COURSE NUMBER & TITLE: ASES 1026: Brakes
CREDITS: 3 (1 Lec / 2 Lab)
PREREQUISITES: None

CATALOG DESCRIPTION:
Brakes covers basic principles of brakes, hydraulic system basics, disc and drum brakes, parking brakes and power assist units. Rear wheel anti-lock systems are also covered. Emphasis is placed on operation, diagnosis and repair of various types of braking systems.

OUTLINE OF MAJOR CONTENT AREAS:
1. Wheel hub and bearings
   A. Design
   B. Service
2. Brake hydraulics
   A. Fluids, lines and hoses
   B. Filling, flushing and bleeding
3. Master cylinders
4. Brake-system control valves
   A. Operation
   B. Diagnosis
5. Drum brakes
   A. System operation
   B. Removal and replacement
6. Disc brakes
   A. Operation
   B. Service
7. Brake measuring and machining
   A. Brake rotor
   B. Brake drum
8. Power-assist units
   A. Vacuum
   B. Hydro-Boost
9. Rear-wheel anti-lock systems
   A. Ford, G.M. and Chrysler
   B. Diagnosis and service

COURSE GOALS/OBJECTIVES/OUTCOMES:
1. Students will describe procedure for performing a road test to check brake system operation; including an anti-lock brake system (ABS).
2. Students will fabricate brake lines using proper material and flaring procedures (double flare and ISO types).
3. Students will bleed and/or flush brake system.
4. Students will diagnose poor stopping, noise, vibration, pulling, grabbing, dragging, or pulsation concerns; determine necessary action.
5. Students will refinish rotor on vehicle; measure final rotor thickness and compare with specifications.
6. Students will describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer’s recommendations.
7. Students will inspect vacuum-type power booster unit for leaks; inspect the check-valve for proper operation; determine necessary action.
8. Students will check parking brake operation and parking brake indicator light system operation; determine necessary action.

MNTC GOALS AND COMPETENCIES MET: N/A

HCC COMPETENCIES MET:
Working Productively and Cooperatively
Communicating Clearly and Effectively

STUDENT CONTRIBUTIONS:
A. Be present—if you’re not here you can’t get paid.
B. Participate—you will get out what you are willing to put in.
C. Work safe—it’s hard to fix cars if you cut off your fingers.
D. Take care of yourself—your body is your most valuable tool.
E. Keep your driver’s license—techs without good driving records don’t have jobs.
F. Think outside of the box—there is always a way.
G. Be a Professional—act like it, look like it, smell like it.
H. Communicate—nobody gets fired by asking for help

ADDITIONAL INFORMATION
- Handouts and other materials will be provided in class.
- Factory and aftermarket service manuals will be used for reference.
- Hazardous Waste Policy: proper handling practices will be used.
- Safety Eyeglass Policy: safety glasses will be worn at all time while working in the labs.
- Shop Safety Policy: safe shop working practices must be followed.

Violations of the above policies will be verbal or documented warnings and will be handled on a case-by-case basis.

METHODS FOR EVALUATING STUDENT LEARNING:
Student assessment shall take place using instruments selected/developed by the course instructor.

Curriculum Committee Approval Date: February 5, 2019

AASC APPROVAL DATE: February 20, 2019
REVIEW DATE: February 2024