

SMOG CHECK PROGRAM TRAINING STANDARDS FOR INSTITUTIONS AND INSTRUCTORS

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DEPARTMENT OF CONSUMER AFFAIRS



Bureau of Automotive Repair

Department of Consumer Affairs
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Preface

This document is incorporated by reference in Section 3340.32, Title 16 of the California Code of Regulations (CCR). It provides minimum requirements and standards for the administration of training required for licensing under the Smog Check Program. BAR Certified Institutions (Institutions) and Certified Instructors (Instructors) must adhere to these requirements in the administration of training.

These requirements are based on the knowledge, skills, and abilities associated with each license type and were developed through a series of workshops with subject matter experts from community colleges and private training institutions. The actual requirements are presented in the form of detailed training outlines. An Institution may establish or tailor their training to best suit the needs of their students, as well as the Institution's and/or the individual Instructor's teaching methods. However, all students must meet the specified student learning outcomes by way of the minimum competency assessments.

While this document provides outlines and other specifics that Institutions and Instructors must follow, it does not address actual teaching techniques nor practices. Institutions and Instructors are expected to utilize recognized best practices of the educational community and apply those practices in all aspects of this training.

Moreover, Institutions and Instructors must conduct themselves in a competent and professional manner. They have been entrusted with the responsibility of helping students gain the knowledge and skills necessary to become effective at their chosen career and, ultimately, responsible members of the automotive industry. Institutions and Instructors must act in the best interest of their students, remaining current with technology and BAR programs, and passing along only accurate and objective information.

The information contained in this document is not intended to supersede any laws or regulations related to education.

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1.0 Level 1 Smog Check Inspector Engine and Emission Controls Training

Training Description

Level 1 Engine and Emission Controls Training (Level 1) is intended to provide basic automotive knowledge, skills, and abilities needed to conduct Smog Check inspections. Candidates with minimal or no automotive experience must complete the Level 1 before proceeding to the Level 2 Smog Check Procedures Training (Level 2). Experienced candidates¹ who meet the requirements described below are not required to complete this training. This is the first step in training required to qualify for the State Licensing Examination for Smog Check Inspectors.

Institutions may provide this training as an independent course or as part of a structured automotive technology curriculum. Time of instruction must be sufficient to achieve competency with each student learning outcome and must be no less than sixty-eight (68) hours in duration.

To pass this training, a student must successfully complete a series of hands-on assessments and pass a written examination. Refer to the Student Learning Outcomes (SLOs) below.

Student Learning Outcomes

Upon successful completion of this training, students must, at a minimum, be able to:

1. Describe and demonstrate personal, shop, environmental, equipment, and vehicle safety practices.
2. Describe engine theory, design, and operation for gasoline, diesel, and hybrid vehicles.
3. Describe emission control systems theory, design, and operation.
4. Demonstrate the knowledge, skills, and abilities of the following:
 - Accurately identify engine systems, parts, and components;
 - Accurately identify emission control systems on various vehicle designs;
 - Properly check ignition timing on various vehicle designs;
 - Properly check the operation of exhaust gas recirculation systems on various vehicle designs; and
 - Properly check monitor readiness status on vehicles equipped with On-Board Diagnostics systems II (OBDII).

¹ Experienced candidates may skip Level 1 training if they qualify in one of the following areas: Possess current ASE A6, A8, and L1 certifications; possess an AA/AS degree or Certificate in Automotive Technology and have one (1) year experience; have two (2) years of experience and have completed BAR Specified Diagnostic and Repair Training; or have equivalent military training/experience.

Training Content Areas

At a minimum, course instruction must provide students the knowledge, skills, and abilities needed to meet all SLOs. The training must include instruction in the following content areas:

Training Content Areas
<ul style="list-style-type: none">➤ Safety<ul style="list-style-type: none">➤ Personal➤ Shop➤ Environmental➤ Equipment➤ Vehicle
<ul style="list-style-type: none">➤ Engine Theory, Design, and Operation<ul style="list-style-type: none">➤ Engines➤ Cooling Systems➤ Exhaust Systems➤ Electrical Systems
<ul style="list-style-type: none">➤ General Engine Performance<ul style="list-style-type: none">➤ Ignition Systems➤ Induction Systems➤ Fuel Metering, Fuel Injection, And Carburetion➤ Engine Management➤ On-Board Diagnostics
<ul style="list-style-type: none">➤ Emission Controls<ul style="list-style-type: none">➤ Crankcase Emission Controls➤ Evaporative Emission Controls➤ Air Cleaner➤ Air Injection Systems➤ Ignition Spark Controls➤ Exhaust After Treatment Systems➤ Exhaust Gas Recirculation Systems (Including Variable Valve Timing)

Training Materials

Institutions are responsible for selecting the training materials needed to ensure that students meet the SLOs. At a minimum, the training materials must cover all subjects listed in the Training Content Areas. All training publications and materials must be current and consistent with OEM service specification, repair procedures, or nationally recognized and periodically updated service specifications and procedures found in industry-standard publications. Refer to section 1.9 for more information.

Competency Assessments

- Written examination – mandatory
- Hands-on competency assessments – mandatory

Institutions must assess whether each student has the knowledge, skills, and abilities needed to achieve the SLOs. In doing so, Institutions must develop and administer a written examination and hands-on competency assessments. The hands-on competency assessments may be completed independently or as part of the structured laboratory/shop exercises.

Attachment 1, *Level 1 Minimum Competencies for Engine and Emission Control Training*, lists the minimum competencies that must be achieved as demonstrated by written examination, hands-on assessment, or both.

To pass this training, a student must successfully complete the written examination with a passing score determined by the Institution and properly complete all hands-on assessments. Instructors must initial or “sign-off” each of the required completed hands-on assessments for each student.

The completed written examination and the signed-off hands-on assessments must be retained by the Institution as part of the training records for at least three (3) years.

1.1 Level 2 Training Outline - Smog Check Procedures Training for Smog Check Inspectors

Training Description

Level 2 Smog Check Procedures Training (Level 2) must be completed by all inspector candidates. In general, this training provides students the procedural knowledge, skills, and abilities needed to perform Smog Check inspections. To pass Level 2 training, a student must successfully complete a series of hands-on assessments and pass a written examination. Refer to the SLOs below. Students who successfully complete this training qualify to register for the California Smog Check Inspector Examination.

Time of instruction must be sufficient to ensure that competency is achieved with each SLO and must be no less than twenty-eight (28) hours in length.

Prerequisite: Prior to attending the Level 2, students must either satisfy the experience requirements identified in Section 1.0 or successfully complete the Level 1 course.

Student Learning Outcomes

Upon successful completion of this training, students must, at a minimum, be able to:

1. Describe and demonstrate personal, shop, environmental, equipment, and vehicle safety practices.
2. Describe the laws, regulations, and procedures associated with customer authorization, estimates, and invoices.
3. Describe expectations of a Smog Check licensee.
4. Demonstrate the ability to properly calibrate, initialize, and operate the Smog Check Emission Inspection System (BAR-97) and BAR OBD Inspection System (OIS).
5. Demonstrate the knowledge, skills, and abilities to properly perform Smog Check emissions inspections on all vehicles subject to the Smog Check Program.
6. Describe and demonstrate the knowledge, skills, and abilities to properly perform the following:
 - o Smog Check visual inspections on all vehicles subject to the Smog Check Program.
 - o Smog Check functional tests on all vehicles subject to the Smog Check Program.

Training Content Areas

At a minimum, course instruction must provide students the knowledge, skills, and abilities needed to meet all SLOs. The training must include instruction in the following content areas:

CONTENT AREA	APPLICABLE BAR PUBLICATIONS/REFERENCES ²
Program Overview	Smog Check Reference Guide
Licensee Expectations/Station Obligations	Smog Check Reference Guide
Program Administration <ul style="list-style-type: none"> ➤ Laws and Regulations ➤ Station Requirements ➤ Inspector Requirements ➤ Technician Requirements ➤ Station Operation ➤ Station Audits ➤ Repair Assistance And Cost Waivers ➤ Referee Services 	Smog Check Reference Guide Smog Check On-Board Diagnostic Test Reference Smog Check Manual Automotive Repair Act Laws And Regulations Related To Automotive Repair And Smog Check
Consumer Authorization and Consultation <ul style="list-style-type: none"> ➤ Estimates ➤ Invoices 	Write It Right: A Guide For Automotive Repair Dealers Smog Check Reference Guide
Vehicle Identification <ul style="list-style-type: none"> ➤ Affected Vehicles ➤ Exempted Vehicles ➤ Directed Vehicles ➤ Certification Type ➤ Specially Constructed Vehicles ➤ Military Personnel Vehicles ➤ Fleet Vehicles ➤ Entering Data Into Inspection System 	Smog Check Reference Guide Smog Check On-Board Diagnostic Test Reference Smog Check Manual
Calibration And Operation Of Inspection Equipment And Devices <ul style="list-style-type: none"> ➤ Equipment Maintenance ➤ Emissions Inspection System ➤ OBD Inspection System ➤ Low-Pressure Fuel Evaporative Tester 	Smog Check Manual Equipment Manufacturer's Publications

² Most publications are available on the Bureau's website (www.bar.ca.gov). Institutions and Instructors must select training publications and/or materials needed to adequately instruct students in all content areas. BAR also provides a series of Smog Check multimedia training presentations on the Smog Check website (www.bar.ca.gov).

CONTENT AREA	APPLICABLE BAR PUBLICATIONS/REFERENCES ²
Safety <ul style="list-style-type: none"> ➤ Personal ➤ Shop ➤ Equipment ➤ Vehicle ➤ Environmental 	Smog Check Manual Cal OSHA Publications Equipment Manufacturer's Publications
Smog Check Inspection Procedures <ul style="list-style-type: none"> ➤ Visual Inspection ➤ Functional Inspection ➤ Emission Inspection 	Smog Check Manual Smog Check Reference Guide Operator's Manuals For Smog Check Equipment ET Blasts Prompts From EIS/OIS Software Smog Check On-Board Diagnostic Test Reference All Training Resources Found On BAR's Website
Smog Check Inspection Results <ul style="list-style-type: none"> ➤ Vehicle Inspection Report ➤ Types Of Results 	Smog Check Manual Smog Check Reference Guide

Training Materials

As listed in the Training Content Area above, training publications and/or materials related to Smog Check administration and procedures, produced by BAR, can be found at www.bar.ca.gov. Institutions must incorporate the most recent BAR publications and materials in their training courses. Any materials used to teach automotive and emissions control technology must be selected by the Institution and must be current and consistent with OEM service specification repair procedures, or nationally recognized and periodically updated service specifications and procedures found in industry-standard publications. Refer to section 1.9 for more information.

Competency Assessments

- Written examination – mandatory
- Hands-on competency assessments – mandatory

Institutions must assess whether each student has the knowledge, skills, and abilities needed to achieve the SLOs. In doing so, Institutions must develop and administer a written examination and hands-on competency assessments. The hands-on competency assessments may be completed independently or as part of ordinary laboratory/shop exercises.

Attachment 2, *Level 2 Minimum Competencies for Smog Check Training*, lists the minimum competencies that must be achieved as demonstrated by written examination, hands-on assessment, or both as applicable.

To pass this training, a student must successfully complete the written examination with a passing score determined by the Institution and properly complete all hands-on assessments. Instructors must initial or “sign-off” each of the required completed hands-on assessments for each student.

The completed written examination and the signed-off hands-on assessments must be retained by the Institution as part of the training records for at least three (3) years.

1.2 Training Outline- BAR Specified Diagnostic and Repair Training for Smog Check Repair Technician

Training Description

BAR Specified Diagnostic and Repair Training represents one (1) of four (4) options a Repair Technician candidate may choose to qualify for the initial state licensing examination. Specifically, candidates with at least two (2) years of engine performance repair experience may complete this training to qualify for the licensing examination.

This training is intended to provide students with a high-level of competency in the diagnosis and repair of Smog Check failures and is focused on electrical/electronic management systems and engine/emission control performance. The actual training curriculum must be established by the Institution and must cover all subjects or content areas necessary to achieve the SLOs.

Time of instruction must be sufficient to ensure that competency is achieved with each SLO and must be no less than seventy-two (72) hours in length. Institutions may provide the *BAR Specified Diagnostic and Repair Training* by way of a single course or multiple courses. However, this is a single comprehensive training program and Institutions must issue students one certificate of completion upon completing the entire training program. Additionally, all training must be offered and completed within twelve (12) months from the start of the first class session.

The *BAR Specified Diagnostic and Repair Training* certificate is valid for five (5) years from the date of completion.

Student Learning Outcomes

Upon successful completion of this training, students must, at a minimum, be able to:

General

1. Describe and demonstrate personal, shop, environmental, equipment, and vehicle safety practices.
2. Explain the causes and effects of air pollution as they relate to vehicle emissions.
3. Describe expectations of a Smog Check licensee.
4. Locate, assess, and apply vehicle service/repair information in the process of Smog Check diagnosis and repair.
5. Employ appropriate diagnostic and repair processes based on the problem described by the customer, the cause of inspection failure, or vehicle data/information.
6. Establish a level of repair priority based on the root cause of the Smog Check failure using inspection and vehicle data/information. (e.g., What is the failure? What are the root causes? What are the resulting problems? What repairs are needed? What is the appropriate order of repair? Actual repairs would depend on customer authorization).

Electrical/Electronic Systems

7. Describe basic principles of electricity and electronics.
8. Define electrical terms of watts, voltage, current, and resistance.

9. Describe and identify the types of:
 - o Automotive electrical circuits (series, parallel, and series/parallel).
 - o Electrical and electronic components used in computer controlled automotive systems (e.g., sensors, actuators, modules).
10. Describe theory, design, and operation of automotive electrical and electronic systems.
11. Identify standard electrical and electronic symbols used in automotive applications.
12. Demonstrate application of electrical principals in detecting defects in automotive electrical/electronic circuits.
13. Interpret electrical wiring diagrams and schematics to diagnose automotive electrical and electronic systems.
14. Diagnose engine electrical/electronic malfunctions or defects and determine appropriate repairs.
15. Effectively use various types of industry standard automotive test equipment.

Engine and Emission Control Performance

16. Describe engine theory, design, and operation of the following:
 - o For gasoline, diesel, and hybrid vehicles.
 - o Induction and exhaust systems.
 - o Fuel systems.
 - o Ignition systems (spark and compression).
 - o All emission control systems, e.g., crankcase controls, fuel evaporative controls, air injection, exhaust gas recirculation, catalyst, exhaust after-treatment systems, and integrated emission control management strategies, such as spark control and variable valve timing.
17. Describe the exhaust byproducts generated by internal combustion engines and define the primary emissions resulting from this combustion process.
18. Explain the relationship of the air/fuel ratio (Stoichiometric, rich, and lean) to the combustion process and the resulting emissions.
19. Analyze exhaust gas readings to determine the best diagnostic strategy.
20. Effectively use all engine and emission control diagnostic tools, tests, and inspection equipment required in the Smog Check Manual for STAR Test and Repair stations.
21. Diagnose the following:
 - o Engine mechanical malfunctions and/or defects and determine appropriate repairs.
 - o Induction and fuel system malfunctions and/or defects and determine appropriate repairs.

- o Emission control system malfunctions and/or defects and determine appropriate repairs.
 - o Ignition system malfunctions and/or defects and determine appropriate repairs.
 - o Identify root or underlying causes of engine and emission control malfunctions and differentiate between mechanical, electrical/electronic, and fuel system problems and determine appropriate repairs.
22. Describe the theory, design, and operation of:
- o Computerized engine and emission control systems.
 - o On-Board Diagnostic (OBD) and On-Board Diagnostics II (OBD II) systems.
 - o Identify computerized engine and emission control systems, subsystems, and components.
23. Describe OBD II monitors' theory and operation.
24. Describe OBD II system modes of operation.
25. Evaluate multiple vehicles OBD data, to determine system operational status and condition, including, supported monitors, monitor enabling criteria, monitor readiness, generic and manufacturer fault codes, OBD Mode data, freeze frame data, and fuel control.
26. Demonstrate comprehensive knowledge skill, and ability to do the following:
- o Use an OBD diagnostic scan tool to diagnose various engine and emission control system and component malfunctions.
 - o Use and understand a diagnostic flow chart.
 - o Use a Digital Storage Oscilloscope (DSO) to identify various system/component malfunctions, and malfunctions not identified by an OBD diagnostic trouble code.
 - o Diagnose a no-communication condition with the OBD system.
27. Evaluate OBD data on various vehicle designs to verify proper repair of engine/emission control functionality and management systems.
28. Demonstrate up-to-date comprehensive knowledge, skill, and ability related to diagnostic and repair procedures pertaining to the repair of Smog Check failures.

Training Materials

Institutions are responsible for selecting the training materials needed to ensure that students meet the SLOs. All training publications and materials must be current and consistent with OEM service specification, repair procedures, or nationally recognized and periodically updated service specifications and procedures found in industry-standard publications. Refer to section 1.9 for more information.

Competency Assessments

- Written examination – mandatory
- Hands-on competency assessments – mandatory

Institutions must assess whether each student has the knowledge, skills, and abilities needed to achieve the SLOs. In doing so, Institutions must develop and administer a written examination and hands-on competency assessments. The hands-on competency assessments may be completed independently or as part of the structured laboratory/shop exercises.

To pass this training, a student must successfully complete the written examination with a passing score determined by the Institution and properly complete all hands-on assessments. Instructors must initial or “sign-off” each of the required completed hands-on assessments for each student.

The completed written examination and the signed-off hands-on assessments must be retained by the Institution as part of the training records for at least three (3) years.

1.3 Update Training - Smog Check Inspector License Renewal

Training Description

Licensed Smog Check Inspectors are required to complete at least four (4) hours of BAR certified update training every two (2) years as a part of their license renewal. This training is intended to provide technicians with on-going education in automotive technology and the related Smog Check inspection procedures.

BAR provides the four (4) hour update training for Inspectors on its website at www.bar.ca.gov.

1.4 Update Training - Smog Check Repair Technician License Renewal

Training Description

Licensed Smog Check Repair Technicians are required to complete at least sixteen (16) hours of update training every two (2) years as a part of their license renewal. This training is intended to provide technicians with on-going education in automotive technology and the related diagnostic and repair practices.

BAR does not provide the subjects or materials for the update training. The training courses are created by Instructors and submitted to BAR for approval. Institutions may purchase and teach approved courses, provided they have an agreement to do so with the person(s) and/or entities who obtained the BAR authorization. Technicians can choose an approved course offered by Institutions that best fits their interests and needs.

Training subjects should focus on current technologies but may also revisit subjects that technicians find they need to refresh their knowledge and skills. Update training may be offered in four (4), eight (8), twelve (12), or sixteen (16) hour courses.

Course Authorization

To obtain authorization, an Instructor must submit a complete Training Course Approval Request (BAR403) (Attachment 3) to BAR for review and authorization. The course subject(s) must be relevant to Smog Check and the training materials must be consistent with the Automotive Training Standards described in Section 1.9 of this manual.

Incomplete submittals and/or courses that do not pertain to Smog Check will be rejected and returned to the author. Complete and relevant course submittals will be referred to a committee of subject matter experts (SMEs) for evaluation. The SMEs will be selected from a list of Instructors and other educational professionals who are under contract with BAR for the review process. As a part of this contract, the SMEs sign a confidentiality agreement to protect the intellectual properties of the course developer and ensure that none of the reviewed information is used in the creation of their own courses, unless under agreement with the applicable developer or publisher. To help ensure objectivity in the review process, BAR will remove information relative to the submitting entity and, when applicable, training developer. Review committee members must not review a course submitted by them or any entity they work for or with which they have a financial interest.

At a minimum, the SME committee will ensure the proposed training is of high quality, utilizes teaching techniques that reflect recognized best practices of the educational community, and is consistent with the Automotive Training Standard described in Section 1.9.

Based on the committee's review, the committee will approve, conditionally approve (approved with SMEs recommendations), or reject the submitted course. Courses that are conditionally approved will be returned to the submitting Instructor for revisions. For conditionally approved courses, BAR will review and verify that the Instructor has addressed the committee's recommendations in the course resubmittal before granting final approval.

With the approval from the SME committee, and BAR's approval, BAR will issue a course authorization and assign a unique course identification number.

1.5 Smog Check Citation Training for Inspectors

Training Description

Citation Training is intended to provide licensed inspectors remedial training related to a Smog Check citation. This training is a minimum of eight (8) hours, and up to four (4) hours may be fulfilled by BAR Inspector Update Online Training. However, actual training requirements, including course hours, may vary depending on the citation settlement with BAR Enforcement.

As applicable, the training must include a test to confirm comprehension of any BAR online training, a review of Smog Check inspection procedures, a hands-on assessment using vehicles with emission control defects or tampers, and a final written examination.

1.6 Instructional Requirements

Instructional Styles

Institutions and Instructors are expected to utilize recognized best practices of the educational community in providing instruction. The methods or tools of instruction must include appropriate combinations of the following styles:

- In-person lectures and discussions
- Written materials
- Shop instruction/demonstrations
- Hands-on exercises
- Audio/Visual presentations
- Online instruction – refer to Section 1.9 for more information.

The styles of instruction for any Smog Check Update Training course must be provided to BAR as part of the training authorization submittal. Refer to Section 1.3 for more information.

Classroom/Lab Requirements

For all courses, classroom and/or lab instruction must be limited to no more than twenty-five (25) students per Certified Instructor per class session. Furthermore, no more than five (5) students must be assigned to each vehicle when performing hands-on exercises. In order to properly perform the hands-on exercises, all students must be given equal access and time to the vehicles and equipment.

In addition, Institutions must have a sufficient number of vehicles, including eight-year-old or newer diesel, gasoline, and hybrid-powered vehicles, available for lab instruction/demonstrations, hands-on exercises, and assessments. The completed written examination and signed-off hands-on assessments must be retained by the Institution as part of the training records for at least three (3) years. The vehicle makes, models, and model-years, must correspond to the specific instructions and/or assessments. For example, shop instruction related to the diagnosis of a P0303 misfire code would require an OBDII equipped vehicle with an introduced malfunction that would cause a misfire in the number three (3) cylinder. Pursuant to Section 3340.32, et seq. of the CCRs, schools must have sufficient diagnostic and test equipment available for lecture and lab activities to accommodate the students in any BAR approved training course.

Instructor Requirements

Institutions shall utilize Instructors certified by the Bureau pursuant to section 3340.33 of the CCRs to conduct training and retraining.

A certified institution may temporarily utilize a representative of vehicle manufacturers or automotive component manufacturers to present training specific to their respective products and/or technologies. In these instances, an Instructor shall be present during the training and the Institution shall be responsible for the training in the same manner as if the training was conducted directly by the Certified Instructor. The duration of these trainings shall not exceed the following time limits:

For BAR's Level 1 training and Specified Diagnostic and Repair Training – 6 hours

For BAR's Level 2 training – 1 hour

For any BAR Update training, a maximum 15% of total time for the class.

1.7 Examination Requirements

Institutions must assess whether each student has the knowledge, skills, and ability needed to achieve the student learning outcomes for each training course. In doing so, Institutions must administer a written examination (develop when necessary) and, as applicable, hands-on competency assessments. To pass the training, a student must successfully complete the written examination with a passing score determined by the Institution and demonstrate complete competency with all hands-on assessments. The hands-on assessments must only be administered by the Instructor and the Instructor must initial or “sign-off” each student as they complete the hands-on assessments.

The completed written examination and the signed-off hands-on assessments must be retained by the Institution as part of the training records for at least three (3) years.

1.8 Use of BAR Website for Student Enrollment and Certificates of Completion

Institutions must use a BAR designated website to report student enrollment and performance (pass/fail) for each training course. The website must also be used to issue respective course certificates of completion.

All completed courses shall be closed within 72 hours of the final class meeting's conclusion.

1.9 Automotive Training Standard

Training publications and/or materials related to Smog Check administration and procedures, produced by BAR, can be found at www.bar.ca.gov. Institutions must incorporate the most recent BAR publications and materials in their training courses.

Any materials used to teach automotive and emissions control technology must be selected by the Institution and/or Instructor and must be current and consistent with OEM service specification repair procedures, or nationally recognized and periodically updated service specifications and procedures found in industry-standard publications. In addition, all training curriculum and materials must be current with automotive technology and the latest in diagnostic and repair practices.

1.10 Online Training

Online training may be used for a portion of training courses but cannot account for more than 25% of the total instructional hours for any one course. This applies to the Level 1 Engine and Emission Controls Training, Level 2 Smog Check Procedures Training, and the BAR Specified Diagnostic and Repair Training courses. Online training components must include interactive exercises as well as quizzes with feedback for correct answers. All online automotive training courses must meet applicable ADA requirements.

Attachment 1 Level 1 Minimum Competencies for Engine and Emission Control Training

Safety	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe and demonstrate application of proper safety practices (personal, shop, tools, equipment, environmental, and vehicle).	Yes	Yes	-

Engine Theory, Design, and Operation (Gasoline/Diesel)	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe four-stroke operation.	Yes	N/A	-
Describe spark-ignited and compression-ignited combustion.	Yes	N/A	-
Describe how poor engine performance can affect emissions output, as related to Smog Check results.	Yes	N/A	-
Identify and locate primary engine systems and components.	Yes	Yes	-
Recognize abnormal engine noises and/or vibrations that would cause a safety risk.	N/A	Yes	-
Inspect and assess condition of drive belts, pulleys, and tensioners (related to safety).	N/A	Yes	-

Cooling System	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe cooling-system design, operation, and normal operating temperature as applicable to safety and emissions.	Yes	N/A	-
Describe how a poor performing cooling-system can affect emissions output, as related to Smog Check results.	Yes	N/A	-
Identify and locate cooling-system components.	Yes	Yes	-
Safely check for proper coolant level.	Yes	Yes	-
Check and identify proper engine operating temperature.	Yes	Yes	-

Exhaust System	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Identify exhaust system components and distinguish between single and dual exhaust systems.	Yes	Yes ⁽¹⁾	-
Recognize excessive exhaust smoke.	N/A	Yes ⁽¹⁾	-

Electrical	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe and demonstrate basic electrical principles to conduct Smog Check functional test.	Yes	Yes	-
Demonstrate use and understanding of electrical wiring diagrams.	N/A	Yes	-
Demonstrate proper use of component locator.	Yes	Yes	-
Demonstrate the proper use of the primary functions of a digital multimeter.	N/A	Yes	-

Ignition System	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe ignition systems theory, design, and operation (spark-ignited and compression-ignited).	Yes	N/A	-
Identify and locate ignition system types and components (primary and secondary ignition).	Yes	Yes	-
Describe how a malfunctioning ignition system can affect emissions output, as related to Smog Check results.	Yes	N/A	-
Check and verify ignition timing setting on various vehicle designs. This includes the ability to use reference sources to determine proper timing check procedures (underhood label, emission control application guides (ECS), and service/repair manuals).	N/A	Yes	-

Induction System	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Identify and locate air induction and air cleaner assemblies and components.	Yes	Yes	-
Identify and locate the intake manifold.	Yes	Yes	-
Describe and locate positive pressure induction systems (turbocharger and components, supercharger and components).	Yes	Yes	-
Describe and measure manifold pressure.	Yes	Yes	-
Identify and locate the source of ported and venturi vacuum.	Yes	N/A	-

Fuel Injection	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe fuel injection systems theory, design, and operation.	Yes	N/A	-
Describe how a malfunctioning fuel injection system can affect emissions output, as related to Smog Check results.	Yes	N/A	-
Identify and locate fuel injection system types and components on various vehicle designs (for example: CIS, TBI, multiport, direct, diesel).	Yes	Yes	-
Identify and locate diesel fuel system components.	Yes	Yes ⁽¹⁾	-

Carburetion	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe carburetor theory, design, and operation, including feedback operation.	Yes	N/A	-
Describe how a malfunctioning carburetor can affect emissions output, as related to Smog Check results.	Yes	N/A	-
Identify components of a carburetor (e.g. early fuel evaporation, anti-dieseling controls, deceleration controls).	N/A	Yes ⁽¹⁾	-
Check and verify proper engine idle speed, per manufacturer's specification.	N/A	Yes ⁽¹⁾	-

Engine Management System and On-Board Diagnostics	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe engine management systems and on-board diagnostics theory, design, and operation.	Yes	N/A	-
Identify engine management system components, actuators, sensors, and switches.	Yes	Yes	-
Describe OBD II monitor enabling criteria, including drive-cycle routines.	Yes	N/A	-
Check for OBD II communication at the diagnostic link connector (DLC).	N/A	Yes	-
Locate the DLC and connect a scan tool on various vehicles.	N/A	Yes	-
Use a scan tool to check OBD II monitor status.	N/A	Yes	-

Emissions Controls, Theory, Design, and Operation	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe theory, design, and operation of the following emission control systems: <ul style="list-style-type: none"> • Positive Crankcase Ventilation (PCV) • Evaporative (EVAP) • Exhaust Gas Recirculation (EGR) • Thermostatic Air Cleaner (TAC) • Air Injection System (AIS) • Ignition Spark Controls (SPK) • Catalytic Converter (CAT) • Diesel Oxidation Catalyst (DOC) • Periodic Trap Oxidizer (PTOX) • Diesel Particulate Filter or Trap (DPF) • Diesel Selective Catalyst Reduction (SCR) • Other (e.g. Diesel Exhaust Fluid, Variable Valve Timing) 	Yes	N/A	-
Identify and locate the following emission control systems in their entirety: <ul style="list-style-type: none"> • Positive Crankcase Ventilation (PCV) • Evaporative (EVAP) • Exhaust Gas Recirculation (EGR) • Air Injection System (AIS) • Ignition Spark Controls (SPK) • Catalytic Converter (CAT) • Other 	N/A	Yes	-
Identify and locate the following emission control systems in their entirety: <ul style="list-style-type: none"> • Diesel Oxidation Catalyst (DOC) • Periodic Trap Oxidizer (PTOX) • Diesel Particulate Filter or Trap (DPF) • Diesel Selective Catalyst Reduction (SCR) 	N/A	Yes	-
Check exhaust gas recirculation (EGR) system operation, for vehicles in which the Smog Check EGR functional test applies (traditional, backpressure, computer controlled).	N/A	Yes	-

Emissions Cause and Effect	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Define the following emissions and their causes and effects: <ul style="list-style-type: none"> • Carbon Monoxide (CO) • Hydrocarbon (HC) • Oxides of Nitrogen (NOx) • Carbon Dioxide (CO₂) • Oxygen (O₂) 	Yes	N/A	-

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Attachment 2 Level 2 Minimum Competencies for Smog Check Procedures Training

Safety	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe and demonstrate application of proper safety practices (personal, shop, tools, equipment, environmental, and vehicle).	Yes	Yes	-
Describe and demonstrate the ability to assess whether a vehicle is safe for inspection.	Yes	Yes	-

Administration	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe expectations of a Smog Check licensee.	Yes	N/A	-
Describe Smog Check station requirements.	Yes	N/A	-
Describe Smog Check inspector requirements.	Yes	N/A	-
Describe Smog Check station operation requirements.	Yes	N/A	-
Describe the provisions of the Consumer Assistance Program.	Yes	N/A	-
Describe repair cost waiver requirements.	Yes	N/A	-
Prepare a work estimate consistent with the requirements as outlined in Write It Right: A Guide for Automotive Repair Dealers (Write It Right).	N/A	Yes	-
Prepare an invoice consistent with the requirements as outlined in Write It Right.	N/A	Yes	-
Describe sublet rules related to Smog Check inspection.	Yes	N/A	-
Identify vehicles subject to Smog Check inspection.	Yes	N/A	-
Describe directed vehicle inspection requirements.	Yes	N/A	-
Describe Smog Check services provided by the State Referee.	Yes	N/A	-
Identify vehicles required to be inspected by the State Referee.	Yes	N/A	-
Describe when to use the Smog Check pre-inspection.	Yes	N/A	-
Describe which repairs are allowed during a Smog Check inspection.	Yes	N/A	-
Describe the process for documenting a visible smoke test failure.	Yes	N/A	-
Describe requirements for signing, storing, and distributing the Vehicle Inspection Report (VIR).	Yes	N/A	-
Describe the special circumstances that must be documented on the VIR.	Yes	N/A	-

Equipment Maintenance	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe proper equipment maintenance.	Yes	N/A	-
Perform calibrations of the Emission Inspection System (EIS), including all subsystems and equipment.	N/A	Yes	-
Demonstrate knowledge of and ability to perform routine maintenance on the EIS.	N/A	Yes	-
Describe the prohibitions of test equipment modifications.	Yes	N/A	-
Demonstrate knowledge and ability to verify operation of all EIS and OIS components and equipment.	N/A	Yes	-
Demonstrate knowledge of methods to address persistent EIS Low Flow and HC Hang-up issues.	Yes	N/A	-
Demonstrate knowledge and ability of troubleshooting procedures on LPFET to restore function.	N/A	Yes	-
Demonstrate knowledge and ability of troubleshooting procedures on OIS to restore function.	N/A	Yes	-

Visual Inspection	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe the general purpose, design, and operation of the following emission control systems: <ul style="list-style-type: none"> • Crankcase Controls • Fuel Metering Systems • Evaporative (EVAP) • Exhaust Gas Recirculation/Variable Valve Timing (EGR/VVT) • Thermostatic Air Cleaner (TAC) • Air Injection System (AIS) • Ignition Spark Controls (SPK) • Exhaust Gas After-Treatment Systems: <ul style="list-style-type: none"> o Catalytic Converter (CAT) o Diesel Oxidation Catalyst (DOC) o Periodic Trap Oxidizer (PTOX) o Diesel Particulate Filter or Trap (DPF) o Diesel Selective Catalyst Reduction (SCR) • Induction Systems (turbocharger/supercharger) • Other Emission Controls 	Yes	N/A	-
Describe the visual inspection pass/fail criteria (OIS and BAR-97).	Yes	N/A	-
Describe and determine vehicle emissions certification type.	Yes	Yes	-
Identify and record the required emission controls for at least three (3) different vehicle makes, using ECS guides and emission control labels.	Yes	Yes	-

Visual Inspection	Written Assessment	Hands-On Assessment	Instructor Sign-Off⁽²⁾
Identify exhaust system components and distinguish between single and dual exhaust systems.	Yes	Yes ⁽¹⁾	-
Demonstrate the knowledge and ability to use electrical wiring diagrams.	Yes	N/A	-
Demonstrate the knowledge and ability to use vacuum diagrams.	Yes	N/A	-
Demonstrate the knowledge and ability to use electrical component locator.	Yes	Yes	-
Describe the Smog Check inspection requirements for aftermarket parts.	Yes	N/A	-
Describe California Air Resources Board (CARB) Executive Order (EO) label requirements for aftermarket parts, including aftermarket catalytic converters.	Yes	N/A	-
Demonstrate the ability to check for CARB approval of aftermarket parts.	N/A	Yes	-
Describe and demonstrate knowledge and ability to perform the liquid fuel leak inspection.	Yes	Yes	-
Describe and demonstrate knowledge and ability to perform the gasoline vehicle visible smoke test.	Yes	Yes	-
Describe and demonstrate knowledge and ability to perform the diesel vehicle visible smoke test.	Yes	Yes	-
Identify and locate gasoline induction and fuel system components.	Yes	Yes	-
Identify and locate diesel induction and fuel system components.	Yes	Yes	-
Identify engine management system components, actuators, sensors, and switches.	Yes	Yes	-
Demonstrate knowledge and ability to conduct a visual inspection on at least three (3) different vehicle makes. Identify each required emission control system in its entirety (all components). Recognize and accurately enter/report the pass/fail conditions.	N/A	Yes	-

Emissions Tests	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe the conditions that must be met before beginning a Smog Check emissions test.	Yes	N/A	-
Demonstrate knowledge and ability to prepare a vehicle for an emissions test, including safety, ventilation, and vehicle warm-up procedures.	N/A	Yes	-
Describe the automated second chance test for vehicles that fail the Two Speed Idle (TSI) test.	Yes	N/A	-
Identify the types of vehicles that are incompatible with the Acceleration Simulation Mode (ASM) test.	Yes	N/A	-
Describe the gear selection requirements for the ASM test.	Yes	N/A	-
Describe emissions test abort conditions.	Yes	N/A	-
Demonstrate knowledge and ability to perform emissions tests.	Yes	Yes	-

Functional Tests	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe OBD II monitor enabling criteria, including the purpose of drive-cycles.	Yes	N/A	-
Identify vehicles subject to the OBD II functional test.	Yes	N/A	-
Describe Smog Check OBD II monitor readiness requirements.	Yes	N/A	-
Demonstrate knowledge and ability to locate and connect scan tool or OIS/EIS to the diagnostic link connector (DLC) on at least three (3) different vehicle makes.	Yes	Yes	-
Describe how to address vehicles with known OBD II test difficulties.	Yes	N/A	-
Identify the vehicles subject to the malfunction indicator light (MIL) functional test.	Yes	N/A	-
Describe the difference between a MIL and a maintenance reminder light.	Yes	N/A	-
Describe and demonstrate knowledge and ability to conduct the MIL functional test on at least three (3) different vehicle makes.	Yes	Yes	-
Identify the vehicles subject to ignition timing functional test, include exception for non-adjustable timing.	Yes	Yes	-
Identify the manufacturer ignition timing specifications for at least three (3) different vehicle makes. Use emission control labels, ECS guides, or other reliable vehicle references.	Yes	N/A	-
Describe the engine revolutions per minute (RPM) requirements for the ignition timing functional test.	Yes	N/A	-

Functional Tests	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Describe the pass/fail criteria for the ignition timing functional test.	Yes	N/A	-
Check and record the ignition timing on at least three (3) different vehicle makes.	N/A	Yes	-
Identify vehicles subject to the EGR test.	Yes	N/A	-
Describe the operation of various EGR systems (conventional, backpressure, electric/electronic controlled and/or actuated).	Yes	N/A	-
Describe and demonstrate knowledge and ability to conduct the EGR functional test on at least three (3) different vehicle makes.	Yes	Yes	-
Identify vehicles subject to the fuel cap integrity test.	Yes	N/A	-
Describe and demonstrate the knowledge and ability to conduct the fuel cap integrity test.	Yes	Yes	-
Identify vehicles subject to the low-pressure fuel evaporative test (LPFET).	Yes	N/A	-
Describe and demonstrate the knowledge and ability to conduct the LPFET functional test on at least three (3) different vehicle makes.	Yes	Yes	-

General	Written Assessment	Hands-On Assessment	Instructor Sign-Off ⁽²⁾
Perform at least four (4) complete Smog Check inspections using the OIS and BAR-97 EIS (at least two (2) on each platform).	N/A	Yes	-

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