

CUYAMACA COLLEGE OFFICIAL COURSE OUTLINE

AUTOMOTIVE TECHNOLOGY 130 – AUTOMOTIVE BRAKES AND BRAKE LICENSE

3 hours lecture, 6 hours laboratory, 5 units

Catalog Description

Detailed study of automotive brake system service procedures. Laboratory experience covers drum and disc brake system inspection, adjustment and repair procedures. Antilock brake systems. 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

None

Course Objectives

Students will be able to:

- 1) Distinguish between safe and unsafe repair practices and working conditions
- 2) Synthesize brake system theory principles and apply that knowledge toward diagnosing braking problems
- 3) Demonstrate the ability to perform various brake repairs to industry standards
- 4) Demonstrate the ability to measure thickness variation, runout, maximum and minimum diameter of various braking components utilizing industry recognized measuring tools

Special Materials Required of Student

- 1) Basic hand tool set
- 2) Specialized brake tools
- 3) Approved safety glasses
- 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. Basic hydraulic theory
 - d. Diagnosing and repairing drum brake systems
 - e. Diagnosing and repairing disc brake systems
 - f. Diagnosing and replacing vacuum assist units and hydraulic assist units
 - g. Operation, diagnosis and repair of antilock brake systems
 - h. Preparation for State of California Brake Test
- 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
- 4) Hands-on performance test

Texts and References

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

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 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