

Maintenance and Light Repair C

AUTO COURSE SYLLABUS 2016-2017 SCHOOL YEAR

School Name: Casey County ATC

School Address: 1723 East KY 70 Liberty, KY 42539

School Phone: (606) 787-6241

Instructor Name: Lance Baldwin

Instructor Email: christopher.baldwin@casey.kyschools.us

Office Hours: 7:45AM-3:45PM Monday-Friday

Program Name: Automotive Technology

KY Tech Course Name: Brake Systems

High School Credit: 1

KCTCS Course Name: Brake Systems

KCTCS Course Number: AUT 110 & AUT 111

Description:

This course involves the operational theory and application of hydraulic and anti-lock brake systems; disc and drum brakes are discussed.

Materials Used: Motor Automotive Technology Textbook, Safety Glasses

TASK LIST

- 1 Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.
- 2 Identify and interpret brake system concern; determine necessary action.
- 3 Research applicable vehicle and service information, such as brake system operation, vehicle service history, service precautions, and technical service bulletins.
- 4 Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, calibration decals).
- 5 Diagnose pressure concerns in the brake system using hydraulic principles (Pascal's Law).
- 6 Measure brake pedal height; determine necessary action.
- 7 Check master cylinder for internal and external leaks and proper operation; determine necessary action.
- 8 Remove, bench bleed, and reinstall master cylinder.
- 9 Diagnose poor stopping, pulling, or dragging concerns caused by malfunctions in the hydraulic system; determine necessary action.
- 10 Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging or wear; tighten loose fittings and supports; determine necessary action.
- 11 Fabricate and/or install brake lines (double flare or ISO types); replace hoses, fittings, and supports as needed.
- 12 Select, handle, store, and fill brake fluids to proper level.
- 13 Inspect, test, and/or replace metering (hold-off), proportioning (balance), pressure differential, and combination valves.

- 14 Inspect, test, and adjust height (load) sensing proportioning valve.
- 15 Inspect, test, and/or replace components of brake warning light system.
- 16 Bleed (manual, pressure, vacuum or surge) brake system.
- 17 Flush hydraulic system.
- 18 Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action. (Drum Brakes)
- 19 Remove, clean (using proper safety procedures), inspect, and measure brake drums; determine necessary action.
- 20 Refinish brake drum.
- 21 Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble.
- 22 Remove, inspect, and install wheel cylinders.
- 23 Pre-adjust brake shoes and parking brake before installing brake drums or drum/hub assemblies and wheel bearings.
- 24 Install wheel, torque lug nuts, and make final checks and adjustments. (Drum Brake Service)
- 25 Diagnose poor stopping, noise, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action. (Disc Brakes)
- 26 Remove caliper assembly from mountings; clean and inspect for leaks and damage to caliper housing; determine necessary action.
- 27 Clean and inspect caliper mounting and slides for wear and damage; determine necessary action.
- 28 Remove, clean, and inspect pads and retaining hardware; determine necessary action
- 29 Disassemble and clean caliper assembly; inspect parts for wear, rust, scoring, and damage; replace seal, boot and damaged or worn parts.
- 30 Reassemble, lubricate, and reinstall caliper, pads, and related hardware; seat pads, and inspect for leaks.
- 31 Clean, inspect, measure rotor with dial indicator and a micrometer; follow manufacturer's recommendations in determining need to machine or replace.
- 32 Remove and reinstall rotor.
- 33 Refinish rotor on vehicle.
- 34 Refinish rotor off vehicle.
- 35 Adjust calipers with an equipped integrated parking brake system.
- 36 Install wheel, torque lug nuts, and make final checks and adjustments. (Disc Brake Service)
- 37 Test pedal free travel with and without engine running; check power assist operation.
- 38 Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster.

- 39 Inspect vacuum-type power booster unit for vacuum leaks; inspect check valve for proper operation; determine necessary action.
- 40 Inspect and test hydraulically assisted power brake system for leaks and proper operation; determine necessary action.
- 41 Measure and adjust master cylinder pushrod length.
- 42 Diagnose wheel bearing noises; wheel shimmy, and vibration concerns; determine necessary action.
- 43 Remove, clean, inspect, repack, and install wheel bearings and replace seals; reinstall hub and adjust wheel bearings.
- 44 Check parking brake cables and components for wear, rusting, binding, and corrosion; clean, lubricate, or replace as needed.
- 45 Check parking brake operation; determine necessary action.
- 46 Check operation of parking brake indicator light system.
- 47 Check operation of brake stop light system; determine necessary action.
- 48 Replace wheel bearing and race.
- 49 Inspect and replace wheel studs.
- 50 Remove and reinstall sealed wheel bearing assembly.
- 51 Identify and inspect antilock brake system (ABS) components; determine necessary action.
- 52 Diagnose poor stopping, wheel lock-up, abnormal pedal feel or pulsation, and noise concerns caused by the antilock brake system (ABS); determine necessary action.
- 53 Diagnose antilock brake system (ABS) electronic control(s) and components using self-diagnosis and/or recommended test equipment; determine necessary action.
- 54 Depressurize high-pressure components of the antilock brake system (ABS).
- 55 Bleed the anti-lock brake system's (ABS) front and rear hydraulic circuits.
- 56 Remove and install antilock brake system (ABS) electrical/electronic and hydraulic components.
- 57 Test, diagnose, and service ABS speed sensors, toothed ring (tone wheel), and circuits using a graphing multimeter (GMM)/digital storage oscilloscope (DSO) (includes output signal, resistance, shorts to voltage/ground, and frequency data)
- 58 Diagnose antilock brake system (ABS) braking concerns caused by vehicle modifications (tire size, curb height, final drive ratio, etc.).
- 59 Identify traction control/vehicle stability control system components.

Make Up Work: Test, Quizzes, and In Class and Lab Assignments

- Students can make up lost lab time from 3:00 pm to 3:45 pm with pre approval.
- Students will have three days to make up any excused absence and still received full credit.
- Students can be on homebound for no more than 2 weeks in any automotive class due to the majority of the class being focused on the lab.

Fees:

- Students will be furnished with one pair of safety glasses at the beginning of the year. If they become lost or broken students must purchase their own.
- Students will be provided Nitrile gloves to wear when deemed necessary.
- Students will be provided ear plugs to wear when using certain equipment or whenever deemed necessary by the instructor.
- Students must pay for any lost or damaged books at cost before graduation.
- Field trips may require a fee for registration and transportation.

Course Requirements:

1	Successfully complete all written assignments/tests successfully.
2.	Complete all lab projects
3.	Abide by all Lab Safety Rules

Evaluation Procedures:

1.	Daily Grade
2.	Performance Tests
3.	Tests/Quizzes

Grade Assignment:

90 – 100	A	60 – 69	D
80 – 89	B	0 - 59	F
70 – 79	C		

Classroom and Shop Rules for Automotive

1. NO TOBACCO use of any kind
2. Cell phones and other electronic devices must be kept out of sight while in classroom area.
3. NO FOOD OR DRINK allowed in classroom or shop area unless authorized by instructor.
4. No inappropriate language or jesters.
5. Safety glasses must be worn at ALL times while in shop area.
6. No hitting, pushing, running or any other type of horseplay will be tolerated.
7. Appropriate clothing must be worn. No shorts, tank tops, open toe shoes, jewelry or loose fitting clothing permitted. Long hair must be pulled back while in shop area.
8. NO USE of shop tools, machinery or lifts without instructor supervision or approval.
9. Be prepared and on time for class each day.
10. Cleaning is everyone's job.

I will abide by these rules of the shop and classroom.

Student-_____

Parent or Guardian-_____

Teacher- Mr. Baldwin

Date-_____

I have read the syllabus and understand the requirements of this course.

Student/Date-_____

Parent or Guardian/Date-_____