



**2023-2024**

# Vehicle Maintenance Technician

**COURSE OUTLINE**

## **DESCRIPTION:**

This program provides entry-level training in automotive service, repair, diagnostics, and maintenance. Students will use diagnostic equipment, as well as specialized and hand tools. Students who successfully complete this training, with an overall grade of C or better, will gain in-demand job skills, a foundation for further education or training, and become eligible for entry-level jobs in the field. Students will receive training in employability skills and participate in mock interviews. Placement assistance is available. Hands-on experience as well as community classroom is a required component of the program. Students will have the opportunity to compile a portfolio and earn industry validated certifications in several areas upon successful completion of in-class instruction and work-based, hands-on training. (180 hours of theory + 120 Work-Based Learning (WBL) =300 hours in 20 Weeks)

## **INFORMATION:**

### A. Pre-requisites:

- 18 years of age, high school graduate or equivalent or High School Automotive student who has completed at least the first year of automotive from one of our three districts.
- Social Security card or right to work documentation and legal valid I.D. at time of Work-Based Learning.
- Reliable transportation for Work-Based Learning participation.
- CASAS Assessment (9<sup>th</sup> grade reading & 6<sup>th</sup> grade math) desired.
- Daily attendance of class as scheduled for both in-class and work-based learning (WBL); WBL is at another location.
- Students must wear protective shoes such as work boots or sturdy tennis shoes. No sandals or open toes, clog style etc. (steel toed shoes not required)

B. Length: 180 classroom hours and 120 hours of Work-Based Learning equals 300 total class hours.

### C. Certificates Earned in Program:

- Valvoline
- OSHA
- SP/2-Automotive
- First Aid/CPR/AED, American Heart Association
- SP/2 Soft Skills
- Anti-Harassment

D. Sector: Transportation

E. Pathway: Systems Diagnostic, Service and Repair

<b>O*Net SOC Codes</b>	
<b>Code #</b>	<b>Title</b>
49-3023.00	Automotive Service Technicians and Mechanics
53-6031.00	Automotive and Watercraft Service Attendants
49-9071.00	Maintenance & Repair Workers, General

<b>1. Orientation</b>	<b>7 Hrs.</b>
<ul style="list-style-type: none"><li>A. Introduce the course and facilities.</li><li>B. Discuss the syllabus and major objectives.</li><li>C. Explain applicable classroom management procedures including the Student Computer and Internet User Agreement and any operational guidelines.</li><li>D. Review instructor/student expectations.</li><li>E. Explain enrollment and attendance requirements and procedures.</li><li>F. Review grading and student evaluation procedures.</li><li>G. Discuss the clinical aspect of the program.</li><li>H. Discuss the “next steps” related to additional education, training, and employment.</li><li>I. Review classroom safety, emergency and disaster procedures.</li></ul>	
<b>2. Interpersonal Skills</b>	<b>10 Hrs.</b>
<ul style="list-style-type: none"><li>A. Demonstrate positive teamwork skills by contributing to a group effort.</li><li>B. Practice the importance of diversity awareness and sensitivity in the workplace.</li><li>C. Define anti-harassment in the workplace and identify the employee’s role and responsibility.</li><li>D. Identify different personality types and strategies for working effectively with each type.</li><li>E. Display customer service and social etiquette skills.</li><li>F. Demonstrate the use of time management skills.</li><li>G. Explain the ethical implications of internal theft and inventory loss.</li><li>H. Recognize the effects of substance abuse in the workplace.</li><li>I. Discuss the importance of ethical decision making.</li><li>J. Demonstrate problem solving skills.</li></ul>	
<b>3. Employability Skills</b>	<b>15 Hrs.</b>
<ul style="list-style-type: none"><li>A. Demonstrate appropriate attendance and punctuality practices for the classroom and worksite.</li><li>B. Prepare a resume, cover letter and job application forms.</li><li>C. Identify strategies for employment retention and sustainability in the workplace.</li><li>D. Demonstrate social networking and securing employment.</li><li>E. Identify appropriate procedures for leaving a job.</li><li>F. Identify sources of job information, including electronic modalities.</li></ul>	

<ul style="list-style-type: none"> <li>G. Write and present a resume.</li> <li>H. Participate in a Mock Interview demonstrating success in the auto industry.</li> </ul>	
<b>4. CPR/AED/First Aid</b>	<b>14 Hrs.</b>
<ul style="list-style-type: none"> <li>A. Demonstrate critical First Aid skills necessary to stabilize someone in an emergency.</li> <li>B. Recognize the five primary objectives of First Aid training (preserving life, preventing injury from getting worse, relieving pain, aiding recovery, and protecting the unconscious) and how they apply to injuries in this industry.</li> <li>C. Demonstrate choking relief in adults, children, and infants.</li> <li>D. Practice the appropriate response to a sudden cardiac arrest incident in adults, children, and infants.</li> <li>E. Pass a First Aid/CPR/AED exam with an 80% or higher.</li> </ul>	
<b>5. Personal and Occupational Safety</b>	<b>20 Hrs.</b>
<ul style="list-style-type: none"> <li>A. Exhibit the appropriate use of PPE and industry standard dress codes during lab/shop activities.</li> <li>B. Demonstrate a working knowledge of how to use a first aid kit, eye wash station and manage blood borne pathogens.</li> <li>C. Identify general shop safety rules and procedures.</li> <li>D. Apply personal safety practices while in the shop.</li> <li>E. Identify safety hazards commonly found in the shop environment.</li> <li>F. Explain the importance of CAL-OSHA.</li> <li>G. Define and discuss ergonomics in relation to the working environment.</li> <li>H. Discuss ways to report and respond to all potential safety hazards.</li> <li>I. Identify and use proper placement of floor jacks, jack stands and lifts.</li> <li>J. Utilize proper ventilation procedures for working within the lab/shop area.</li> <li>K. Identify marked safety areas and posted evacuation routes.</li> <li>L. Identify types of hazardous waste, discuss related safety issues, and demonstrate proper handling and disposal procedures.</li> <li>M. Locate and demonstrate knowledge of material safety data sheets (MSDS).</li> <li>N. Exhibit the ability to operate vehicles safely.</li> <li>O. Identify the location and types of fire extinguishers and other fire safety equipment.</li> <li>P. Demonstrate the procedures for using fire extinguishers and other fire safety equipment.</li> <li>Q. Upon completion of the S/P 2 training obtain a certificate of completion.</li> </ul>	
<b>7. Tools and Equipment</b>	<b>9 Hrs.</b>
<ul style="list-style-type: none"> <li>A. Identify tools and their usage in automotive applications.</li> <li>B. Identify standard and metric designation.</li> </ul>	

- C. Demonstrate safe handling and use of appropriate tools and equipment.
- D. Demonstrate proper cleaning, storage, and maintenance of tools and equipment.
- E. Demonstrate proper use of precision measuring tools (i.e., micrometer, dial-indicator, dial-caliper).

## 8. Preparing Vehicle for Service and Customer

7 Hrs.

- A. Research and review applicable vehicle and service information (vehicle service history, service precautions, technical service bulletins).
- B. Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, calibration decals).
- C. Safety check, fill, and replace to proper fluid levels: oil, engine coolant, power steering fluid, brake fluid, windshield washerfluid, differential/transfer case fluid, transmission fluid, etc.
- D. Identify information needed and service requested on a repair order.
- E. Explain the purpose and demonstrate proper use of fender covers and mats.
- F. Demonstrate use of the three C's (concern, cause, and correction).
- G. Ensure vehicle is prepared to return to customer per school/company policy (i.e., floor mats, steering wheel cover, etc.).
- H. Demonstrate proper inspection, removal, and replacement of windshield wiper blades.

## 9. Oil and Fluids Changes

14 Hrs.

- A. Identify types of fluids and explain their uses.
- B. Checks all levels of fluids under the hood.
- C. Changes oil and filters.
- D. Demonstrate the correct disposal of fluids and follow all safety procedures.

## 10. Cooling System

14 Hrs.

- A. Identify the various types of radiators and appropriate fluids and levels.
- B. Demonstrates cooling system services.
- C. Demonstrate replacement and disposal of anti-freeze.
- D. Demonstration cooling system testing and inspection.
- E. Demonstrates replacement of radiator and heater hoses.

<b>11. Belts</b>	<b>7 Hrs.</b>
<ul style="list-style-type: none"> <li>A. Identify various types of drive belts.</li> <li>B. Demonstrates inspection, removal/replacement &amp; adjustment.</li> <li>C. Demonstrates the proper disposal of belts.</li> </ul>	
<b>12. Heating &amp; Air Conditioning</b>	<b>7 Hrs.</b>
<ul style="list-style-type: none"> <li>A. Identifies different cabin filters.</li> <li>B. Demonstrates proper inspection, removal, and replacement of cabin filters.</li> </ul>	
<b>13. Air Cleaners</b>	<b>7 Hrs</b>
<ul style="list-style-type: none"> <li>A. Identify types of air filters.</li> <li>B. Demonstrates proper inspection, removal and replacement of air filters.</li> </ul>	
<b>14. Tires/Balancing/Shocks</b>	<b>14 Hrs.</b>
<ul style="list-style-type: none"> <li>A. Identifies various types of tires, tread, and tread wear.</li> <li>B. Explains the cause of uneven tread wear and recommends appropriate actions for concern.</li> <li>C. Demonstrate ability to rotate tires.</li> <li>D. Performs different rotation patterns.</li> <li>E. Identify different types of wheels.</li> <li>F. Perform static and dynamic balance tires.</li> <li>G. Demonstrate the ability to dynamic balance tires.</li> <li>H. Replace shock absorbers (front, rear).</li> <li>I. Identify and perform appropriate tire repair (i.e., plugs, patching).</li> </ul>	
<b>15. Batteries, Charging &amp; Starting Systems</b>	<b>14 Hrs.</b>
<ul style="list-style-type: none"> <li>A. Demonstrate understanding of the basic principles of electricity.</li> <li>B. Identifies different types of batteries and explains their uses.</li> <li>C. Demonstrate ability to replace, service and test batteries.</li> <li>D. Explain how charge systems work.</li> <li>E. Perform a starting system inspection and test.</li> </ul>	

- F. Explain the safety aspects of high voltage circuits (i.e., high intensity discharge (HID) lamps, ignition systems, injection systems, hybrid vehicle high voltage circuits, etc.).

## 16. Brake System

14 Hrs.

- A. Explain the basic principles of braking.
- B. Identifies common brake parts.
- C. Perform an inspection of the hydraulic system (master cylinder, wheel cylinders, calipers, lines & hoses).
- D. Inspect and replace rear brake shoes.
- E. Inspect and replace disc brake pads.
- F. Remove air from brake system (bleeds brakes).
- G. Replace brake lines and hoses.
- H. Adjust brakes (foot & parking).
- I. Explain the safety aspects of supplemental restraint systems (SRS), and electronic brake control systems.

## 17. Demonstrates Effective Use of Technology

7 Hrs.

- A. Identify and discuss online ethics, safety, and security.
- B. Identifies and investigates emerging technologies related to mechanics.
- C. Selects and uses appropriate technologies/tools/materials for successful completion of job task.
- D. Uses technology resources for solving problems and making informed decisions.

## 18. Portfolio

- A. Create a professional (digital or binder) portfolio reflecting employability skills in the relevant industry to include an "About Me" page.
- B. Collect original works (in photographs and videos) and/or documents that demonstrate technical skills and knowledge in the industry.
- C. Demonstrate knowledge of competencies by accompanying each selected document or work with a journal entry or summary.
- D. Write a brief resume and cover letter to be included in portfolio.
- E. Develop interviewing techniques using portfolio materials.
- F. Display portfolio materials for critique by a professional panel (industry partners and classmates).
- G. Gather feedback and update portfolio.