

CUYAMACA COLLEGE OFFICIAL COURSE OUTLINE

AUTOMOTIVE TECHNOLOGY 191 – ASSET – BRAKES AND ALIGNMENT

5 hours lecture, 6 hours laboratory, 7 units

Catalog Description

Ford ASSET course to include a detailed study of modern automotive braking systems and service procedures. The laboratory will cover drum and disc brake systems inspection, adjustment and repair procedures. Also covers four wheel alignment principles as applied to checking and correcting alignment settings. Repair and replacement of suspension components. Additional training in wheel balancing. Emphasis on practical experience on "live" automobiles. Preparation for ASE Certification. Complemented by required work experience in the dealership.

Prerequisite

None

Course Objectives

Students will be able to:

- 1) Acquire safe working habits
- 2) Relate brake system theory for practical application
- 3) Perform various mechanical brake repairs to industry standards
- 4) Perform electronic diagnosis and repair of computer-controlled braking systems to industry standards
- 5) Relate four wheel alignment and tire balancing theory to practical application
- 6) Perform suspension and steering system repairs, alignments and tire balancing to prescribed industry standards
- 7) Perform electronic diagnosis and repair of computer-controlled steering and suspension systems

Special Materials Required of Student

- 1) Mechanic's hand tool set
- 2) Approved safety glasses
- 3) Specialized brake and alignment tools

Minimum Instructional Facilities

- 1) Auto tech lab (6 bays)
- 2) Classroom with projection screen, audiovisual equipment
- 3) Complete brake servicing equipment center
- 4) Various brake system training models
- 5) Complete four wheel alignment center
- 6) Computer and strobe tire balance equipment
- 7) Specialized alignment and suspension repair tools
- 8) Automotive transparencies and filmstrips

Course Content

- 1) Lecture:
 - a. Introduction and safety
 - b. Equipment operation
 - c. Basic hydraulic theory
 - d. Basic laws of physics as related to automotive braking systems
 - e. Drum brake system theory of operation
 - f. Disc brake system theory of operation
 - g. Theory of operation of the various power assist systems
 - h. Theory of operation of electronic anti-lock braking systems
 - i. Suspension theory and design
 - j. Alignment procedures
 - k. Manual steering control systems

- l. Power steering control systems
 - m. Electronic power steering systems
 - n. Electronic ride control systems
 - o. Tire and wheel design
 - p. Tire balancing principles
 - q. Four wheel steering systems
- 2) Lab:
- a. Introduction and safety
 - b. Laboratory procedures
 - c. Equipment operation
 - d. Diagnosing and repairing drum brake systems
 - e. Diagnosing and repairing disc brake systems
 - f. Diagnosing and repairing various power assist systems
 - g. Diagnosing and repairing electronic anti-lock systems
 - h. Pre-alignment checks
 - i. Tire balancing
 - j. Alignment procedures
 - k. Suspension component diagnosis, repair and replacement
 - l. Manual steering system repair and adjustment
 - m. Power steering system repair and adjustment
 - n. Electronic power steering diagnosis and repair
 - o. Electronic ride control diagnosis and repair
 - p. Tire and wheel care
 - q. Alignment of four wheel steer cars

Method of Instruction

- 1) Lecture and demonstration
- 2) Individual 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, exams (multiple choice, fill-in, true-false, short essay)
- 2) Observation of student work
- 3) Inspection of work completed
- 4) Hands-on performance exam

Texts and References

- 1) Required: None
- 2) Supplemental: None