

AUTO 145: AUTOMOTIVE BRAKES MAINTENANCE AND LIGHT REPAIR

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2023
Credits:	3
Total Contact Hours:	90
Lecture Hours :	36
Lab Hours:	54
Hours Arranged:	0
Outside of Class Hours:	72
Total Student Learning Hours:	162
Strongly Recommended:	ENGL 101; MATH 144; AUTO 140A or one year of employment as automotive technician.
Transferable to CSU:	No
Transferable to UC:	No
Grading Method:	Standard Letter, Pass/No Pass

Catalog Course Description

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is part of the Maintenance and Light Repair (MLR) curriculum. This course is focused on developing workplace skills that will allow a student to competently perform detailed brake inspections and repairs on disc, drum and parking brake systems. Appropriate lab activities are included. 36 lecture hours, 54 lab hours.

Course Objectives

- Check base brake system operation and determine corrective action.
- Inspect, repack and replace tapered front wheel bearings according to manufacturer's procedures and specifications.
- Inspect and service parking brake.
- Check power assist operation and determine corrective action.
- Measure disc brake rotors for minimum thickness and variations in parallelism according to manufacturer's specification and identify corrective action.
- Measure brake drums for maximum diameter and out of round according to manufacturer's specification and identify corrective action.
- Machine both rotors and drums using off the car brake lathe according to manufacturer's specification.
- Machine rotors using an on-car brake lathe according to manufacturer's specification.
- Replace brake pads and related hardware.
- Replace drum brake shoes and related hardware.
- Replace brake hydraulic components following manufacturer's procedure.

Major Course Content

1. Safety Specific to the Brake System
2. Fasteners, Gaskets and Seals Specific to the Brake System
3. Brake System Principles
 - a. Pascal's law and hydraulics
 - b. Energy
 - c. Mechanical
 - d. Fade
 - e. Lining Composition
4. Theory, Service, Diagnosis and Repair of the following brake subsystems
 - a. Hydraulic
 - i. front/rear split, diagonal split, quick take-up master cylinders
 - ii. valves and switches
 1. metering, proportioning, and residual valves
 - iii. lines and hoses
 - iv. bleeding and flushing
 - b. Drum
 - c. Disc
 - i. Front
 - ii. Four-wheel
 - d. Parking (including exclusive systems)
 - e. Power assist
 - i. Electronic
 - ii. Vacuum
 - iii. Hydro-boost
5. Introduction to ABS, Traction and Stability control
6. Wheel Bearings
 - a. Serviceable and non-serviceable types

Lab Content

1. Check system operation
 - a. Base brake system operation
 - b. Power assist operation
2. Inspect and service parking brake
3. Bleed and flush brake fluid
4. Brake System Measurements
 - a. Measure brake rotors
 - i. Minimum thickness
 - ii. Variation in parallelism
 - b. Measure brake drums
5. Machining Brake Components
 - a. Machine rotors and drums off the car
 - b. Machine rotors on the car
6. Replace hydraulic components
 - a. calipers
 - b. wheel cylinders
 - c. master cylinder
 - d. flex lines
7. Inspect, repack and replace wheel bearing and races in the rotor.

Suggested Reading Other Than Required Textbook

Student will complete instructor selected MyAutoLab e-learning modules that are related to the subject matter.

Examples of Required Writing Assignments

Student will use electronic service information to complete guided discovery based learning.

Examples of Outside Assignments

Students will be assigned industry based technical article evaluation from trade journals .

Instruction Type(s)

Lab, Lecture, Online Education Lecture