

Student Name _____ Instructor Name _____

High School or Vocational Center _____ Grade _____

**COMPETENCY CHECKLIST FOR ADVANCED TECHNICAL PLACEMENT
Automotive Technology**

**AT 150A
Automotive Brakes
3 Credit Hours**

This course covers theory, repair, and adjustment of hydraulic and Antilock Braking systems (ABS) brake systems and related machining equipment. Students will learn in this class through hands on experience how to diagnose problems with ABS and Electronic Stability Control in addition to rebuild and bleed advanced braking systems. Students have the opportunity to become certified via the State of Michigan test in the area of brakes.

To meet the standards for articulated credit, the student will demonstrate competency in tasks listed below. Competency standards will be determined by the high school instructor.

Task	Satisfactory	Unsatisfactory
DEMONSTRATE AN UNDERSTANDING		
<i>The student will be able to:</i>		
Describe the operation of a typical brake hydraulic system and identify the components that make it up.		
Identify the components of a typical drum brake system and discuss how the drum brake is energized.		
Identify the components of a typical disc brake system and discuss how the disc brake operates.		
Demonstrate proper safety procedures that should be observed during brake system service.		
Demonstrate appropriate service procedures when performing repairs on a typical brake system, including the hydraulic and mechanical components of the system.		
Demonstrate an understanding of how to diagnose problems associated with a typical brake system and determine needed repairs		
Demonstrate diagnostic and safety procedures associated with anti-lock brake system		
DEMONSTRATE PROFICIENCY IN SERVICE		
<i>The student, by using instructor instruction, shop manuals, and appropriate shop safety practices will be able to:</i>		
Discuss how friction is used in the braking process.		

Task	Satisfactory	Unsatisfactory
Describe how hydraulics is used to operate brake components.		
Identify the basic tools used in brake repair.		
Describe and demonstrate how the system safety switches and hydraulic valves function.		
Discuss the precautions required in the use of brake fluids to avoid contamination.		
Discuss the need for bleeding a brake hydraulic system.		
Discuss and demonstrate the proper method for bleeding a brake hydraulic system.		
Discuss and demonstrate the importance of properly bench bleeding a master cylinder before installation.		
Recognize when it is necessary to flush a brake hydraulic system and discuss and demonstrate how it is done.		
Measure brake pedal free height and travel and determine whether they are within specifications.		
Demonstrate the proper technique for cleaning a brake assembly using the brake dust collector prior to disassembly and service.		
Inspect a typical drum brake assembly and determine needed service. Measure a drum with a drum micrometer to determine if it is within wear limits and inspect for unusual conditions such as heat checking, scoring, and hard spots.		
Inspect a typical disc brake assembly and determine needed service. Measure a rotor with a micrometer to determine if it is within wear limits and inspect for unusual conditions such as heat checking, scoring, and hard spots.		
Resurface a typical brake rotor on the brake lathe to obtain the proper finish.		
Resurface a typical brake drum on the brake lathe to obtain the proper finish.		
Distinguish the differences between a floating, sliding and fixed brake caliper.		
Discuss advantages of disc brakes over drum brakes.		
Demonstrate how to adjust a typical parking brake. Inspect a parking brake assembly and identify needed service.		
Discuss advantages of anti-lock brakes. Diagnose problems with the ABS system. Test various sensors on the ABS system		
Explain the procedures for brake system bleeding on a car with anti-lock brakes.		
Explain how regenerative braking works on a hybrid vehicle.		

Instructor's Signature _____ Date _____