

CUYAMACA COLLEGE OFFICIAL COURSE OUTLINE

AUTOMOTIVE TECHNOLOGY 135 – ADVANCED BRAKES

3 hours lecture, 6 hours laboratory, 5 units

Catalog Description

Advanced course in automotive brake systems emphasizing diagnosis. Designed to develop greater student performance under simulated industry conditions. Students will be required to complete associated tasks in the shop as specified by NATEF (National Automotive Training Educational Foundation). Preparation for State of California Official Brake Adjusters License and ASE A-5 Certification.

Prerequisite

AUTO 130

Entrance Skills

Without the following skills, competencies and/or knowledge, and student entering this course will be highly unlikely to succeed:

- 1) Understand nomenclature and operational theory of drum and disc brakes
- 2) Ability to read micrometer, dial indicator and drum micrometer
- 3) Ability to properly machine a brake rotor and brake drum
- 4) Ability to repair and replace brake system components and properly bleed the system
- 5) Understand basic theory and troubleshooting of antilock brakes

Course Objectives

Students will be able to:

- 1) Acquire safe working habits
- 2) Relate brake system theory for practical application
- 3) Perform various brake repairs to industry standards
- 4) Prepare for acquisition of State of California Brake License and ASE Certification

Special Materials Required of Student

- 1) Basic hand tool set
- 2) Approved safety glasses
- 3) Specialized brake tools
- 4) Notebook, required textbook

Minimum Instructional Facilities

- 1) Auto tech lab (6 bays)
- 2) Complete brake servicing equipment center
- 3) SMART classroom with projection screen
- 4) Various brake system training models
- 5) Automotive transparencies, PowerPoint presentations, CD/DVD videos

Course Content

- 1) Lecture:
 - a. Introduction and safety
 - b. Equipment operation
 - c. Laboratory procedures
 - d. Basic hydraulic theory
 - e. Diagnosing and repairing drum brake system
 - f. Diagnosing and repairing disc brake systems
 - g. Diagnosing and replacing vacuum assist units and hydraulic assist units
 - h. Preparation for State of California Brake Test
 - i. Operation, diagnosis and repair of antilock brake systems

- 2) Lab:
 - a. Safety
 - b. Equipment operation
 - c. Laboratory procedures
 - d. Diagnosing and repairing drum brake systems
 - e. Diagnosing and repairing disc brake systems
 - f. Diagnosing and replacing vacuum assist units
 - g. Diagnosing and repairing antilock brake systems

Method of Instruction

- 1) Lecture and demonstration
- 2) Individual assistance
- 3) Small group assistance

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Quizzes and written exams
- 2) Observation of shop work
- 3) Inspection of work completed

Texts and References

- 1) Required: Birch, Automotive Braking Systems. 3rd edition. Delmar, 1999.
- 2) Supplemental: None