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Course Outline for AUTO 70A

BASIC CLEAN AIR CAR COURSE

Effective: Spring 2017

I. CATALOG DESCRIPTION:
AUTO 70A — BASIC CLEAN AIR CAR COURSE — 3.50 units

his course covers the basic understanding of vehicle emissions systems including their computers and how to identify and diagnose them effectively. This course will also cover advanced diagnostic and repair procedures on 2nd Generation On Board Diagnostic (OBD II vehicles using the latest electronic interface diagnostic equipment as well as rules and regulations in the revision of the Smog Check Manual. This course is a combination of the previous Basic Clean Air Car Course, the 2003 Update Course, and the OBD II Update Course. Industry Advisory: In order to be eligible to take the State Licensing Exam at completion of the course/program, students must also have one-year trade experience in engine performance/emissions, or nine semester units (13 quarter units) in Automotive Technology, or 180 hours at an accredited automotive school.

2.50 Units Lecture 1.00 Units Lab

Grading Methods:
Letter or P/NP

Discipline:

	MIN
Lecture Hours:	45.00
Lab Hours:	54.00
Total Hours:	99.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. understand the concepts, techniques, principles, and legal requirements of the California Smog Check Program, including changes and updates published in the latest edition of the Smog Check Manual;
B. analyze a vehicle with emission control problems to a criterion established by the instructor based on Bureau of Automotive Repair and industry standards by using the newest in automotive and emission control theory;
C. demonstrate understanding of vehicle emission systems applications for theory, operation and diagnosis, to a standard set by the Bureau of Automotive Repair, through manipulative, oral, or written assignments, and/or class discussion;
D. demonstrate proper operating procedures and safety precautions using a 5-Gas Analyzer to conduct a complete smog inspection;
E. apply automotive computer system theory to evaluate, diagnose, and repair an emissions malfunction caused by a component of the computer system;
F. perform advanced diagnostic and repair procedures on vehicles equipped with 2nd Generation On Board Diagnostics (OBD II using the latest electronic interface equipment;
G. understand the operating theory of wide band oxygen sensor by interpreting scan tool data and the ion transfer between platinum zirconium electrodes.

V. CONTENT:
A. The (48 hour) Basic Clean Air Car Course is divided into seven parts called modules which correspond with the State Examination modules:
1. Rules and Regulations
2. Automotive Theory
3. Emission Control Theory and Operations
4. Vehicle Emission Systems Applications
5. TAS Operation and Testing Procedures
6. Computer Systems Theory
7. Diagnosis and Repair of Computerized Vehicles
B. The (20 hour) OBD II Training covers advanced diagnostic and repair procedures on 2nd Generation On Board Diagnostics (OBD II vehicles using the latest electronic interface equipment.
C. The (8 hour) 2003 Update Course covers smog testing procedures and new rules and regulations in the latest Smog Check Manual.
D. The (16 hours) 2005 Update course covers wide band oxygen sensors testing and theory

VI. METHODS OF INSTRUCTION:

A. **Lecture** -
B. **Lab** - Hands-On lab exercises
C. **Audio-visual Activity** -
D. **Discussion** -

VII. TYPICAL ASSIGNMENTS:

A. Read each module in the text and be prepared to seek clarification and ask questions in class. B. Orally discuss the material covered in each module. C. Complete the review questions for each module in the student workbook. 1. (Example) Base spark advance is calculated using what 2 inputs? 2. (Example) True or False? Potentiometers are used to measure throttle position. D. Complete the related lab exercises for each (relevant) module. 1. (Example) Customize an engine diagnostic scanner for troubleshooting purposes. 2. (Example) Perform a complete Smog Check inspection on at least two computer controlled vehicles, one foreign and one domestic.

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Class Participation
3. Lab Activities

B. **Frequency**

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IX. TYPICAL TEXTS:

1. Bureau of Automotive Repair *Clean Air Car Course Training Manual,.*, Department of Consumer Affairs,, 1993.
2. Bureau of Automotive Repair *Clean Air Car Course Student Workbook,.*, Department of Consumer Affairs,, 1993.
3. Bureau of Automotive Repair, *Revision 6 Smog Check Inspection Manual,.*, Department of Consumer Affairs, 2004.
4. Bureau of Automotive Repair *Write It Right",.*, Department of Consumer Affairs,, 1999.
5. Bureau of Automotive Repair *Laws and Regulation.*, Department of Consumer Affairs,, 2004.
6. Myron Maurseth and Ellen K Smith *A. BD II Generic On-Board Diagnostic Second Generation.*, A. California Institute of Automotive Technology , 2000.
7. Slip resistant, steel-toed boots – strongly recommended
8. Safety glasses – required

X. OTHER MATERIALS REQUIRED OF STUDENTS: