MISSION VALLEY REGIONAL OCCUPATION PROGRAM

Basic Car Care

Course Outline

1. Course Title:

Basic Car Care

2. CTE Career Sector and Pathway:

Transportation Sector, 221 Systems Diagnostics, Service, and Repair

3. CALPADS Number:

8530

4. Job Titles/DOT Codes:

Automotive Mechanic	620.261-010
Automobile-Mechanic Helper	620.684-014
Automobile-Repair-Service Estimator	620.261-018
Automotive Technician, Exhaust Emission	620.281-014
Brake Adjuster	620.684-018

5. Course Length:

Washington High School- 1 year long, 1 period class

James Logan High School- 1 semester long, 1 period class

6. Course Description:

This course provides pre-entry level training in automotive service/maintenance and is designed to be the first course for students entering transportation technology career pathways. Instruction covers the following areas: engine systems, electrical systems, tires and brakes, lubrication service, cooling systems, ignition and emission device service.

7. Hours:

James Logan High School: 90
Washington High School: 180

8. Articulation:

This course is articulated not articulated with any community college course

9. UC/CSU A-G Eligibility:

This course does not meet the UC/CSU A-G requirement.

10. Instructional Materials

- *Fundamentals of Automotive Maintenance and Light Repair, Kirk Van Gelder, CDX publishing 2020 - ISBN – 978-1-284-14339-3*
- *Automotive Technology, 5th edition, Halderman, Pearson Publishing, 2016 (JLHS / WHS)*

Date of Revision: July 2023 **Approved by Advisory:**

11. Course Outline:

Upon successful completion of this course, students will be able to demonstrate the following skills necessary for entry-level employment.

Unit	Content Area Skills	Hours
Integrated Throughout the course	**Workplace Basic Skills & Behaviors** (Necessary skills for any occupation – MVROP SLO #1) Learner Outcomes: A. Apply skills learned in class. B. Analyze information and make decisions. C. Communicate verbally and in writing. D. Work independently and as a team member in a diverse workplace. E. Work reliably, responsibly, and ethically.	Integrated Throughout the course
Integrated throughout the course	**Career Technical Skills** (Occupational competencies – MVROP SLO #2) Learner Outcomes: **A. Technology.** a. Select, operate, maintain, and troubleshoot a variety of technologies (tools, machines, and computers). b. Use computers to process information for the numerical system. **B. Safety standards** a. Comply with personal and environmental safety practices associated with clothing, eye protection, hand tools, power equipment, and proper ventilation. b. Comply with safety and environmental practices associated with handling, storage, and disposal of chemicals or materials in accordance with local, state, and federal regulations. **C. Business Functions** a. Identify, organize, plan, and manage time, materials, and facilities. b. Recognize purpose for administration, operations, marketing, personnel, production, distribution, and services.	Integrated throughout the course
	Career Path Strategies (Occupational competencies – MVROP SLO # 3) Learner Outcomes: A. Develop a plan to achieve career goals. B. Use effective job search strategies C. Demonstrate an awareness of the importance of lifelong learning.	Integrated throughout the course

Unit	Course Curriculum	Hours JLHS/WHS
1	**<u>Introduction to Automotive Technology</u>** Learner Outcomes: A. The Automobile a. Parts, Assemblies, and Systems b. Hybrid Vehicle B. Basic Hand Tools a. Tool Rules b. Tool Storage c. Wrenches, Screwdrivers, Pliers, Hammers, Chisels and Punches, d. Files, Saws e. Holding Tools f. Cleaning Tools g. Probe and Pickup Tools h. Pry Bars C. Power Tools and Equipment a. Compressed-Air System b. Air Tools c. Electric Tools d. Hydraulic Tools e. Shop Equipment - including but not limited to the safe and proper usage of vehicle hoists and service jacks. D. Auto Shop and Safety a. Auto Shop Layout b. Shop Safety c. Types of Accidents d. General Safety Rules e. Customer Relations E. Basic Vehicle Maintenance, Fluid Service, and Recycling a. Lubrication Service b. Vehicle Maintenance c. Fluid Service d. Filter Service e. Chassis Lubrication f. Service Intervals g. General Inspection and Problem Location h. Recycling and Disposal of Auto Shop Wastes	20/40
2	**<u>Label Identification</u>** Learner Outcomes: A. Fluid Labels B. Emission Labels C. Vehicle Identification Number	1/2

3	**29-Point Inspection** Learner Outcomes: A. Engine B. Transmission C. Suspension D. Tires E. Safety Belts and Interior F. Lighting Systems	1.5/3
4	**Road Hazard/ Tire Replacement** Learner Outcomes: A. Road Hazards B. Freeway Hazards C. Car Jack Usage D. Flares and Signs E. Common Sense	2.5/5
5	**Engines** Learner Outcomes: A. Basic Engine Fundamentals a. Engine Operation b. Engine Bottom End c. Engine Top End d. Engine Front End B. Engine Design Classifications a. Engine Classifications b. Cylinder Arrangement c. Alternative Engines d. Typical Automotive Engines	5/10
6	**Cooling and Lubrication Systems** Learner Outcomes: A. Basic Cooling System Fundamentals a. Cooling System Functions and Operations b. Cooling System Types c. Basic Cooling System d. Closed and Open Cooling System e. Cooling System Instrumentation f. Antifreeze g. Block Heater h. Focus on Hybrids B. Basic Cooling System Testing, Maintenance, and Repair a. Cooling System Problems and Diagnosis b. Thermostat Service c. Cooling System Hose Service d. Radiator and Pressure Cap Service e. Fan Belt Service f. Coolant Service	7.5/15

	C. Basic Lubrication System Testing, Service, and Repair a. Lubrication System Problem Diagnosis b. Engine Oil and Filter Service	
7	**Electrical Systems** Learner Outcomes: A. Basic Automotive Batteries a. Battery Principles b. Battery Functions c. Battery Construction d. Maintenance-Free Battery e. Gel Battery f. Battery Ratings g. Battery Temperature and Efficiency h. Focus on Hybrids B. Basic Battery Testing and Service a. Battery Maintenance b. Jump Starting c. Removing and Replacing a Battery d. Battery Diagnosis C. Lights, Instrumentation, Wipers, and Horns – Operation and Service a. Lighting Systems and Service b. Instrumentation c. Windshield Wipers d. Horns e. Finding Common Electrical Problems f. Headlamp and Turn Signal Diagnosis D. EV Safety Awareness and operational understanding a. High Voltage Batteries b. Safety Procedures c. EV PPE equipment	7.5/15
8	**Engine Performance** Learner Outcomes: A. Basic Engine Tune-Up a. Engine Performance Checks b. General Engine Performance Rules c. Typical Tune-Up Procedures d. Diesel Engine Tune-Up (Maintenance) e. Engine Tune-Up (Maintenance) Intervals	5/10
9	**Suspension, Steering, and Brakes** Learner Outcomes: A. Tire, Wheel, and Wheel Bearing Fundamentals a. Tires and Wheels b. Valve Stems and Cores, Lug Nuts, Studs, and Bolts	20/40

	c. Wheel Weights B. Basic Suspension System Fundamentals a. Functions of a Suspension System b. Basic Suspension System c. Independent and Non-Independent Suspension Systems d. Suspension System Springs and Construction e. Torsion Bar Suspension f. MacPherson Strut Suspension g. Pickup Truck Suspension Systems h. Rear Suspension Systems C. Brake System Fundamentals a. Basic Brake System b. Braking Ratio c. Brake System Hydraulics d. Brake System Components e. Parking Brakes f. Regenerative Brakes g. Brake System Diagnosis and Repair h. Brake System Problem Diagnosis and Inspection i. Disc Brake Service j. Brake Disc (Rotor) Service k. Drum Brake Service l. Parking Brake Adjustment m. Brake System Diagnosis	
10	**Computer Systems** Learner Outcomes: A. Basic Computer System Fundamentals a. On-board diagnostic systems	10/20
11	**Fuels Systems** Learner Outcomes: A. Automotive Fuels, Gasoline and Diesel Combustion a. Petroleum (Crude Oil) b. Gasoline c. Diesel Fuel d. Alternative Fuels B. Fuel Injection Operation a. Basic Fuel injection C. Carburetor Operation Service a. Basic Carburetor D. Exhaust Systems, Turbochargers, and Superchargers a. Exhaust Systems and Service b. Superchargers and Turbochargers	10/20
	Total Hours	**90/180**

12. Instructional Strategies

Lecture	Reading Assignments	Demonstration
Group Discussion	Oral Questioning	Team Learning
Brainstorming	Multimedia	Simulation
Projects	Hands-on Practice	Virtual Reality
Written Tests	Presentations	Skill Practical Assessments
Performance Exams	Portfolios	

13. Certificate Competency List:

Career Preparation Standards:

- Apply workplace basic skills and behaviors
- Practice occupational safety standards
- Demonstrate effective job employment skills

Career Technical Skills:

- Demonstrates safe working conditions in classroom and shop
- Identify common automotive tools and equipment
- Demonstrate proper usage of tools and equipment
- Perform vehicle safety inspection
- Check fluids accurately
- Perform engine oil and filter service and chassis lubrication
- Perform tire repair and replacement
- Complete repair order accurately
- Demonstrate part removal and replacement
- Use appropriate methods for disposal of hazardous waste material