.
58. Inspect, remove, and replace water pump.
59. Establish camshaft position sensor indexing.
60. Remove and replace radiator.
61. Remove, inspect, and replace thermostat and gasket/seal.
62. Perform engine oil and filter change.

### **Grading Procedure:**

#### **GRADE COMPILATION:**

Lab	60%
Quiz	30%
Final Exam	10%
Total	100%

#### **GRADE SCALE:**

94-100	A
87-93	B
78-86	C
70-77	D
0-69	F

### **Specific Course Rules & Classroom Procedures:**

1. The student is responsible for all material discussed in class, handed out, seen or heard in visual/audio, or written on the board.

2. The student is responsible for all work assigned whether discussed in class or not.
3. Any missed classes, tests, or assignments must be made up by the end of the semester through agreement with the instructor.
4. The instructor, with permission of the chairman, whenever appropriate and necessary, reserves the right to amend, adjust, or deviate from the course outline and lecture topic areas to assure the students of the best possible education from the course.

### **Safety Glasses**

Students will not be permitted to attend lab classes without the required safety glasses.

### **Safety**

Since personal safety is a major concern of this college and employers, students will be expected to conduct themselves in a safe manner at all times. Students will be required to follow safety requirements pertaining to: safety glasses, clothing, labs, and work procedures. (Remember SAFETY is everyone's job!)

### **Specific Course Rules:**

- Computer Headphones are required.  
ABSOLUTELY NO DOWNLOADING IN COMPUTER LAB.

**Specific Course Rules:** (This can include but is not limited to: policies on attendance, make-up/late work, class participation, tape recording, cell phone use, and electronic device use.)

### **Miscellaneous Information:**

Disclaimer: "The instructor reserves the right to amend this syllabus as deemed necessary and will communicate such amendment to the students in the course."

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