

Course Outline of Record

1. Course Code: AUTO-054D
2.
 - a. Long Course Title: Smog Check Inspector Training, Level 1 & 2
 - b. Short Course Title: SMOG INSPECTOR 1 & 2
3.
 - a. Catalog Course Description:
 This course is designed to provide students with fundamental knowledge of engine and emission control theory, design and operation. Students who successfully complete this training at a BAR-certified school will have met the BAR's training requirements to qualify to take the Smog Check Inspector state licensing examination.
 - b. Class Schedule Course Description:
 This course is designed to provide students with fundamental knowledge of engine and emission control theory, design and operation. Students who successfully complete this training at a BAR-certified school will have met the BAR's training requirements to qualify to take the Smog Check Inspector state licensing examination.
 - c. Semester Cycle (if applicable): Every semester
 - d. Name of Approved Program(s):
 - AUTOMOTIVE EMISSIONS Certificate of Achievement
4. Total Units: 4.00 Total Semester Hrs: 108.00
 Lecture Units: 3 Semester Lecture Hrs: 54.00
 Lab Units: 1 Semester Lab Hrs: 54.00
 Class Size Maximum: 21 Allow Audit: No
 Repeatability No Repeats Allowed
 Justification 0
5. Prerequisite or Corequisite Courses or Advisories:
Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm1-A)
 Advisory: AUTO 014A
6. Textbooks, Required Reading or Software: (List in APA or MLA format.)
 - a. Bureau of Automotive Repair (2014). Smog Check Reference Guide (2014/e). State of California.
 College Level: Yes
 Flesch-Kincaid reading level: 13
 - b. Bureau of Automotive Repair (2013). Smog Check Inspection Procedures Manual (2013/e). State of California.
 College Level: Yes
 Flesch-Kincaid reading level: 13
 - c. Bureau of Automotive Repair (2014). Laws and Regulations Manual, Smog Check (2014/e). State of California.
 College Level: Yes
 Flesch-Kincaid reading level: 13
 - d. Other new test books or resource material that may be required by the State of California, Department of Consumer Affairs, Bureau of Automotive Repair.
7. Entrance Skills: *Before entering the course students must be able:*
 - a. Demonstrate skills and knowledge necessary to understand automobile engine computer control systems at the relationship to drivability problems.
 - AUTO 014A - Diagnose ignition system related problems such as no-starting, hard starting, engine misfire, poor drivability, spark knock, power loss, poor mileage, and emissions concerns on vehicles with electronic ignition (distributorless) systems; determine necessary action.
 - AUTO 014A - Diagnose hot or cold no-starting, hard starting, poor drivability, incorrect idle speed, poor idle,

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flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems on vehicles with injection-type fuel systems; determine necessary action.

b. Develop qualifications necessary to gain and maintain employment as an automotive technician.

- AUTO 014A - Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.
- AUTO 014A - Identify and interpret engine performance concern; determine necessary action.

c. Demonstrate an understanding of the relationship between proper engine operation and the environment.

- AUTO 014A - Diagnose engine mechanical, electrical, electronic, fuel, and ignition concerns with an oscilloscope and/or engine diagnostic equipment; determine necessary action.

d. Effectively use and understand shop/service manuals, specifications, and electronic data retrieval systems as related to automotive engine computer systems.

- AUTO 014A - Research applicable vehicle and service information, such as engine management system operation, vehicle service history, service precautions, and technical service bulletins.
- AUTO 014A - Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, and calibration decals).

8. Course Content and Scope:

Lecture:

1. Safety
 - a. Personal
 - b. Shop
 - c. Equipment
 - d. Vehicle
2. Engine Theory, Design and Operation (gasoline and diesel).
 - a. Engines
 - b. Cooling Systems
 - c. Exhaust Systems
 - d. Electrical Systems
3. Engine Performance (gasoline and diesel).
 - a. Ignition Systems
 - b. Induction Systems
 - c. Fuel Metering-fuel Injection and carburetion.
 - d. Engine Management
 - e. On-Board Diagnostics
4. Emission Controls (gasoline and diesel).
 - a. Crankcase Emission Controls
 - b. Evaporative Emission Controls
 - c. Thermostatic Air Cleaner
 - d. Air Injection Systems
 - e. Ignition Spark Controls
 - f. Exhaust After Treatment Systems
 - g. Exhaust Gas Recirculation Systems
5. Standards of Practice / Station Obligations
6. Program Administration
 - a. Laws and Regulations
 - b. Station Requirements
 - c. Inspector Requirements
 - d. Technician Requirements
 - e. Station Operation
 - f. Station Audits
 - g. Repair Assistance and Cost Waivers
 - h. Referee Services
7. Consumer Authorization and Consultation
 - a. Estimates
 - b. Invoices
8. Vehicle Identification

- a. Affected Vehicles
- b. Exempted Vehicles
- c. Directed Vehicles
- d. Certification Type
- e. Specially Constructed Vehicles
- f. Military Personnel Vehicles
- g. Fleet Vehicles
- h. Emissions Inspection System Vehicle Entries
- 9. Calibration of Inspection Equipment and Devices
 - a. Equipment Maintenance
 - b. Emissions Inspection System
 - c. Low Pressure Fuel Evaporative Tester
- 10. Visual Inspection Procedures - Gasoline and Diesel.
 - a. Pass/Fail Criteria (tampered, defective)
 - b. Vehicle Emission Control Information Label
 - c. BAR Referee Label
 - d. Aftermarket Parts Label
 - e. Crankcase Emission Controls
 - f. Evaporative Emission Controls
 - g. Thermostatic Air Cleaner
 - h. Air Injection Systems
 - i. Ignition Spark Controls
 - j. Exhaust After Treatment Systems
 - k. Exhaust Gas Recirculation Systems
 - l. Liquid Fuel Leak Inspection
 - m. Other Engine and Emission Controls Systems
 - n. Aftermarket Parts
 - o. Gasoline Visible Smoke Test
 - p. Diesel Visible Smoke Test
 - q. Emissions Inspection System Entries
- 11. Emission Test Procedures
 - a. Safety Precautions
 - b. Test Application
 - c. Vehicle Preconditioning
 - d. Acceleration Simulation Mode
 - e. Two-Speed Idle
- 12. Functional Inspection Procedures
 - a. Test Application
 - b. Malfunction Indicator Light
 - c. OBDII
 - d. Ignition Timing
 - e. Exhaust Gas Recirculation System
 - f. Fuel Cap Integrity
 - g. Low Pressure Fuel Evaporation Test (LPFET)
 - h. Emissions Inspection System Entries
- 13. Smog Check Inspection Results
 - a. Vehicle Inspection Report
 - b. Vehicle Passes Inspection
 - c. Vehicles Fails Inspection

Lab: *(if the "Lab Hours" is greater than zero this is required)*

- A. Proper safety practices and procedures
- B. Identification of Vehicles, Engines, and Emission Controls
 - 1. Vehicle identification
 - 2. Systems application
 - 3. Grey market vehicles
 - 4. Engine changes
 - 5. After market smog related components
- C. Diagnosis and Testing of 1980 and Newer Vehicles

1. Trouble codes and retrieval
2. Scan tools
3. Trouble shooting trees
4. Diagnosis and repair
 - a. Fuel systems
 - b. Timing controls
 - c. Emission systems
- D. Five-gas exhaust emissions and test failure
 1. Hydrocarbons
 2. Carbon monoxide
 3. Carbon dioxide
 4. Oxides of nitrogen
 5. Oxygen
- E. Vehicle and equipment preparation of loaded mode testing
 1. Performing a loaded mode test
 2. Discussion and explanation of Vehicle Inspection Report
- F. Perform SMOG tests
 1. Diesel
 2. Containment
 3. Non-containment
- G. Other minimum competencies required by Bureau of Automotive Repair (BAR)

9. Course Student Learning Outcomes:

1.
Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2.
Describe engine theory, design, and operation for both gasoline and diesel vehicles.
3.
Demonstrate their knowledge, skills and abilities in identifying engine systems, parts and components.
4.
Describe emission control systems theory, design and operation for both gasoline and diesel vehicles.
5.
Demonstrate their knowledge, skills and abilities in identifying emission control systems on various vehicle designs.
6.
Demonstrate their knowledge, skills and abilities in checking ignition timing on various vehicle designs.
7.
Demonstrate their knowledge, skills and abilities in checking the operation of exhaust gas recirculation systems on various system designs.
8.
Demonstrate their knowledge, skills and abilities in checking monitor readiness on vehicles equipped with second generation on-board diagnostics systems (OBDII).

9.

Describe the laws, regulations, and procedures associated with consumer authorization of inspections and the overall administration of the Smog Check Program.

10.

Describe the standards of practice expected of Smog Check Inspectors.

11.

Demonstrate ability to calibrate an emission inspection system.

12.

Demonstrate their knowledge, skills and abilities in performing Smog Check emission tests on various vehicle designs.

13.

Demonstrate their knowledge, skills and abilities in performing Smog Check visual inspections on various vehicle designs.

14.

Describe and demonstrate they have the knowledge, skills and abilities to perform smog check functional tests on various vehicle designs.

10. Course Objectives: *Upon completion of this course, students will be able to:*

- a. Identify basic components of a vehicle emission control system components
- b. Describe the operation of vehicle emission control system components
- c. Understand the laws, rules, and regulations pertaining to emission control system inspection and certification
- d. Demonstrate the proper procedure for conducting a vehicle emission inspection
- e. Demonstrate skill in the operation, diagnosis, and repair of automotive engine computer systems.
- f. Demonstrate an understanding of the relationship between proper engine operation and the environment.
- g. Use and understand shop/service manuals, specifications, and electronic data retrieval systems as related to automotive engine computer systems.
- h. Demonstrate the safe use of the chassis dynamometer.
- i. Demonstrate the use of diagnostic test equipment to repair emission test failures
- j. Identify the differences between the OBD I and OBD II computer systems
- k. Compare and contrast the diagnostic techniques of OBD I and OBD II

11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*

- a. Collaborative/Team
- b. Demonstration, Repetition/Practice
- c. Discussion
- d. Laboratory
- e. Lecture
- f. Observation
- g. Participation
- h. Technology-based instruction

Other Methods:

| |
|---|
| Reading assignments in textbook and technical manuals |
|---|

12. Assignments: *(List samples of specific activities/assignments students are expected to complete both in and outside of class.)*

In Class Hours: 108.00

Outside Class Hours: 108.00

a. In-class Assignments

1. Readings from required text.
2. Assigned readings and written summaries from selected instructor handouts.
3. Written summaries and analysis of assigned websites.
4. Vehicle diagnosis, troubleshooting and repair of personal, shop and other vehicles to be evaluated by the instructor during lab time.
5. Hands-on lab worksheets matching each course objective. These will be graded by the instructor throughout the semester during lab time.
6. Must develop teamwork skills through lab activities.

b. Out-of-class Assignments

1. Homework from required text.
2. Completion of 3 SP2 safety tests.
3. Assigned readings and written summaries from selected instructor handouts.
4. Written summaries and analysis of assigned websites.
5. Worksheets provided by instructor.
6. Must develop teamwork skills through assigned special projects.

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*

- College level or pre-collegiate essays
Short essays on engine or sub-system operation
- Written homework
- Reading reports
- Laboratory projects
- Group activity participation/observation
- True/false/multiple choice examinations
- Mid-term and final evaluations
- Student participation/contribution
- Student preparation
- Other
Hands-on Competency

14. Methods of Evaluating: Additional Assessment Information:

One instructor and multiple BAR generated multiple choice test with passing score of 70% for BAR certificate Notebook

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*

PO-BS Problem Solving

Use background information in a subject to understand the nature of a problem and transfer information to new problems accordingly.

Identify what isn't known, but needs to be known in order to solve a problem (depending on the problem domain, reading and/or mathematical skills are helpful).

IO - Scientific Inquiry

Collect and analyze data. Skills of data collection include an understanding of the notion of hypothesis testing and specific methods of inquiry such as experimentation and systematic observation.

IO - Critical Thinking and Communication

Apply principles of logic to problem solve and reason with a fair and open mind.

Summarize, analyze, and interpret oral and written texts, with the ability to identify assumptions and differentiate fact from opinion.

16. Comparable Transfer Course

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| | | | | |
|--------------------------|---------------|----------------------|---------------------|---------------------|
| University System | Campus | Course Number | Course Title | Catalog Year |
| CSU | CSU Fullerton | | | |

17. Special Materials and/or Equipment Required of Students:

1. 3-ring binder
2. Safety glasses meeting ANSI Z87.1 standards

18. Materials Fees: Required Material?

| | | |
|-------------------------|----------------------|-------------------|
| Material or Item | Cost Per Unit | Total Cost |
|-------------------------|----------------------|-------------------|

19. Provide Reasons for the Substantial Modifications or New Course:

The Bureau of Automotive Repair (BAR) changed the requirements for the Smog Check training.

20. a. Cross-Listed Course (*Enter Course Code*): *N/A*
 b. Replacement Course (*Enter original Course Code*): AUTO-054C

21. Grading Method (*choose one*): Letter Grade Only

22. MIS Course Data Elements

- a. Course Control Number [CB00]: CCC000583743
- b. T.O.P. Code [CB03]: 94840.00 - Alternative Fuels and Adv
- c. Credit Status [CB04]: D - Credit - Degree Applicable
- d. Course Transfer Status [CB05]: C = Non-Transferable
- e. Basic Skills Status [CB08]: 2N = Not basic skills course
- f. Vocational Status [CB09]: Advanced Occupational
- g. Course Classification [CB11]: Y - Credit Course
- h. Special Class Status [CB13]: N - Not Special
- i. Course CAN Code [CB14]: *N/A*
- j. Course Prior to College Level [CB21]: Y = Not Applicable
- k. Course Noncredit Category [CB22]: Y - Not Applicable
- l. Funding Agency Category [CB23]: Y = Not Applicable
- m. Program Status [CB24]: 1 = Program Applicable

Name of Approved Program (*if program-applicable*): AUTOMOTIVE EMISSIONS

Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)

23. Enrollment - Estimate Enrollment

First Year: 21
 Third Year: 21

24. Resources - Faculty - Discipline and Other Qualifications:

- a. Sufficient Faculty Resources: Yes
- b. If No, list number of FTE needed to offer this course: *N/A*

25. Additional Equipment and/or Supplies Needed and Source of Funding.

N/A

26. Additional Construction or Modification of Existing Classroom Space Needed. (*Explain:*)

N/A

27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES

Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes

28. Originator Douglas Hugh Redman Origination Date 01/03/17

