# Brakes II Course No. 40206 Credit: 0.5

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| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes:Mobile Equipment Maintenance (47.9999) - Technology Strand II

Course Description: A comprehensive, **application level** course designed to provide students with the basic skills needed to inspect, service and repair braking systems to industry standards. (Prerequisite: Brakes I.)

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: General Brake Systems Diagnosis

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction. |  |
| 1.2 | Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging, or pedal pulsation concerns; determine necessary action. |  |

## Benchmark 2: Hydraulic System Diagnosis and Repair

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Measure brake pedal height; determine necessary action. |  |
| 2.2 | Check master cylinder for leaks and proper operation; determine necessary action. |  |
| 2.3 | Remove, bench bleed, and reinstall master cylinder. |  |
| 2.4 | Flush or bleed hydraulic system.  |  |

## Benchmark 3: Drum Brake Diagnosis and Repair

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Remove, inspect, and install wheel cylinders. |  |
| 3.2 | Remove, inspect, refinish, and measure drum. |  |

## Benchmark 4: Disc Brake Diagnosis and Repair

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Remove caliper assembly from mountings; clean and inspect for leaks and damage to caliper housing; determine necessary action. |  |
| 4.2 | Disassemble and clean caliper assembly inspect part for wear, rust, scoring, and damage; replace seal, boot, and damaged or worn parts. |  |
| 4.3 | Reassemble, lubricate, and reinstall caliper, pads, and related hardware; seat pads, and inspect for leaks. |  |
| 4.4 | Remove, refinish and replace rotor on and off vehicle. |  |
| 4.5 | Adjust caliper equipped with an integrated parking brake system. |  |

## Benchmark 5: Power Assist Units Diagnosis and Repair

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Test pedal free travel with and without engine running; check power assist operation. |  |
| 5.2 | Inspect the vacuum-type power booster unit for vacuum leaks and inspect the check valve for proper operation; Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster. |  |
| 5.3 | Measure and adjust master cylinder pushrod length. |  |
| 5.4 | Inspect and test hydraulic/electric assisted power brake system for leaks and proper operation; determine necessary action. |  |

## Benchmark 6: Diagnosis and Repair of Wheel Bearings, Parking Brakes, Electrical, etc.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Inspect and diagnose parking brake operation including parking brake cables and components, for wear, rusting, binding, and corrosion; clean, lubricate, or replace as needed. |  |
| 6.2 | Analyze operation of brake stop light system and the parking brake indicator light system. |  |
| 6.3 | Demonstrate proper removal and reinstallation of tire wheel assembly including proper torque of lugnuts. |  |
| 6.4 | Demonstrate inspection and service of both sealed and non-sealed wheel bearings. |  |

## Benchmark 7: Click or tap here to enter text.

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Diagnose poor stopping, wheel lock-up, abnormal pedal feel or pulsation, and noise concerns caused by the antilock brake system (ABS); determine necessary action. |  |
| 7.2 | Diagnose antilock brake system (ABS) electronic controls and components using self-diagnosis and/or recommended test equipment; including braking concerns caused by vehicle modifications (tire size, curb height, final drive ratio). |  |
| 7.3 | Depressurize high-pressure components of the antilock brake system (ABS). |  |
| 7.4 | Bleed the antilock brake system’s (ABS) front and rear hydraulic circuits. |  |
| 7.5 | Remove and install antilock brake system (ABS) electrical and hydraulic components. |  |
| 7.6 | Test, diagnose and service ABS speed sensors, toothed ring (tone wheel), and circuits using a graphing multimeter (GMM), digital storage oscilloscope (DSO) or digital volt ohm meter (DVOM) (including output signal, resistance, shorts to voltage/ground, and frequency data). |  |
| 7.7 | Identify traction control/vehicle stability control system components. |  |
| 7.8 | Identify and describe traction control/ vehicle stability control system and its components. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

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