

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: AUTO 115 Department: Automotive Technology

Course Title: Brake Systems Semester: Spring Year: 1997

Objectives/Competencies

Course Objective	Competencies
1. Describe the effects of friction, simple hydraulics and brake fluid viscosity have on brake system operation.	1. Define brake “Fading” as it applies to the coefficient of friction. 2. Explain the relationship between force area and pressure in a simple hydraulic circuit. 3. Recognize the properties of brake fluid advantages and disadvantages.
2. Identify the subsystems and components of automotive brake systems.	1. Understand proper brake pedal adjusting and testing techniques. 2. Describe dual master cylinder operation. 3. Differentiate between hydraulic systems split front to rear and diagonally split. 4. Understand the operation of and reason for proportioning and metering valves in the hydraulic circuit. 5. Explain the reason for a height sensing valve in some applications. 6. Describe the operation of disc brake assembly. 7. Describe the operation of the drum brake assembly.

Course Objective	Competencies
<p>3. Provide the students with appropriate diagnostic techniques to determine whether a brake system is functioning satisfactorily.</p> <p>4. Identify correct brake bleeding procedures for standard and antilock equipped vehicles.</p> <p>5. Identify and describe the operation of the major components in the light truck rear antilock brake systems (rabs).</p>	<p>8. Identify parking brake operation and proper adjustment techniques.</p> <p>1. Describe a warning lamp operation test.</p> <p>2. Perform a brake fluid level test.</p> <p>3. Explain the purpose of an air entrapment test.</p> <p>4. Determine when a master cylinder bypass test is necessary.</p> <p>5. Identify areas to check for external leaks in hydraulic system.</p> <p>6. Explain a power brake (vacuum booster) function test.</p> <p>1. Give the correct air bleeding sequence used when manually bleeding a brake hydraulic system.</p> <p>2. Explain air bleeding techniques using a pressure bleeder.</p> <p>3. Describe hydro boost bleeding techniques.</p> <p>4. List the major steps required to manually bleed an anti-lock system.</p> <p>1. Locate and identify rabs module.</p> <p>2. Perform diagnostics on speed sensor and exicitor ring.</p> <p>3. Explain duel solenoid electro-hydraulic valve operation.</p> <p>4. Read flashout code from yellow rear antilock warning lamp.</p> <p>5. Describe overall operation of a rabs system.</p> <p>6. List rabs module inputs.</p> <p>7. List rabs module outputs.</p>

Course Objective	Competencies
<p>6. Identify and describe the operation on the four-wheel antilock brake system.</p> <p>7. Teach the proper resurfacing techniques used on disc brake rotors and shoe brake drums.</p>	<ol style="list-style-type: none">8. Produce the appropriate diagnostic literature to perform accurate pinpoint diagnostic procedures.1. Locate and identify the electronic control module.2. Describe the operation of the master cylinder and antilock hydraulic control unit.3. Recognize the purpose of relays and electronic protector diode.4. Diagnose and adjust wheel speed sensors.5. Determine warning light strategy in association with pressure control switch pressures.6. Perform self test on four wheel abs.7. Interpret service codes and perform pinpoint test step procedures using appropriate diagnostic equipment. 1. Properly mount a rotor on the lathe and prepare it for .008" stock removal.2. Perform a finish (.002") cut on a disc brake rotor.3. Remove unidirectional surface grooves from rotor.4. Properly mount a drum on the lathe and prepare it for .008" stock removal.5. Perform a finish cut (.002") on a shoe brake drum.6. Identify when lathe cutting tool bits must be repositioned or replaced.7. Measure final rotor thickness and drum i.d. with micrometers and compare to specifications.

Course Objective	Competencies
8. Instill on the student clean, organized, safe work habits, which will enable him/her to become a successful employee with a positive attitude.	<ol style="list-style-type: none">1. Safely operate the oxygen acetylene torches on brake line and drum removal.2. Organize the internal parts of brake components in an orderly fashion when performing overhaul procedures.3. Demonstrate proper environmental disposal procedures of hoisting and supporting a vehicle for brake service.