NAME _____ SEMESTER_____YEAR_____

CERRITOS COLLEGE
AUTOMOTIVE TECHNOLOGY

BRAKES
TASK LIST

	V. BRAKES A. General Brake Systems Diagnosis	LIVE WORK	DATE COMPLETED	INSTRUCTOR
1.	Identify and interpret brake system concern; determine necessary action. P-1			
2.	Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins. P-1			
3.	Describe procedure for performing a road test to check brake system operation; including an anti-lock brake system (ABS). P-1			
4.	Install wheel and torque lug nuts. P-1			
	B. Hydraulic System Diagnosis and Repair	**LIVE WORK**	**DATE COMPLETED**	**INSTRUCTOR**
1.	Diagnose pressure concerns in the brake system using hydraulic principles (Pascal's Law). P-1			
2.	Measure brake pedal height, travel, and free play (as applicable); determine necessary action. P-1			
3.	Check master cylinder for internal/external leaks and proper operation; determine necessary action. P-1			
4.	Remove, bench bleed, and reinstall master cylinder. P-1			
5.	Diagnose poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system; determine necessary action. P-3			
6.	Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, wear, loose fittings/supports; determine necessary action. P-1			
7.	Replace brake lines, hoses, fittings, and supports. P-2			
8.	Fabricate brake lines using proper material and flaring procedures (double flare and ISO types). P-2			
9.	Select, handle, store, and fill brake fluids to proper level; Use proper fluid type per manufacture specification. P-1			

10.	Inspect, test, and/or replace components of brake warning light system. P-3			
11.	Identify components of hydraulic brake warning light system. P-2			
12.	Bleed and/or flush brake system. P-1			
13.	Test brake fluid for contamination. P-1			
	C. Drum Brake Diagnosis and Repair	**LIVE WORK**	**DATE COMPLETED**	**INSTRUCTOR**
1.	Diagnose poor stopping, noise, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action. P-1			
2.	Remove, clean, and inspect brake drum; measure brake drum diameter; determine serviceability. P-1			
3.	Refinish brake drum and measure final drum diameter; compare with specification. P-1			
4.	Remove, clean, inspect, and/or replace brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble. P-1			
5.	Inspect wheel cylinders for leaks and proper operation; remove and replace as needed. P-2			
6.	Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; perform final checks and adjustments. P-1			
	D. Disc Brake Diagnosis and Repair	**LIVE WORK**	**DATE COMPLETED**	**INSTRUCTOR**
1.	Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging or pulsation concerns; determine necessary action. P-1			
2.	Remove and clean caliper assembly; inspect for leaks, damage, and wear; determine necessary action. P-1			
3.	Inspect caliper mounting and slides/pins for proper operation, wear and damage; determine necessary action. P-1			
4.	Remove inspect, and/or replace brake pads and retaining hardware; determine necessary action. P-1			

5.	Lubricate and reinstall caliper, brake pads, and related hardware; seat brake pads and inspect for leaks. P-1			
6.	Clean and inspect rotor and mounting surface; measure rotor thickness, thickness variation, and lateral runout; determine necessary action. P-1			
7.	Remove and reinstall/replace rotor. P-1			
8.	Refinish rotor on vehicle; measure final rotor thickness and compare with specification. P-1			
9.	Refinish rotor off vehicle; measure final rotor thickness and compare with specification. P-1			
10.	Retract and re-adjust caliper piston on an integrated parking brake system. P-2			
11.	Check brake pad wear indicator; determine necessary action. P-1			
12.	Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer's recommendations. P-1			
	E. Power Assist Units Diagnosis and Repair	**LIVE WORK**	**DATE COMPLETED**	**INSTRUCTOR**
1.	Check brake pedal travel with, and without, engine running to verify proper power booster operation. P-2			
2.	Identify components of the brake power assist system (vacuum and hydraulic); check vacuum supply (manifold or auxiliary pump) to vacuum- type power booster. P-1			
3.	Inspect vacuum-type power booster unit for leaks; inspect the check-valve for proper operation; determine necessary action. P-1			
4.	Inspect and test hydraulically-assisted power brake system for leaks and proper operation; determine necessary action. P-3			
5.	Measure and adjust master cylinder pushrod length. P-3			
	F. Miscellaneous (Wheel Bearings, Parking Brakes, Electrical, Etc.) Diagnosis and Repair	**LIVE WORK**	**DATE COMPLETED**	**INSTRUCTOR**
1.	Diagnose wheel bearing noises, wheel shimmy, and vibration concerns; determine necessary action. P-2			
2.	Remove, clean, inspect, repack, and install wheel bearings; replace seals; install hub and adjust wheel bearings. P-2			

3.	Check parking brake system components for wear, binding, and corrosion; clean, lubricate, adjust and/or replace as needed. P-1			
4.	Check parking brake operation and parking brake indicator light system operation; determine necessary action. P-1			
5.	Check operation of brake stop light system. P-1			
6.	Replace wheel bearing and race. P-3			
7.	Remove, reinstall, and/or replace sealed wheel bearing assembly. P-1			
8.	Inspect and replace wheel studs. P-1			
	G. Electronic Brake Control Systems: Antilock Brake (ABS), Traction Control (TCS), and Electronic Stability Control (ESC) Systems Diagnosis and Repair	**LIVE WORK**	**DATE COMPLETED**	**INSTRUCTOR**
1.	Identify and inspect electronic brake control system components (ABS, TCS, ESC); determine necessary action. P-1			
2.	Describe the operation of a regenerative braking system. P-3			
3.	Diagnose poor stopping, wheel lock-up, abnormal pedal feel, unwanted application, and noise concerns associated with the electronic brake control system; determine necessary action. P-2			
4.	Diagnose electronic brake control system electronic control(s) and components by retrieving diagnostic trouble codes, and/or using recommended test equipment; determine necessary action. P-2			
5.	Depressurize high-pressure components of an electronic brake control system. P-3			
6.	Bleed the electronic brake control system hydraulic circuits. P-1			
7.	Test, diagnose, and service electronic brake control system speed sensors (digital and analog), 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). P-3			
8.	Diagnose electronic brake control system braking concerns caused by vehicle modifications (tire size, curb height, final drive ratio, etc.) P-3			