

Course Outline

Transportation

REVISED: August/2017

Job Title
Smog Technician

79-90-65

Career Pathway:
Systems Diagnostics and Service

Auto Tech: Emission Control/1

Industry Sector:
Transportation

Credits: 5

Hours: 90

O*NET-SOC CODE:
49-3023.02

Course Description:

This competency-based course is the first in a sequence of two designed to meet the Bureau of Automotive Regulation (BAR) licensing requirements for the Basic Clean Air Car Course Program. It provides students with technical instruction and practical experience in emission control using sustainable and green vehicle technologies. Instruction includes classroom and workplace policies and procedures in accordance with federal, state, and local safety and environmental regulations. Emphasis is placed on the techniques in the following areas of emission control: vehicle testing, On Board Diagnosis (OBD) II systems tests and diagnostics, malfunction indicator light (MIL) trouble codes, main monitors and readiness tests. It also teaches resource management, trade mathematics, use of service manuals and computer-based information systems, and employability skills. The competencies in this course are aligned with the California High School Academic Content Standards and the California Career Technical Education Model Curriculum Standards.

CBEDS Title:
Automotive Specialty, Other Combinations

CBEDS No.:
5688

Prerequisites:

Enrollment requires successful completion of the Auto Tech: Engine Performance/1 (79-90-69) and Auto Tech: Engine Performance/2 (79-90-71) courses or one year experience in the automotive engine performance area.

NOTE: For Perkins purposes this course has been designated as a **introductory/concentrator** course.

MEETS THE BUREAU OF AUTOMOTIVE REGULATION (BAR) STANDARDS FOR THE BASIC CLEAN AIR CAR COURSE TO BECOME LICENSED AS A SMOG INSPECTION TECHNICIAN.

This course cannot be repeated once a student receives a Certificate of Completion.



COURSE OUTLINE COMPETENCY-BASED COMPONENTS

A course outline reflects the essential intent and content of the course described. Acceptable course outlines have six components. (Education Code Section 52506). Course outlines for all apportionment classes, including those in jails, state hospitals, and convalescent hospitals, contain the six required elements:

(EC 52504; 5CCR 10508 [b]; Adult Education Handbook for California [1977], Section 100)

COURSE OUTLINE COMPONENTS

LOCATION

GOALS AND PURPOSES

Cover

The educational goals or purposes of every course are clearly stated and the class periods are devoted to instruction. The course should be broad enough in scope and should have sufficient educational worth to justify the expenditure of public funds.

The goals and purpose of a course are stated in the COURSE DESCRIPTION. Course descriptions state the major emphasis and content of a course, and are written to be understandable by a prospective student.

PERFORMANCE OBJECTIVES OR COMPETENCIES

pp. 7-15

Objectives should be delineated and described in terms of measurable results for the student and include the possible ways in which the objectives contribute to the student's acquisition of skills and competencies.

Performance Objectives are sequentially listed in the COMPETENCY-BASED COMPONENTS section of the course outline. Competency Areas are units of instruction based on related competencies. Competency Statements are competency area goals that together define the framework and purpose of a course. Competencies fall on a continuum between goals and performance objectives and denote the outcome of instruction.

Competency-based instruction tells a student before instruction what skills or knowledge they will demonstrate after instruction. Competency-based education provides instruction which enables each student to attain individual goals as measured against pre-stated standards.

Competency-based instruction provides immediate and continual repetition and In competency-based education the curriculum, instruction, and assessment share common characteristics based on clearly stated competencies. Curriculum, instruction and assessment in competency-based education are: explicit, known, agreed upon, integrated, performance oriented, and adaptive.

COURSE OUTLINE COMPETENCY-BASED COMPONENTS
(continued)

COURSE OUTLINE COMPONENTS

LOCATION

INSTRUCTIONAL STRATEGIES

p. 18

Instructional techniques or methods could include laboratory techniques, lecture method, small-group discussion, grouping plans, and other strategies used in the classroom.

Instructional strategies for this course are listed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructional strategies and activities for a course should be selected so that the overall teaching approach takes into account the instructional standards of a particular program, i.e., English as a Second Language, Programs for Adults with Disabilities.

UNITS OF STUDY, WITH APPROXIMATE HOURS ALLOTTED FOR EACH UNIT

Cover

The approximate time devoted to each instructional unit within the course, as well as the total hours for the course, is indicated. The time in class is consistent with the needs of the student, and the length of the class should be that it ensures the student will learn at an optimum level.

pp. 7-15

Units of study, with approximate hours allotted for each unit are listed in the COMPETENCY AREA STATEMENT(S) of the course outline. The total hours of the course, including work-based learning hours (community classroom and cooperative vocational education) is listed on the cover of every CBE course outline. Each Competency Area listed within a CBE outline is assigned hours of instruction per unit.

EVALUATION PROCEDURES

pp. 18-19

The evaluation describes measurable evaluation criteria clearly within the reach of the student. The evaluation indicates anticipated improvement in performances as well as anticipated skills and competencies to be achieved.

Evaluation procedures are detailed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructors monitor students' progress on a continuing basis, assessing students on attainment of objectives identified in the course outline through a variety of formal and informal tests (applied performance procedures, observations, and simulations), paper and pencil exams, and standardized tests.

REPETITION POLICY THAT PREVENTS PERPETUATION OF STUDENT ENROLLMENT

Cover

After a student has completed all the objectives of the course, he or she should not be allowed to reenroll in the course. There is, therefore, a need for a statement about the conditions for possible repetition of a course to prevent perpetuation of students in a particular program for an indefinite period of time.

ACKNOWLEDGMENTS

Thanks to PAUL PIDOUX and MARCELA BAKER for developing and editing this curriculum. Acknowledgment is also given to ERICA ROSARIO for designing the original artwork for the course covers.

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CALIFORNIA CAREER TECHNICAL EDUCATION MODEL CURRICULUM STANDARDS
Transportation Industry Sector
Knowledge and Performance Anchor Standards

1.0 Academics

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the Transportation academic alignment matrix for identification of standards.

2.0 Communications

Acquire and accurately use Transportation sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.

3.0 Career Planning and Management

Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.

4.0 Technology

Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Transportation sector workplace environment.

5.0 Problem Solving and Critical Thinking

Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the Transportation sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.

6.0 Health and Safety

Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Transportation sector workplace environment.

7.0 Responsibility and Flexibility

Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Transportation sector workplace environment and community settings.

8.0 Ethics and Legal Responsibilities

Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.

9.0 Leadership and Teamwork

Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in the SkillsUSA career technical student organization

10.0 Technical Knowledge and Skills

Apply essential technical knowledge and skills common to all pathways in the Transportation sector, following procedures when carrying out experiments or performing technical tasks.

11.0 Demonstration and Application

Demonstrate and apply the knowledge and skills contained in the Transportation anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through the SkillsUSA career technical student organization.

Transportation Pathway Standards

C. Systems Diagnostics and Service Pathway

The Systems Diagnostics and Service pathway prepares students for postsecondary education and employment in the transportation industry, which includes but is not limited to motor vehicles, rail systems, marine applications, and small-engine and specialty equipment.

Sample occupations associated with this pathway:

- ◆ Service Technician/Maintenance Worker/Shop Foreman
- ◆ Technical Writer
- ◆ Dispatcher
- ◆ Engineer
- ◆ Investigator/Inspector

- C1.0 Demonstrate the practice of personal and occupational safety and protecting the environment by using materials and processes in accordance with manufacturer and industry standards.
- C2.0 Practice the safe and appropriate use of tools, equipment, and work processes.
- C3.0 Use scientific principles in relation to chemical, mechanical, and physical functions for various engine and vehicle systems.
- C4.0 Perform and document maintenance procedures in accordance with the recommendations of the manufacturer.
- C5.0 Apply and understand appropriate business practices.
- C6.0 Demonstrate the application, operation, maintenance, and diagnosis of engines, including but not limited to two- and four-stroke and supporting subsystems.
- C7.0 Demonstrate the function, principles, and operation of electrical and electronic systems using manufacturer and industry standards.
- C8.0 Demonstrate the function and principles of automotive drivetrain, steering and suspension, brake, and tire and wheel components and systems in accordance with national industry standards.

CBE
Competency-Based Education

COMPETENCY-BASED COMPONENTS
for the Auto Tech: Emission Control/1 Course

| COMPETENCY AREAS AND STATEMENTS | MINIMAL COMPETENCIES | STANDARDS |
|--|--|---|
| <p>A. ORIENTATION AND SAFETY</p> <p>Understand, apply and evaluate classroom and workplace policies and procedures used in accordance with federal, state and local safety and environmental regulations.</p> <p>(3 Hours)</p> | <ol style="list-style-type: none"> 1. Describe the scope and purpose of the course. 2. Describe classroom policies and procedures. 3. Identify classroom and workplace first aid and emergency procedures. 4. Describe the different occupations in the Transportation Industry Sector which have an impact on the role of the auto technician. 5. Describe the California Occupational Safety and Health Administration (Cal/OSHA) workplace requirements for auto technicians. 6. Explain the impact of Environmental Protection Agency (EPA) legislation on Transportation Industry Sector practices in protecting and preserving the environment. 7. Explain the impact of California Air Resources Board (ARB) legislation on the Transportation Industry Sector practices in protecting and preserving the environment. 8. State the Bureau of Automotive Repair (BAR) standards for the safety and environmental protection. 9. Describe and demonstrate the use of the Material Safety Data Sheet (MSDS) as it applies to the automotive industry. 10. Identify the safety items required by federal, state and local regulations. 11. Pass the safety exam with 100% accuracy. | <p>Career Ready Practice: 1, 3, 6, 7, 12</p> <p>CTE Anchor: Career Planning and Management: 3.4 Health and Safety: 6.1, 6.6, 6.7 Ethics and Legal Responsibilities: 8.2</p> <p>CTE Pathway: C1.1, C1.2, C1.3</p> |
| <p>B. RESOURCE MANAGEMENT</p> <p>Understand, apply and evaluate the resource management principles and techniques in the auto repair and maintenance business.</p> | <ol style="list-style-type: none"> 1. Define the following: <ol style="list-style-type: none"> a. resources b. management c. sustainability 2. Describe the management of the following resources in the auto repair and the maintenance business: <ol style="list-style-type: none"> a. time b. materials c. personnel 3. List specific examples of effective management of the following in the auto repair and maintenance business: <ol style="list-style-type: none"> a. time b. materials c. personnel | <p>Career Ready Practice: 1, 3, 5, 7, 8, 10</p> <p>CTE Anchor: Responsibility and Flexibility: 7.1, 7.4, 7.6</p> <p>CTE Pathway: C5.3</p> |

| COMPETENCY AREAS AND STATEMENTS | MINIMAL COMPETENCIES | STANDARDS |
|--|---|---|
| (1 Hour) | <ol style="list-style-type: none"> 4. Describe the benefits of effective resource management in the auto repair and maintenance business. 5. Describe the economic benefits and the liabilities of managing resources in an environmentally responsible way. | |
| <p>C. TRADE MATHEMATICS</p> <p>Understand, apply and evaluate the mathematical requirements used in auto repair and maintenance.</p> | <ol style="list-style-type: none"> 1. Identify the practical applications of math in the auto repair and maintenance. 2. Describe and demonstrate problem-solving techniques involving whole number problems using addition, subtraction, multiplication and division. 3. Describe and demonstrate problem-solving techniques involving various fraction problems using arithmetic (addition, subtraction, multiplication and division) 4. Describe and demonstrate problem-solving techniques involving various decimal problems using arithmetic operations. 5. Describe and demonstrate techniques for the changing fractions to decimals. 6. Describe and demonstrate techniques for the changing decimals to fractions. 7. Describe the English system of measuring length. 8. Describe the English system of measuring weight. 9. Describe the English system of measuring volume or capacity. 10. Describe the relationships between various English system linear units of measurement such as inches, feet, yards and miles. 11. Describe the relationships between various English system units of volume or capacity such as cups, pints, quarts and gallons. 12. Describe and demonstrate problem-solving techniques for various English system measuring problems using arithmetic operations. 13. Describe and demonstrate measuring techniques of various objects by using the English system measuring tools common to the trade. 14. Describe the metric system of measuring length. 15. Describe the metric system of measuring weight. 16. Describe the metric system of measuring volume and capacity. 17. Describe the relationships between various metric system linear units of measurement such as, millimeters, centimeters and meters. 18. Describe the relationships between various metric system units of weight such as milligrams, grams and kilograms. 19. Describe and demonstrate problem-solving techniques for various metric system measuring problems involving addition, subtraction, multiplication and division. 20. Describe and demonstrate measuring techniques of objects using metric system measuring tools common to the trade. | <p>Career Ready Practice: 1, 3, 5</p> <p>CTE Anchor: Problem Solving and Critical Thinking: 5.2</p> <p>CTE Pathway: C2.4, C2.7</p> |

| COMPETENCY AREAS AND STATEMENTS | MINIMAL COMPETENCIES | STANDARDS |
|---|---|---|
| (5 Hours) | <ol style="list-style-type: none"> 21. Describe and demonstrate problem-solving techniques for geometric problems that apply to auto repair and maintenance. 22. Describe and demonstrate problem-solving techniques for algebraic problems that apply to auto repair and maintenance. 23. Describe and demonstrate problem-solving techniques using percentages. 24. Describe and demonstrate techniques for reading and interpreting graphs. 25. Describe and demonstrate techniques for using calculators. | |
| <p>D. SERVICE MANUALS AND COMPUTER-BASED INFORMATION SYSTEMS</p> <p>Understand, apply and evaluate the contents of service manuals and computer-based information systems as important sources of reference to an auto technician.</p> <p>(3 Hours)</p> | <ol style="list-style-type: none"> 1. Identify the different types of service manuals. 2. State the different types of information that can be found in service manuals such as specifications, troubleshooting charts, and repair information. 3. Describe and demonstrate the use of service manuals. 4. Describe and demonstrate the use of CD-ROM (compact disc) and web-based search engines in finding automotive technical information. 5. Explain the advantages of using CD-ROM and web-based search engines over service manuals in finding automotive technical information. | <p>Career Ready Practice: 1, 3, 11</p> <p>CTE Anchor: Communications: 2.3 Technology: 4.1, 4.2, 4.6</p> <p>CTE Pathway: C2.6, C4.3</p> |
| <p>E. BUREAU OF AUTOMOTIVE REPAIR (BAR) RULES AND REGULATIONS</p> <p>Understand, apply and evaluate the policies and requirements of the Bureau of Automotive Repair (BAR) regarding motor vehicle emissions reduction in its Smog Check Program.</p> | <ol style="list-style-type: none"> 1. State the mission of the Bureau of Automotive Repair (BAR) as a government agency dedicated to protecting and serving California consumers. 2. Describe major provisions of the Automotive Repair Act of 1971. 3. State the Smog Check Program of BAR. 4. Describe the licensing requirements for the inspection technicians. 5. Describe the certificate requirements for compliance and non-compliance. 6. Identify test failures and repair cost limitations. 7. Discuss the difference between Test Only station and Test/Repair station. 8. Describe the types and dimensions of smog check signs including the following: <ol style="list-style-type: none"> a. "heavy duty" b. "light duty only" c. "test only" d. "79 and older" | <p>Career Ready Practice: 1, 3, 4, 8, 12</p> <p>CTE Anchor: Communications: 2.3 Career Planning and Management: 3.4 Ethics and Legal Responsibilities: 8.2 Technical Knowledge and Skills: 10.1</p> <p>CTE Pathway: C2.1, C4.2, C5.6</p> |

| COMPETENCY AREAS AND STATEMENTS | MINIMAL COMPETENCIES | STANDARDS |
|---|---|--|
| (5 Hours) | 9. Describe the following state smog inspection programs: <ol style="list-style-type: none"> inspection and maintenance change of ownership 10. Describe the state biennial inspection program including heavy duty gasoline powered by vehicles. | |
| F. BAR-97 EMISSIONS INSPECTION SYSTEM (EIS) Understand, apply and evaluate the operational techniques for the BAR-97 EIS. | 1. Identify and discuss the following: <ol style="list-style-type: none"> Enhanced Areas (California's smoggiest regions) Enhanced Area Vehicles major chemical components of smog: <ol style="list-style-type: none"> NO_x (oxides and nitrogen) HC (hydro carbons) CO (carbon monoxide) 2. Identify and describe the features and functions of the following parts of a BAR 97-EIS: <ol style="list-style-type: none"> 5-gas analyzer additional hardware software fuel cap tester dynamometer with safety restraints 3. Describe the operational techniques for the BAR-97 EIS 4. Describe the NO _x test techniques for the Acceleration Simulation mode (ASM) 5. Identify the following motor vehicle exceptions to the BAR-97 ASM tests: <ol style="list-style-type: none"> full-time drive four-wheel drive all-wheel drive traction control specified heavy duty trucks 6. Describe the Automotive Service Excellence certification competencies in sections A6, A8 and L1 in order to operate the BAR-97 EIS. 7. Describe the BAR-97 EIS as a diagnostic tool to pinpoint vehicle abnormalities. | Career Ready Practice: 1, 3, 4, 11, 12 CTE Anchor: Career Planning and Management: 3.4 Problem Solving and Critical Thinking: 5.4 Ethics and Legal Responsibilities: 8.2 Technical Knowledge and Skills: 10.1 Demonstration and Application: 11.2 CTE Pathway: C1.1, C1.3, C2.2, C4.2, C6.1 |
| G. SMOG CHECK PROGRAM: 2003 AND 2007 UPDATES Understand, apply and evaluate the policies and procedures contained in the Smog Check program for the 2003 and 2005 updates. | 1. Describe the updates in the following program, system or equipment: <ol style="list-style-type: none"> On Board Diagnosis (OBD) Program "lambda" air/fuel calculations evaporative emissions systems broad band air/fuel ratio sensors analysis of emission failures by using OBD II (OEM) 2. Pass the lab assignments and written exam with a minimum score of 70% | Career Ready Practice: 1, 3, 4, 5, 12 CTE Anchor: Communications: 2.3, 2.4 Technology: 4.3 |

| COMPETENCY AREAS AND STATEMENTS | MINIMAL COMPETENCIES | STANDARDS |
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| (5 Hours) | | Problem Solving and Critical Thinking: 5.2, 5.4 Technical Knowledge and Skills: 10.1, 10.2, 10.3 Demonstration and Application: 11.1, 11.2 CTE Pathway: C1.5, C2.2, C3.7, C5.6 |
| H. VEHICLE EMISSION TESTING PROCEDURES Understand, apply and evaluate the BAR Smog Check Program's vehicle emission testing procedures for the Basic Area Program. | <ol style="list-style-type: none"> 1. Describe the effect of manufacturers' warranties on emission repairs. 2. State the regulations for self-repairs by vehicle owners. 3. State the regulations regarding subletting smog repairs. 4. Perform vehicle identification and classification for a certificate. 5. State procedures for inspecting vehicle emissions testing equipment. 6. Demonstrate vehicle and engine identification procedures. 7. Locate gross vehicle weight labels for trucks and recreational vehicles. 8. Find emission system applications and manuals and underhood labels. 9. Describe the certificate of compliance for an I/M station. 10. Describe the certificate of compliance for change of ownership station. 11. Describe the certificate for non-compliance. 12. Explain the difference between the following type of failures: <ol style="list-style-type: none"> a. visual b. functional test c. emission 13. Describe repair requirements for the following: <ol style="list-style-type: none"> a. visual failures b. functional test failures c. emission failures 14. Describe and demonstrate an after-repairs test as per state standards. 15. Describe the procedures for cleaning and enforcement document. 16. Describe the acceptable methods for carburetor adjustments including feedback carburetors. | Career Ready Practice: 1, 3, 4, 10, 12 CTE Anchor: Communications: 2.3, 2.4 Technology: 4.1, 4.3 Problem Solving and Critical Thinking: 5.2, 5.3, 5.4 Ethics and Legal Responsibilities: 8.1 Technical Knowledge and Skills: 10.1, 10.2, 10.3 Demonstration and Application: 11.1, 11.2 CTE Pathway: C2.3, C2.6, C3.7, C4.1, C4.2, C4.3, C4.4, C5.3, C6.1, C6.4, C6.6 |

| COMPETENCY AREAS AND STATEMENTS | MINIMAL COMPETENCIES | STANDARDS |
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| (20 Hours) | <ol style="list-style-type: none"> 17. Describe the authorized replacement parts and original equipment repairs. 18. Describe the laws pertaining to retrofit failures. 19. Describe the repair differences between the following vehicles: <ol style="list-style-type: none"> a. computerized b. non-computerized 20. Describe and demonstrate self-diagnostic procedures using fault code diagnostic charts. 21. Describe and demonstrate use of service manuals for emission repairs. 22. Describe and demonstrate procedures for clearing emissions warning lights. 23. Describe and demonstrate procedures to verify closed loop operation. 24. Describe and demonstrate testing and measuring techniques for various computer sensors. 25. Describe and demonstrate use of electrical wiring diagrams. 26. Describe common malfunctions of and test procedures for computer-controlled engines. 27. Describe and demonstrate common test procedures and equipment for sensor testing. 28. Observe the effects of oxygen sensor voltage on fuel mixture duty cycle. 29. Describe sensors malfunctions and emission effects. 30. Describe and demonstrate the use of manufacturers' diagnostic flow charts. 31. Describe state laws regarding written estimates, repair orders and repair authorizations. 32. Describe repair cost limits for visual, functional and emission failures. 33. Fill out a repair order, including an estimate. | |
| <p>I. OBD II SYSTEM HISTORY, TESTING AND DIAGNOSTICS</p> <p>Understand the history and development of the OBD II system, apply and evaluate its testing and diagnostic techniques.</p> | <ol style="list-style-type: none"> 1. Describe the history of OBD II development and why the new system was adopted. 2. Describe the federal and California Air Resources Board (CARB) standardization regulations including: <ol style="list-style-type: none"> a. common terminology b. generic Scan Tool operation c. interface protocols d. service information availability e. bi-directional communication 3. Define common OBD II terminology 4. describe the differences between OBD I and OBD II systems in terms of: <ol style="list-style-type: none"> a. Scan Tool Operation b. EEPROM updates c. diagnostic connector characteristics | <p>Career Ready Practice: 1, 3, 4, 5, 12</p> <p>CTE Anchor: Technology: 4.3, 4.5 Ethics and Legal Responsibilities: 8.2 Technical Knowledge and Skills: 10.1</p> |

| COMPETENCY AREAS AND STATEMENTS | MINIMAL COMPETENCIES | STANDARDS |
|---|---|--|
| (5 Hours) | <ul style="list-style-type: none"> d. trouble code strategies e. diagnostic routines f. main monitors g. readiness tests <p>5. Describe the following:</p> <ul style="list-style-type: none"> a. computer relearn b. Throttle Position Sensor (TPS) relearn c. Idle Air Control (IAC) relearn d. fuel trim relearn e. misfire relearn <p>6. Describe the concept of main monitors.</p> <p>7. Describe the concept of “Rationality” and the importance of analyzing Scan Tool Data to identify the root cause of a problem.</p> <p>8. Describe the use of the Scan Tool graphing data menu and troubleshooting circuits with a lab scope.</p> | <p>CTE Pathway: C1.3., C1.5, C2.1, C2.2, C2.3, C5.6, C6.4</p> |
| <p>J. OBD II MALFUNCTION INDICATOR LIGHT (MIL) STRATEGIES AND DIAGNOSTIC TROUBLE CODES</p> <p>Understand, apply and evaluate the OBD II MIL strategies and diagnostic trouble codes.</p> <p>(5 Hours)</p> | <ul style="list-style-type: none"> 1. Describe the On Board specialty program (program manager, diagnostic executive, task manager, etc.) and its use of “Rationality” to determine if systems are functioning within acceptable limits. 2. Differentiate between the OBD I “Check Engine Light” and the “OBD II MIL” operation. 3. Describe and demonstrate strategies to activate and deactivate an MIL (i.e, using a Scan Tool to clear codes, having computer clear codes). 4. Identify current pending and history codes on the Scan Tool. 5. Describe the Freezer Frame Data and its use in diagnosis. 6. Describe the lack of “Intermittent” codes on OBD II. 7. Describe the following modes of the MIL operation: <ul style="list-style-type: none"> a. MIL OFF b. MIL ON’ c. MIL flashing conditions 8. Describe the SAE J2012 Standards for code numbering and consistency of the code name. 9. Differentiate between type “A” and type “B” codes. 10. Describe the OBD II diagnostic flow chart. 11. Describe verification tests and POM resets procedures used after all repairs. | <p>Career Ready Practice: 1, 3, 4, 5, 10, 12</p> <p>CTE Anchor: Communications: 2.3 Technology: 4.3 Problem Solving and Critical Thinking: 5.3 Ethics and Legal Responsibilities: 8.1 Technical Knowledge and Skills: 10.1</p> <p>CTE Pathway: C2.3, C3.7, C5.6, C6.1</p> |

| COMPETENCY AREAS AND STATEMENTS | MINIMAL COMPETENCIES | STANDARDS |
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| <p>K. OBD II MAIN MONITORS AND READINESS TESTS</p> <p>Understand, apply and evaluate the operational and test techniques for the OBD II Main Monitors to detect failures in the vehicle emission system.</p> <p>(20 Hours)</p> | <ol style="list-style-type: none"> 1. Describe the Comprehensive Component Monitor code enable conditions. 2. Describe the Catalyst Efficiency Monitor and DTC P0420. 3. Describe the Readiness Test and Trip required for testing a Catalyst Monitor. 4. Describe the EGR monitor and the different ways the monitor can test to determine if the EGR is working. 5. Describe various examples of EGR Trips and the EGR Readiness Test. 6. Describe the EVAP Monitor and Readiness Test. 7. Describe the importance of using a pressure tester to find EVAP problem. 8. Describe the importance of a warm-up cycle for some manufacturers. 9. Explain the differences between systems with normally open and normally closed EVAP vent solenoids. 10. Describe the Fuel System Monitor including the Short-Term and the Long-Term Fuel Trim. 11. Describe the feedback process and the effect of adaptive fuel on the long-term Fuel Trim diagnosis. 12. Describe the need to reset the Fuel Trim monitor after all repairs on selected systems. 13. Describe H2O switching codes. 14. Describe the effect of a slow H2O on the engine management system. 15. Describe misfire detection. 16. Identify rough road misfire strategies. 17. Describe the importance of monitoring CAP with a lab scope. 18. Describe the importance of driving the vehicle within 10% of the values on the Freeze Frame (similar condition strategies) 19. Describe the H2Os Heater Monitor and explain the different methods of determining if the H2Os Heater is working. 20. Describe the importance of the H2Os Heater for closed loop and for idle control. 21. Describe the Secondary AIR System Monitor, the readiness test and trip for the AIR system. 22. Demonstrate the completing an OBD II Trip (for an individual monitor) and the OBD II Drive Cycle on the dyno. 23. Describe the “load” and the horsepower requirements to complete the Readiness Test. | <p>Career Ready Practice: 1, 3, 4, 5, 10, 12</p> <p>CTE Anchor: Communications: 2.3 Technology: 4.2, 4.3 Problem Solving and Critical Thinking: 5.3, 5.4 Technical Knowledge and Skills: 10.1, 10.2, 10.3 Demonstration and Application: 11.1, 11.2</p> <p>CTE Pathway: C2.2, C2.3, C3.7, C4.1, C5.6, C6.1, C6.4</p> |

| COMPETENCY AREAS AND STATEMENTS | MINIMAL COMPETENCIES | STANDARDS |
|--|--|--|
| <p>L. EMPLOYABILITY SKILLS Understand, apply and evaluate the employability skills required in auto repair and maintenance.</p> <p>(3 Hours)</p> | <ol style="list-style-type: none"> 1. Summarize employer requirements for the following: <ol style="list-style-type: none"> a. punctuality b. attendance c. attitude toward work d. quality of work e. teamwork f. responsibility g. timeliness h. communication skills 2. Explain the importance of the continuous upgrading of job skills through lifelong learning. 3. Identify pre-professional and professional industry organizations and discuss the employability benefits and belonging. 4. State the need to adapt to varied roles and responsibilities in the workplace. 5. Describe the importance of personal integrity and ethical behavior in the workplace. 6. Describe customer service as a method of building permanent relationships between the organization and the client. 7. Identify conflict resolution strategies for a variety of workplace situations. 8. Describe ways to demonstrate respect for individual and cultural differences and for the attitudes and feelings of others. 9. Identify potential employers through traditional and internet sources. 10. Describe the role of electronic social networking in job search. 11. Finalize sample résumés and cover letters. 12. Review the importance of filling out a job application legibly, with accurate and complete information. 13. Review the common mistakes that are made on job applications. 14. Complete sample job application forms correctly. 15. Review the importance of enthusiasm in the interview and on a job. 16. Review the importance of appropriate appearance in the interview and on a job. 17. Review a career plan that builds on existing interests, skills, and abilities. 18. Review the informational materials, resources, and test knowledge needed to be successful in an interview. 19. Review and demonstrate appropriate interviewing techniques. | <p>Career Ready Practice: 1, 2, 3, 7, 9, 10, 11</p> <p>CTE Anchor: Communications: 2.1, 2.2, 2.3, 2.4 Career Planning and Management: 3.1, 3.2, 3.4, 3.6, 3.9 Responsibility and Flexibility: 7.2, 7.3, 7.4, 7.5, 7.7 Ethics and Legal Responsibilities: 8.3 Leadership and Teamwork: 9.2, 9.6 Demonstration and Application: 11.5</p> <p>CTE Pathway: C5.3, C5.4, C5.5</p> |

SUGGESTED INSTRUCTIONAL MATERIALS and OTHER RESOURCES

TEXTBOOKS

Bureau of Automotive Repair. Clean Air Car Course Student Materials Set. Bureau of Automotive Repair, 2008.

Duffy, James E. Modern Automotive Technology, 7th Edition. Goodheart-Willcox Publishing, 2009.

Halderman, James D. and James Linder. Automotive Fuel and Emissions Control Systems. Prentice Hall, 2008.

Horngren, Charles T. NATEF Correlated Task Sheets to Accompany Automotive Fuel and Emissions Control Systems. Prentice Hall Professional Technical Reference, 2008.

Tomita, A. Emissions reduction: NOx/Sox Suppression. Elsevier Science and Technology Books. 2008.

SUPPLEMENTAL BOOKS

Bureau of Automotive Repair. Laws and Regulations Relating to Automotive Repair Dealers and Smog Check Stations. California Department of Consumer Affairs, Bureau of Automotive Repair, 2009.

Bureau of Automotive Repair. Smog Check Inspection Procedures Manual. California Department of Consumer Affairs, Bureau of Automotive Repair, 2009.

Bureau of Automotive Repair. Write it Right Booklet: A Guide for Licensed Smog Check Stations. California Department of Consumer Affairs, Bureau of Automotive Repair, 2009.

RESOURCES

Employer Advisory Board members

Foundation Standards

<http://www.cde.ca.gov/ci/ct/sf/documents/transportation.pdf>

Automotive Retailing Today (ART) 8400 Westpark Dr., MS 2, McLean, VA 22102. Phone: (703) 556-8578.

Automotive Service Councils of America

One Capitol Mall, Suite 320

Sacramento, CA 95814

www.asca.com

Automotive Youth Educational Systems (AYES) 50 W. Big Beaver, Suite 145, Troy, MI 48084. Phone: (248) 526-1750. Fax: (248) 526-1751.

Field Representatives from the Bureau of Automotive Repair offices:

| | |
|--------------------|----------------|
| Culver City Branch | (310) 410-0024 |
| South El Monte | (626) 575-6934 |
| South El Monte HQ | (626) 350-6494 |
| Valencia | (661) 702-6600 |

National Automobile Dealers Association (NADA) Public Relations Dept., 8400 Westpark Dr., McLean, VA 22102-3591. Phone: (703) 821-7000.

National Automotive Technicians Education Foundation (NATEF) 101 Blue Seal Dr. SE, Suite 101, Leesburg, VA 20175. Phone: (703) 669-6650. Fax: (703) 669-6125.

www.natef.org

http://www.ed-foundation.org/html_pages/products_programs_services/natef_tools/non-structural_analysis/non-structural_analysis.shtml

National Institute for Automotive Service Excellence (ASE) 101 Blue Seal Dr. SE, Suite 101, Leesburg, VA 20175. Phone: (703) 669-6600.

SkillsUSA P.O. Box 3000, Leesburg, VA 20177-0300. Phone: (703) 777-8810. Fax: (703) 777-8999.

www.skillsusa.org

COMPETENCY CHECKLIST

TEACHING STRATEGIES and EVALUATION

METHODS AND PROCEDURES

- A. Lecture and discussion
- B. Demonstration using vehicles of early and late model years
- C. Multi-Sensory presentation
- D. Lab and shop work using early and late model year vehicles

EVALUATION

State requirements mandate that students complete all laboratory assignments from the Basic Clean Air Car Course student workbook in order to receive a state required course certificate.

A minimum of 68 hours of attendance must be completed by students before receiving a state required course certificate.

SECTION A – Orientation and Safety – Pass the safety test with 100% accuracy.

SECTION B – Resource Management – Pass all assignments and exams on resource management with a minimum score of 80% or higher.

SECTION C – Trade Mathematics – Pass all assignments and exams on trade mathematics with a minimum score of 80% or higher.

SECTION D – Service Manuals and Computer-Based Information Systems – Pass all assignments and exams on service manuals and computer-based information systems with a minimum score of 80% or higher.

SECTION E – Bureau of Automotive Repair (BAR) Rules and Regulations – Pass all assignments and exams on Bureau of Automotive Repair (BAR) rules and regulations with a minimum score of 80% or higher.

SECTION F – BAR-97 Emissions Inspection System (EIS) – Pass all assignments and exams on BAR-97 emissions inspection system (EIS) with a minimum score of 80% or higher.

SECTION G – Smog Check Program: 2003 and 2007 Updates – Pass all assignments and exams on smog check program: 2003 and 2007 updates with a minimum score of 70% or higher.

SECTION H – Vehicle Emission Testing Procedures – Pass all assignments and exams on vehicle emission testing procedures with a minimum score of 80% or higher.

SECTION I – OBD II System History, Testing, and Diagnostics – Pass all assignments and exams on OBD II system history, testing, and diagnostics with a minimum score of 80% or higher.

SECTION J – OBD II Malfunction Indicator Light (MIL) Strategies and diagnostic trouble codes – Pass all assignments and exams on OBD II Malfunction Indicator Light (MIL) strategies and diagnostic trouble codes with a minimum score of 80% or higher.

SECTION K – OBD II Main Monitors and Readiness Tests – Pass all assignments and exams on OBD II main monitors and readiness tests diagnosis with a minimum score of 80% or higher.

SECTION L –Employability Skills – Pass all assignments and exams on employability skills with a minimum score of 80% or higher.

DEFINITIONS OF TERMS FOR A VEHICLE INSPECTION REPORT

%CO₂: Carbon Dioxide is a colorless, odorless gas which is a byproduct of most combustion processes and also of human respiration. It is the same gas found in soda pop. High levels of CO₂ in exhaust typically indicate greater engine efficiency; however, CO₂ is considered a greenhouse gas that may cause global warming. High or low levels of carbon dioxide emissions are not grounds for a vehicle failing the Smog Check; the measurement is meant as a diagnostic tool for technicians. CO₂ is measured in percent.

%O₂: Oxygen is a colorless, odorless gas necessary for life on the planet and also for engine combustion to occur. The atmosphere is comprised of approximately 21% oxygen. High levels of O₂ emissions can indicate a problem with the catalytic converter. High or low levels of O₂ emissions are not grounds for a vehicle failing the Smog Check; the measurement is meant as a diagnostic tool for technicians. O₂ is measured in percent.

Air Injection: Also known as the smog pump. Pumps air into the exhaust manifold to burn unburned fuels (hydrocarbons).

AVE: The average emissions for vehicles in the same Emissions Standards Category (ESC). ESCs are based on model year and whether the vehicle is a passenger car or a light-, medium-, or heavy-duty truck. The average emissions reading is meant as a guidepost for technicians when repairing vehicles that fail a Smog Check; it has no effect on the pass/fail result of the emissions test.

Acceleration Simulation Mode (ASM): This is the test type for vehicles operated on a dynamometer (treadmill like device) which simulates actual driving conditions.

Bureau of Automotive Repair (BAR): Part of the California Department of Consumer Affairs, the Bureau of Automotive Repair (BAR) is a consumer protection agency focused exclusively on automotive repair issues. BAR licenses auto repair dealers, Smog Check stations, and Smog Check technicians. BAR administers the Smog Check program, as required by law. BAR investigates complaints from consumers about auto repair establishments, and recovers millions of dollars for consumers each year. BAR is completely separate from the Department of Motor Vehicles and the Air Resources Board.

Catalytic Converter: Located between the exhaust manifold and the muffler, this device uses precious metals as a catalyst to turn hydrocarbons, carbon monoxide, oxygen, and oxides of nitrogen into carbon dioxide and water vapor.

Certification: Indicates whether your vehicle was manufactured to meet United States Environmental Protection Agency or more stringent California emissions standards.

Carbon Monoxide (CO%): Carbon Monoxide is a colorless, odorless gas that is fatal to many life forms in moderate concentrations. CO emissions are often the byproduct of an overly rich fuel mixture. Unhealthy levels of CO emissions result in a vehicle failing its Smog Check. CO is measured in percent.

Consumer Assistance Program (CAP): The Consumer Assistance Program is available at participating Gold Shield stations for motorists who need financial assistance (up to \$500) making repairs to their vehicle when it fails a biennial (every other year) Smog Check. [Click here](#) to learn more about the Consumer Assistance Program and to obtain an application.

Cylinders: The number of combustion cylinders in the engine (usually 4, 6, or 8).

Directed Vehicle: In order to comply with state law, the California Department of Consumer Affairs/Bureau of Automotive Repair (DCA/BAR) directs a portion of the vehicles registered in Enhanced Smog Check Areas to Test-Only and Gold Shield stations. These vehicles are called Directed Vehicles. Enhanced Areas are those parts of the state with "serious," "severe," or "extreme" ozone pollution problems.

DMV ID Number: A number used to locate the electronic smog certificate in the event it is electronically misfiled.

EGR Functional: During the Smog Check inspection, the technician performs a functional test of the EGR system per the vehicle manufacturer's instructions. This ensures the EGR system is operating as designed.

EGR Visual: As part of the Smog Check inspection, the technician performs a visual inspection of all emission components the vehicle is equipped with, including the EGR system. The technician visually inspects the EGR valve and associated plumbing for defects or modifications. The technician will either pass or fail the fuel cap visual test based on observations made during the test.

Emissions Control System (ECS): The Emissions Control System is any of a number of separate emissions control components which, together, reduce the level of pollutants emitted from a vehicle.

Emissions Inspection System (EIS): The EIS can be defined as the complete BAR97 system, the analyzer, dynamometer and peripheral devices.

Emission Standards Category (ESC): ESCs are the pass/ fail emission level cut points for a specific class of vehicles. For example, 1975 through 1978 trucks with a Gross Vehicle Weight Rating (GVWR) over 8500 pounds would have the same cut points, therefore, they are in the same ESC.

Emissions Test: The third of the three vital parts of the California Smog Check. This is where the emissions analyzer tests actual emissions from your vehicle, as measured at the tailpipe. Only the emissions test can label a car a [Gross Polluter](#). Emissions measured include Carbon Monoxide (CO), Carbon Dioxide (CO₂), Hydrocarbons (HC) and Oxygen (O₂). In California's most polluted urban areas (Enhanced Areas), the emissions test also measures levels of oxides of nitrogen (NO_x).

Engine Size: Measured in displacement of either cubic inches, cubic centimeters, or cubic liters.

Evaporative Emission Control System (EVAP): The EVAP system prevents raw gasoline from escaping the vehicle and evaporating into the atmosphere. As part of the inspection, the technician visually inspects the EVAP system and associated plumbing for defects or modifications. The technician will either pass or fail the EVAP system based on observations made during the test.

Exhaust: Usually either single (one pipe) or dual (two pipes).

Exhaust Gas Recirculation (EGR): The vehicle's Exhaust Gas Recirculation system reroutes exhaust gases back through the intake manifold to lower engine temperatures and, in so doing, reduces [NO_x](#) emissions. The EGR functional test is part of the two-speed idle (TSI) [test](#), but is not necessary for the ASM (BAR-97) [test](#) because that equipment tests for NO_x.

Fail: The level of harmful emissions from this vehicle, on this portion of the test, exceeds the range of what is reasonable for this model/engine combination, and is contributing to unhealthy air in California.

Fuel Pipe Restrictor: A functional test of the fuel pipe restrictor is performed only on vehicles being initially registered in California. If the fuel pipe restrictor is oversized due to tampering, then the fuel pipe restrictor functional test fails.

Fuel EVAP Functional: A functional test of the evaporative emission control system is under development by the Bureau. Until the test is implemented, the technician will enter "non applicable" into the analyzer for this test.

Fuel Cap Integrity Test: Tests whether gasoline fumes can leak out from your tank around the cap. Gasoline fumes contain high levels of harmful pollutants, including benzene, a known carcinogen. Studies by the United States

Environmental Protection Agency show that around 30 percent of all the emissions from a vehicle are in the form of fuel evaporation, usually from the fuel tank.

Fuel Cap Visual Test: As part of a Smog Check inspection, the technician visually inspects the fuel tank cap for defects, (i.e. cracked or deteriorated rubber seal). The technician will either pass or fail the fuel cap visual test based on observations made during the test.

Fuel Evaporative Controls: Also known as the charcoal canister, this system stops vapors from the carburetor bowl and the gas tank from evaporating into the atmosphere.

Fuel Type: Only vehicles fueled by gasoline, natural gas, and propane are currently included in the Smog Check program. Light-duty diesel vehicles are excluded.

Functional Inspection: The second of the three vital parts of the California Smog Check. The functional check ensures the correct vehicle timing and [EGR System](#) function. The engine malfunction light is also part of the functional inspection. Emissions system defects identified during the functional inspection are considered unhealthy for the air and result in an overall Smog Check failure.

Gold Shield Dealer: The Gold Shield Dealer station sub-type is a new car dealer in a Basic or Change of Ownership area and has the ability to smog enhanced area cars that are to be sold in their program area.

Gold Shield Station: The Gold Shield Station type has met certain performance criteria and performs [CAP](#) repairs. As of late 2007, Gold Shield stations are authorized to perform initial inspections on Directed Vehicles.

GP: The emissions level, or "cut point," at which a vehicle fails as a [Gross Polluter](#). The emissions of a gross polluter are typically at least twice as high as those of an ordinary failing vehicle. Repairs on a Gross Polluter must be verified at a Test-Only or Gold Shield station. (Click here for Test-Only or Gold Shield [station listings](#)).

Gross Polluter: The emissions levels, or "cut points," established for the highest-polluting vehicles. The emissions of a Gross Polluter are typically at least twice as high as those of an ordinary failing vehicle. Repairs on a Gross Polluter must be verified at a Test-Only or Gold Shield station. (Click here for Test-Only or Gold Shield [station listings](#)).

Gross Vehicle Weight Rating (GVWR): Gross Vehicle Weight Rating is the weight of the vehicle plus the maximum load it is designed to carry. This differs from the vehicle's [Test Weight](#).

Hydrocarbons (HC) (PPM): Hydrocarbons are the component of fuels that produce energy. HC emissions from a vehicle are basically unburned fuel. High levels of HC emissions indicate incomplete fuel combustion, either the result of a misfire or of low engine compression. Unhealthy levels of HC emissions result in a vehicle failing its Smog Check. Hydrocarbons are measured in parts per million (PPM).

Ignition Timing: The timing of the spark relative to the operation of the valves and the placement of the piston in the cylinder. BTDC stands for "before top dead center" a reference to a mark on the main pulley on the front of the engine. For most engines, when the timing is set to 0 degrees TDC, the number one piston will fire at the very top of the stroke. For vehicles where the manufacturer specifies a timing setting, the Smog Check inspection allows plus or minus three degrees from that setting. For vehicles where the manufacturer specifies a timing range, the vehicle must be within that timing range. Advanced timing is when the spark fires before the piston has reached the top of the stroke. Retarded timing is when the spark fires after the piston has reached the top

Inspection Reason: Either biennial (in conjunction with a DMV registration renewal notice), change of ownership (selling a car), or initial (first time registered in California).

License: The California license plate number on your vehicle. This field is left blank when there is no license plate on the vehicle.

Make: The vehicle manufacturer's brand name.

MAX: The maximum allowable emissions for the particular make, model, and year of vehicle. Vehicles with emissions that exceed this level, or "cut point," fail the emissions portion of the Smog Check. There are separate cut points for vehicles failing at ordinary vs. [Gross Polluter](#) levels.

MEAS: The amount of each specific pollutant measured during the emissions test of the vehicle.

Model: The vehicle manufacturer's model name.

Model-Year: The vehicle manufacturer's model year for your vehicle. Not necessarily the year the vehicle was built.

NO (PPM): Oxides of nitrogen (more commonly called NOx) are odorless gases that help form smog, and give smog its characteristic brown color. NO is produced when temperatures in the combustion chambers exceed 2500 degrees Fahrenheit. Excessive engine temperatures could be caused by a lean fuel mixture, by retarded timing, by carbon buildup inside the combustion chamber, or by a malfunctioning engine cooling system. The function of the [EGR System](#) is to reduce NO. Unhealthy levels of NO emissions result in a vehicle failing its Smog Check. NO is measured in parts per million (PPM).

Odometer: The number of miles on your vehicle as reported by the technician based on his or her reading of your vehicle's odometer.

Oxygen Sensor: A device located in the exhaust manifold or exhaust pipe which compares the level of oxygen in the ambient air to the level of oxygen in the exhaust stream and sends a signal to the vehicle's onboard computer, which adjusts the fuel mix accordingly.

Parts Per Million (PPM): This is a unit of measurement for both Oxides of Nitrogen and Hydrocarbons which are measured by the BAR97 emissions analyzer.

Pass: The level of harmful emissions from this vehicle, on this portion of the test, is within the range of what is reasonable for this model/engine combination. Thank you for doing your part to improve our air quality to healthy levels in California.

Positive Crankcase Ventilation (PCV): Positive Crankcase Ventilation removes gases blown around the pistons and rings from the engine crankcase, and reroutes them through the intake manifold to be burnt again.

Regular Test and Repair: The Regular Test and Repair Station type performs inspections and repairs all types of vehicles. This station type does not have the ability to certify directed (Test Only) vehicles or vehicles with emissions in the [gross polluter](#) range.

Revolutions Per Minute (RPM): Revolutions per minute is a measurement of engine speed. Engine turning speed typically does not correspond to the speed of the vehicle.

RepairTech Name / Number: The name of the licensed Smog Check technician who repaired the vehicle, if applicable or known.

Smog Check Certificate Number: This is the number of the electronic certificate sent to the Department of Motor Vehicles (DMV) which allows the owner to complete his or her registration. The Vehicle Inspection Report is proof of the vehicle passing a Smog Check.

Software Version / EIS Number: The BAR-certified version of the software that the emissions analyzer unit used during the test, and the unique identification number for the analyzer unit.

State: The state where the vehicle is registered.

Station Number: The license number of the Smog Check station where the test was performed.

System Malfunction Light: Also known as the "check engine light," this early warning signal in the vehicle cabin indicates engine problems. Such problems could cause serious performance or engine problems for the vehicle if not checked and repaired, and could lead to excessive amounts of pollution being emitted during certain driving conditions which may not be detected during a Smog Check.

Technician Name / Number: The name of the licensed Smog Check technician who performed the test, and his/her individual license number.

Test: The Acceleration Simulation Mode (BAR-97) test measures vehicle emissions levels at 15 mph and 25 mph with driving conditions simulated by the dynamometer, a treadmill-like device. The two-speed idle (TSI or BAR-90) test measures the emissions levels of a stationary vehicle at two engine idle speeds.

Test Only: The Test Only station type has the ability to test and certify all vehicles, though it cannot perform any repairs.

Test Weight: The actual weight of your vehicle as measured during the Smog Check.

Thermostatic Air Cleaner: Draws warm air into a cold engine to help fuel vaporize before burning. This system is important before the engine warms up, to improve cold drivability and cold-engine emissions reductions.

Transmission: Either manual (3-, 4-, 5-, or 6-speed) or automatic.

Type: Vehicles eligible for the Smog Check program include passenger cars, light-duty trucks and heavy-duty trucks.

Vacuum Lines to Sensors/Switches: A visual inspection of the vacuum lines to the sensors and switches in all of the emission control systems on the vehicle is performed. The technician will either pass or fail these components based on observations made during the test.

Vehicle Identification Number (VIN): Your vehicle's unique identification number, usually 17 digits but sometimes less. Typically found on the top of the dash just inside the windshield on the driver's side, or on a plate/sticker in the driver's side door jamb. The BAR code on your DMV registration renewal also contains this number. Contact the DMV if the VIN on your vehicle does not match the VIN on your registration form.

Visual Inspection: The first of the three vital parts of the California Smog Check. The visual inspection checks for missing, disconnected, or visibly damaged emissions-system components, including the catalytic converter, the thermostatic air cleaner, the heat riser and the smog pump. Emissions system defects identified during the visual inspection are considered unhealthy for the air and result in an overall Smog Check failure.

VLT Record #: Your vehicle's record on the Bureau of Automotive Repair's Vehicle Lookup Table (VLT). The table contains specific information for each vehicle model and engine combination available. Information from the VLT regarding your vehicle's weight and aerodynamic resistance allows the Smog Check emissions analyzer to correctly set the resistance on the dynamometer (a treadmill-like device used to test vehicles in the smoggiest urban areas of the state).

Wiring to Sensors/Switches: A visual inspection of the wiring to the sensors and switches in all of the emission control systems on the vehicle is performed. The technician will either pass or fail these components based on observations made during the test.

Statement for Civil Rights

All educational and vocational opportunities are offered without regard to race, color, national origin, gender, or physical disability.
