

Course Syllabus

A5 Brakes

A Secondary-Level Course for Students Interested in Careers

Related to Automotive Brakes

This course links occupational and academic pedagogy and is built on Integrated Curriculum

Standards. These standards incorporate state and national academic, occupational, and employability standards.

XII. Outline of Course Content

- 1) Introduction to Automotive Brake Systems
 - a) Fundamental Principles of Hydraulic Brake System Operation
 - i) Basic Physics
 - ii) Mechanics and Forces
 - iii) Thermodynamics and Heat
 - iv) Chemical Reactions
 - v) Chemical and Physical Properties
 - 2) Disc and Drum Brake System Operation
 - a) Operating Principles of Disc and Drum BrakesPower Rack-and-Pinion Systems
 - i) A) Disc and Drum Brake Components
 - b) Power-Assist Unit Operation
 - c) ABS System Operation
 - i) Antilock Brake System Components
 - ii) Microprocessors
 - 3) Brake Fluid Properties and Processes
 - a) Selection and Handling of Brake Fluid
 - i) Safety Procedures
 - ii) Hazard Recognition
 - iii) Chemical Reactions
 - iv) Regulations
 - b) Bleeding Brake Systems
 - 4) Diagnosing and Determining Needed Disc and Drum Brake Service
 - a) Schematics and Reference Materials
 - i) Blueprints and Diagrams
 - b) Scientific Process of Brake Diagnosis
 - i) Problem Solving and Decision Making
 - ii) Units of Measurement
 - c) Brake Inspection Process
 - d) Wheel Bearing Service and Adjustment

- 5) Servicing Hydraulic System Components
 - a) Master Cylinder Service
 - b) Hydraulic Brake Line Service
 - c) Brake Switches and Valves
- 6) Servicing Disc Brake Components
 - a) Caliper Service
 - b) Servicing Disc Brake Rotors
- i) General Housekeeping
- 7) Drum Brake Service
 - a) Servicing Drum Brake Systems
 - b) Servicing Brake Drums
- 8) Diagnosing Power-Assist Units
 - a) Pneumatic (Vacuum) Power Brake Boosters
 - b) Hydraulic Power Brake Boosters
- 9) Antilock Brake System (ABS) Operation
 - a) Diagnosing Antilock Brake Systems
 - b) ABS Component Service
- i) Hazard Prevention
- 10) Working with Others/Mentor Module
 - a) Workplace Interpersonal Skills
 - i) Teamwork
 - ii) Listening
 - iii) Self-Management of Self-Concept
 - b) Positive Attitude, Personal and Professional
 - i) Information and Skills Required in Career Planning
 - ii) Work Journal
 - iii) Task List