

Las Positas College
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Course Outline for AUTO 61A

FUEL INDUCTION, EMISSION I

Effective: Fall 2008

I. CATALOG DESCRIPTION:

AUTO 61A — FUEL INDUCTION, EMISSION I — 4.00 units

Principals of automotive fuel induction, ignition and emission control systems, including inspection, diagnosis and repair of fuel and emission control systems/components governed by federal and state laws and standards. Students are strongly recommended to enroll in Automotive Lab concurrently. Prerequisite: Automotive Technology 55 (may be taken concurrently).

3.00 Units Lecture 1.00 Units Lab

Prerequisite

AUTO INTR - Automotive Service and Introduction

Grading Methods:

Letter or P/NP

Discipline:

	MIN
Lecture Hours:	54.00
Lab Hours:	54.00
Total Hours:	108.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 4

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering the course a student should be able to:

A. AUTOINTR

IV. MEASURABLE OBJECTIVES:

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

- A. distinguish and explain the different types of fuel delivery systems;
- B. distinguish and explain the different types of ignition systems
- C. perform tests related to popular fuel systems used on current model cars;
- D. perform tests related to popular ignition systems used on current model cars
- E. formulate diagnostic patterns, and analyze gas readings to expedite proper repairs
- F. manipulate and use hand held diagnostic test equipment
- G. demonstrate proficient use of diagnostic information systems;
- H. explain theory and functionality of carburetors, throttle body, and port injectors;
- I. explain safety procedures and the handling of hazardous waste materials;
- J. maintain a clean and professional environment.

V. CONTENT:

- A. Different types of fuel delivery systems.
 1. describe functionality of Carburetors
 2. describe advantages of Fuel injectors
- B. Different types of ignition systems
 1. describe functionality of a points ignition systems
 2. describe functionality of a high energy ignition systems
 3. describe functionality of a coil over plug ignition systems
- C. Fuel systems testing
 1. perform pressure test
 2. evaluate volume test and fuel composition
 3. electronic pulse with modulation evaluation
 4. Volt drop and scope evaluation
- D. Ignition System Testing
 1. Ignition Scope theory
 2. Ignition Scope Usage
 3. Ignition Scope Reading and evaluation
- E. Diagnostic patterns, and analyze gas readings

1. execute diagnostic as described in service information systems
2. study and evaluate exhaust gas readings
- F. Diagnostic test equipment
 1. identify proper tester for application
 2. manipulate hand held scanners to retrieve diagnostic information.
- G. Diagnostic information systems
 1. access and extract diagnostic information.
 2. research labor time guides for work determined in diagnostics.
- H. Explain theory and functionality
 1. list theory of air fuel flow of a carburetor
 2. explain advantages of port injectors and related equipment
- I. Handling of hazardous waste materials
 1. storage and handling of gasoline
 2. storage and handling of diesel fuel
- J. Professional environment
 1. safety glasses (clear lens) worn in all Laboratory areas
 2. no loose clothing (coveralls strongly recommended)
 3. long Hair secured
 4. no open toe shoes (safety shoes recommended)
 5. work areas maintained: clean free of debris and spills

VI. METHODS OF INSTRUCTION:

- A. **Audio-visual Activity** - 1. PowerPoint presentations 2. Mockup parts from automotive
- B. **Discussion** - Group discussion
- C. **Lecture** -
- D. **Lab** - Student Hands-on laboratory activities and assignments

VII. TYPICAL ASSIGNMENTS:

A. Lecture based assignments 1. Text reading 2. Oral presentation 3. Class discussion B. Lab based assignments 1. Completion of applied activities 2. Lab activity worksheet 3. Diagnosis and debugging C. Student Lab work sheets with emphasis on Hands-on applications D. Review of Lab sheets in both Lab and class settings E. Text reading assignments F. Class discussions of reading assignments G. Demonstrations pertaining to reading assignments

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Quizzes
3. Class Participation
4. Home Work
5. Lab Activities

B. **Frequency**

IX. TYPICAL TEXTS:

1. Hollembeak, Barry *Automotive Electricity and Electronics and Computer Controls Classroom Manual*,, : Thomson Delmar Learning, 2005.
2. Hollembeak Barry *Automotive Electricity and Electronics and Computer Controls Shop Manual*,, Thomson Delmar Learning, 2005.
3. Safety Glasses

X. OTHER MATERIALS REQUIRED OF STUDENTS: