

Las Positas College
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Course Outline for AUTO 65

AUTO BRAKE SAFETY INSPECTION

Effective: Fall 2008

I. CATALOG DESCRIPTION:

AUTO 65 — AUTO BRAKE SAFETY INSPECTION — 3.00 units

Diagnosis, evaluation, inspection, adjustment, and repair of safety equipment, braking and antilock braking systems and related devices. Class will involve California State law regarding brake and safety inspections. . Includes the material on the California Brake Adjuster's Licensing Examination. Students are strongly recommended to enroll in Automotive Lab concurrently. Prerequisite: Automotive Technology 55.

2.00 Units Lecture 1.00 Units Lab

Prerequisite

AUTO INTR - Automotive Service and Introduction

Strongly Recommended

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Grading Methods:

Letter or P/NP

Discipline:

	MIN
Lecture Hours:	36.00
Lab Hours:	54.00
Total Hours:	90.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 3

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. describe the theory and fundamentals of automotive brake, anti-lock brake electronic traction control, and steering stability systems;
- B. use basic testing and diagnostic tools and equipment in the inspection, diagnosis and repair of automotive braking systems;
- C. demonstrate the ability to access the vehicle computer and various sensors relating to brakes and suspension systems;
- D. demonstrate safe and appropriate handling of hazardous material;
- E. accurately investigate and catalogue consumer concerns;
- F. maintain a clean and professional environment.

V. CONTENT:

- A. Automotive brakes.
 - 1. Foundation brake systems
 - a. Hydraulic servo, dual-servo, advanced leading trailing and leading trailing
 - b. Caliper and piston front
 - c. Caliper and piston rear
 - 2. Anti-Lock systems and sub-systems
 - a. Wheel speed sensors
 - b. Vehicle speed sensors
 - c. Hydraulic control units
 - d. Electrical control units
 - 3. Traction control systems, and sub-systems.
 - a. Wheel speed sensors
 - b. Vehicle speed sensors
 - c. Hydraulic control units
 - d. Electrical control units

4. Steering Stability systems and subsystems
 - a. Wheel speed sensors
 - b. Vehicle speed sensors
 - c. Hydraulic control units
 - d. Electrical control units
 - e. Yaw Sensors
 - f. Pitch Sensors
 - g. Decelerometers
 - h. Steering input sensors
- B. Testing and diagnostic tools and equipment
 1. Proper and safe tool use procedures
 2. Diagnostic safety precautions
 3. Analysis of test results
 4. Digital volt, ohm meter reading (DVOM)
 5. Digital storage oscilloscope hook-up and reading
- C. Computer access
 1. Access vehicle on board computer
 2. Retrieve codes and refer to diagnostic service information
 3. Evaluate sensor data
- D. Hazardous material handling
 1. Demonstrate proper handling of brake system components
 2. Perform proper fluid disposal
- E. Consumer concerns
 1. Research customer concerns, evaluate steps needed to repair concern
 2. Catalogue concern
 3. Repair Procedures
- F. 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. **Lecture** -
- B. **Lab** - Student Hands-on laboratory activities and assignments
- C. **Audio-visual Activity** - 1. PowerPoint presentations 2. Mockup parts from automobile
- D. **Discussion** - Group discussions

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 4. Demonstrations of skill competences

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Quizzes
3. Class Participation
4. Home Work
5. Lab Activities
6. Other:
 - Performance of Lab projects
 - Tracking of documentation of applied competencies
 - Professionalism of student in shop practices, including safety, maintenance of work areas, and customer service
- a. Typical exam questions:
 1. When diagnosing an "ABS warning Lamp acuminated, what is your first step?
 - a. Perform visual inspection
 - b. Check for codes
 - c. Road test vehicle
 - d. Perform brake job
 2. While performing a four wheel brake job (all disc.), you find NO run out in the rotors you should:
 - a. Machine rotors
 - b. Measure rotors
 - c. Perform a pad slap
 - d. Road test vehicle

B. **Frequency**

IX. TYPICAL TEXTS:

1. Owen, Clifton E *Today's Technician: Automotive Brake Systems*,. 3rd Ed., ed., -, 2004.
2. California State Department Consumer Affairs *Brake Inspection Manual*, -, 2003.
3. Safety Glasses

X. OTHER MATERIALS REQUIRED OF STUDENTS: