COURSE SYLLABUS

Course Title: AUMT 1410-271 Automotive Brake Systems (4:2:6)
Semester/Year: Fall 2025

Instructor: Mr. Escobedo
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Office Hours: Check posted hours after classes begin or by appointment

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I. GENERAL COURSE INFORMATION

A. Course Description: (4:2:6) - This course covers the operation, identification, and repair of drum/disc type brake systems. Emphasis will be on safe use of modern equipment. Topics include brake theory, diagnosis, and repair of power, manual, anti-lock brake systems, and parking brakes. Also covered are proper nomenclature and operation of all existing components. Elements of the course may be taught manufacturer specific.

B. Course Goals/Objectives: Utilizing appropriate safety procedures, the student will diagnose and repair hydraulic systems; diagnose and repair drum/disc brake systems; diagnose and repair parking brake systems; and diagnose and repair anti-lock brake systems.

C. Course Competencies: A = 100-90 B = 89-80 C = 79-70 F = 69 or below. A grade of C or higher is required in AUMT 1410 in order to successfully complete this course.

D. Academic Integrity: It is the aim of the faculty of South Plains College to foster a spirit of complete honesty and a high standard of integrity. The attempt of any student to present as his own, any work which he has not honestly performed, is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, possibly suspension. For further information concerning Cheating and Plagiarism, read the section on Academic Integrity in the SPC General Catalog. **If you have a question as to whether you may work with other students on any assignment, ASK YOUR INSTRUCTOR. On some assignments, working with others is encouraged.**

E. SCANS and Foundation Skills: Specific SCANS competencies and foundation skills applicable to this course are listed adjacent to each objective in the course objective table. They include: Foundation Skills (F): 1,2,3,4,5,6,8,9,10,11,12,13,15.
Competencies (C): 5,6,7,9,10,11,14,15,16,17,18,19,20.
A complete list of SCANS competencies and foundation skills is attached at the end of this syllabus.

F. Verification of Workplace Competencies-Technical Education Division. The learning outcomes of this course will prepare the student to meet the competencies measured in a comprehensive elective course experience (Course #'s AUMT 1366, AUMT 2366). In

addition, the student will also be prepared to take the ASE Student Certification test for Automotive Brake Systems.

SPECIFIC COURSE/INSTRUCTOR REQUIREMENTS

A. Textbook & Other Required Materials:

Ford Training Website is required for this class. See the assignment page and required Ford Class page in this syllabus for more information.

8 ½ x 11 notebook for classroom note taking and assignments

Clear Safety Glasses.

B. Attendance Policy: Students are expected to attend all classes in order to be successful in a course. The student may be administratively withdrawn from the course when absences become excessive, **without notice. Excessive absences mean 4 (four) or more absences for any reason, there are no excused absences. Upon the 5th absence, each student will lose 10 points off their current GPA, the 6th absence an additional 10 points, and the 7th absence an additional 10 points. Excessive absences cause you to miss key points of a class and show you are not reliable/dependable for employment. Two (2) tardies will count as one absence. Leaving class without notifying your instructor is considered an absence, regardless of the time you left.**

When an unavoidable reason for class absence arises, such as illness, an official trip authorized by the college or an official activity, the instructor may permit the student to make up work missed. It is the student's responsibility to complete work missed within a reasonable period of time as determined by the instructor. Students are officially enrolled in all courses for which they pay tuition and fees at the time of registration. Should a student, for any reason, delay in reporting to a class after official enrollment, absences will be attributed to the student from the first-class meeting.

Students who enroll in a course but have "Never Attended" by the official census date, as reported by the faculty member, will be administratively dropped by the Office of Admissions and Records. A student who does not meet the attendance requirements of a class as stated in the course syllabus and does not officially withdraw from that course by the official census date of the semester, may be administratively withdrawn from that course and receive a grade of "X" or "F" as determined by the instructor.

It is the student's responsibility to verify administrative drops for excessive absences through MySPC using his or her student online account. If it is determined that a student is awarded financial aid for a class or classes in which the student never attended or participated, the financial aid award will be adjusted in accordance with the classes in which the student did attend/participate and the student will owe any balance resulting from the adjustment.

C. Assignment Policy: All assignments are due at the beginning of class on the due dates unless otherwise instructed. Assignments may include review questions, short essay questions, and definitions. **Most of these assignments will be on-line through the Ford on-line curriculum, you should log on to the on-line curriculum at the beginning of the semester as per instructor directions in order to complete them on time. There will be no makeup assignments and no late assignments accepted.** The dates printed in this syllabus can change. Every effort will be made to inform the students of those changes, but the students are ultimately responsible for all assignments regardless of any changed

dates. Please check the dates with your instructor throughout the course.

D. **Grading Policy/Procedure and/or Methods of Evaluation:** All exams, including quizzes and the final exam are mandatory for effective student evaluation. Exams will cover theory and practical skills pertaining to all aspects of the material presented. Adequate study time should be set aside for exam reviews. **There will be no make up exams . <u>If a student's financial records are not clear by the time for finals, *the student will not be allowed to take the final exam*</u>.**

Course Requirement: All students who desire to participate in the Automotive Service Excellence (ASE) industry certification assessment mentioned above must be in good standing in the class, such as have a 70% average or higher.

Your grade will be determined based on the following factors:

Unit exams Written assignments, pop quizzes, and attendance = 25%

Unit skills tests and/or lab sheets = 50% (approximately 4)

Final Exam = 25%

A unit skills test is a measure of how well you follow instructions, your safety in the shop, your use of tools, your cleanliness in the work area and your attention to detail while you perform diagnostics or repairs within a required time period. **If you're late for a skills test the following will happen; 0 to 5 minutes late = -10pts; more than 5 min. but less than 10 min. late = -20pts; more than 10 min. but less than 15 min.late = -30pts. If you are more than 15 minutes late your will have earned a "0" for the test.**

A task sheet is used to plan and track students while they perform required skills in the shop. This is not used to average your grade, but it is a professional evaluation of how well you work independently and your level of expertise in completing assigned tasks. Prospective employers will want to see this during an interview, so please follow the shop and repair procedures to the best of your ability.

C. **Special Requirements: <u>A student's conduct is expected to follow the guidelines stated in the college catalogue and student handbook, any deviation will result in immediate disciplinary action.</u> No smoking, chewing, or dipping is permitted in the building or outside the back doors of the shop and food and drinks are not allowed in any** classroom**, lab or shop.** These activities will be limited to break time in the designated areas only. Breaks will be limited to 20 minutes. A detailed list of lab/shop guidelines will be handed to you at the beginning of class, you are expected to follow them whenever you are in the shop. Please turn off all cell phones, pagers, etc. during class. Do not park on the back lot unless preauthorized by your instructor, unauthorized vehicles can be towed at the owner's expense.

Dress Code: The Automotive Program requires you to dress appropriately. Flip flops or opened toed shoes are not allowed in the shop, proper foot attire should be worn to protect your fee, leather work boots are recommended. Jeans/pants will be worn so that neither one falls to your thighs or knees, belts must hold them at your waist line. Safety glasses will be worn at all times in the shop. If a student fails to comply with the above dress code, he or she, will be sent home and given an absence for that day.

	Course Objectives: Upon completion of this course, students will be able to:	
F1,2,5,6,8-12	● Discuss the operation of a typical brake hydraulic system and identify the components that make it up.	C5,7,15
F1,2,5,6,8	● Identify the components of a typical drum brake system and discuss how the drum brake is energized.	C5,7,15
F1,2,5,6,8	● Identify the components of a typical disc brake system and discuss how the disc brake operates.	C5,7,15
F1,2,5,6,8	● Discuss and demonstrate proper safety procedures that should be observed during brake system service.	C5,7,15
F1,2,5,6,8-12	● Follow appropriate service procedures when performing repairs on a typical brake system, including the hydraulic and mechanical components of the system.	*C5,7,15,16, 18-20
F1,2,5,6,8-12	● Diagnose problems associated with a typical brake system and determine needed repairs	*
F1,2,5,6,8-12	● Perform diagnostic and safety procedures associated with anti-lock brake systems	*
	Content Outline:	
	Unit 1: Brake System Operating Principles Unit Objectives:	
F1,2,5,6	Upon completion of this unit, students will be able to	
F1,2,5,8,10	● Discuss how friction is used in the braking process.	C5,7,15
F1,2,5,8,10	● Describe how hydraulics is used to operate brake components.	C5,7,15
	● Recognize and discuss the two basic types of brake systems.	C5,7,15
F1,2,5,8,10 F1,2,5,8,12	● Identify the components of a typical brake system and discuss the function of each.	C5,7,15
F1,2,5,8,12	● Discuss proper safety procedures associated with brake system service.	C5,7,15
F1,2,5,8,9,10	● Identify the basic tools used in brake repair.	C5,7,15,18
F1-5, 8-12	● Locate service information pertaining to brake system repair in the appropriate service manual.	C5,6,7,15
	● Diagnose various types of brake noises and symptoms and determine proper repair.	C5,7,15,16, 18-20

	Unit 2: Hydraulic System and Power Assist Unit Operation & Service Unit Objectives: Upon completion of this unit, students will be able to	
	● Identify all components of the hydraulic system and briefly discuss the function of each.	C5,6,7,15
	● Describe how the system safety switches and hydraulic valves function.	C5,6,7,15
	● Discuss the precautions required in the use of brake fluids to avoid contamination.	C5,6,7
	● Explain the need for properly bleeding a brake hydraulic system.	C5,6,7,15
	● Discuss and demonstrate the proper method for bleeding a brake hydraulic system.	*C5-7,15,16, 18-20
	● Discuss the importance of properly bench bleeding a master cylinder before installation.	C5,7,15
	● Demonstrate the proper method of bench bleeding a brake master cylinder.	*
	● Recognize when it is necessary to flush a brake hydraulic system and discuss and demonstrate how it is done.	*
	● Inspect a complete brake hydraulic system to determine the condition of components and discuss recommended service.	*
	● Measure brake pedal free height and travel and determine whether they are within specifications.	
	● Perform service on the following components of the brake hydraulic system: brake pedal, stop light switch, brake fittings, lines, hoses, master cylinder, wheel cylinder, combination valve, and brake caliper.	*C5,7,15,16, 18-20 *
	● Identify and discuss the different types of power assist units and test the components for proper operation.	

	Unit 3: Disc, Drum and Parking Brake Operation and Repair Unit Objectives: Upon completion of this unit, students will be able to:	
	● Explain the operation of drum brakes.	
F1,2,5,6,12	● Identify the components of a drum brake assembly and discuss the	C5,7,15
F1,2,5,6,12	function of each.	C5,7,15
	● Discuss and demonstrate how to assemble a drum brake assembly,	
F1,2,5,8-12	including all mounting hardware and springs.	*C5-7,9-11,14-20
	● Discuss how self-adjusting brakes operate and demonstrate the	
F1,2,5,8-12	proper procedure for adjusting a typical drum brake.	*
	● Demonstrate the proper technique for cleaning a brake assembly using the brake dust collector prior to disassembly and service.	
F1,2,5,8-12	● Inspect a typical drum brake assembly and determine needed service.	*
	● Measure a drum with a drum micrometer to determine if it is within	
F1,2,5,8-12	wear limits and inspect for unusual conditions such as heat checking, scoring, and hard spots.	*
F1-5,9,12	● Resurface a typical brake drum on the brake lathe to obtain the proper finish.	*
	● Service a complete brake drum assembly including replacement of	
F1-5,9,12	shoes, springs, brake backing plate, brake adjuster mechanism, and wheel cylinder.	*
F1-5,8-13,15	● Discuss advantages of disc brakes over drum brakes.	*
	● Distinguish the differences between a floating, sliding and fixed brake caliper.	
F1,2,5,6	● Discuss how a typical disc brake assembly operates.	C5,7,15
F1,2,5,6,8	● Contrast the differences between front and rear disc brake assemblies.	C5,7,15
F1,2,5,6,8	● Discuss safety precautions that should be observed during service of	C5,7,15
F1,2,5,6,8,12	disc brake assemblies.	C5,7,15
	● Demonstrate the proper procedure for resurfacing disc brake rotors	
F1,2,5,6,8,12	to obtain a serviceable finish.	C5,7,15
	● Clean, inspect, and repack front or rear wheel bearings.	
*F1,2,5,6,8,12, 15	● Service a typical disc brake assembly.	C5-7,15-20
	● Identify the components of the parking mechanism and discuss the function of the parking brake assembly.	
*	● Demonstrate how to adjust a typical parking brake.	C5-7,15-20
	● Inspect a parking brake assembly and identify needed	
*	service.	C5,7,15,18-20
F1-6, 8-16	● Test the operation of a typical parking brake assembly.	C5-7,14-16, 18-20

	Unit 4: Anti-Lock Brakes Unit Objectives:	
F1,2,5,6,8	Upon completion of this unit, students will be able to: ● Discuss advantages of anti-lock brakes.	C5,6,15
F1,2,5,6,8,9,12	● Diagnose problems with the ABS system.	C5,6,15,16
F1,2,5,6,8,9,12	● Test various sensors on the ABS system.	C5,6,15,16
F1,2,5,6,8,9,12	● Test Drive a vehicle with ABS and distinguish between "normal" operation and "improper" operation.	C5,6,15,16
F1,2,5,6,8-12, 15	● Explain the procedures for brake system bleeding on a car with anti-lock brakes.	C5-7,14-16, 18-20
F1,2,5,6		C5-7,15
F1,2,5,6	● Explain how regenerative braking works on a hybrid vehicle.	C5-7,15

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Brake System Assignment and Exam Schedule

Log on to this course on Blackboard using your SPC credentials, also log on to the on-line Ford Training curriculum by following your instructor's directions. Become familiar with the websites and look for all on line assignments on Blackboard and the Ford Training site. The Ford Training page follows this page. It is your responsibility to keep up with all assignments and turn in by the due dates listed below and on line.

Unit 1: Brake System Operating Principles

Date: August 25th - September 11th

Assignment: **Log on to the on-line curriculum Ford website, you will need directions from your instructor. Review the Ford Training page and see what is required for Unit 1. All of the Ford modules are due by the date below. You are required to print a transcript of these modules from the Ford website and turn into your instructor by the due date.** Perform all assigned projects. **O**ther written and in-class assignments may be assigned throughout the unit, maybe even on-line.

Unit 1 Assignment Due: September 11th

Unit 1 Written Test: September 11th (on blackboard or Ford Training)

Unit 1 Skills Test: September 11th

Unit 2: Hydraulic System/Power Assist Unit Operation & Service

Date: September 15th – October 9th

Assignment: **Review the Ford Training page and see what is required for Unit 2. All of the Ford modules are due by the date below. You are required to print a transcript of these modules from the Ford website and turn into your instructor by the due date.** Perform all assigned projects. Other written and in-class assignments may be assigned throughout the unit, maybe even on-line.

Unit 2 Assignment Due: October 9th

Unit 2 Written Test: October 9th (on blackboard or Ford Training)

Unit 2 Skills Test: October 9th

Unit 3: Disc, Drum, Parking Brake Operation & Repair

Date: October 13th –November 6th

Assignment : **Review the Ford Training page and see what is required for Unit 3. All of the Ford modules are due by the date below. You are required to print a transcript of these modules from the Ford website and turn into your instructor by the due date.** Perform all assigned lab projects, other written and in-class assignments may be assigned throughout the unit, maybe even on-line.

Unit 3 Assignment Due: November 6th

Unit 3 Written Test: November 6th (0n blackboard or Ford Training)

Unit 3 Skills Test: November 6th

THANKSGIVING HOLIDAY NOVEMBER 26th – 28th

Unit 4: Anti-Lock Brakes

Date: November 10th - December 4th

Assignment: **Review the Ford Training page and see what is required for Unit 4. All of the Ford modules are due by the date below. You are required to print a transcript of these modules from the Ford website and turn into your instructor by the due date.** Perform all assigned lab projects. other written and in-class assignments may be assigned throughout the unit, maybe even on-line.

Unit 4 Assignment Due Date: December 4th

There will be no separate exam for Unit 4; any information will be on the Final Exam. Give yourself adequate time to study.

FINAL EXAM (on blackboard) due by DECEMBER 8th @ 10:00am

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Ford Website = college.fordservicetraining.com

Unit 1: Brake Systems Operating Principles (Syllabus Title)

All of F101015003 – Brake System Fundamentals – (5 modules)

1. F10101500301 – Course Introduction
2. F10101500302 – Brake System Principles
3. F10101500303 – Brake System Overview
4. F10101500304 – Introduction to Brake Service
5. F10101500305 – Advanced Brake System Overview

Unit 2: (Hydraulic System and Power Assist Unit Operation and Service)

38S01W2 – Vehicle Brake Systems - (6 of 10 modules) , 38S01W201 to 38S01W206

38S02W1 – Brake Service Procedures – (5 of 6 modules) 38S02W101 to 38S02W105

1. 38S01W201 – Course Introduction
2. 38S01W202 – Brake System Principles
3. 38S01W203 – Brake System Overview
4. 38S01W204 – Brake Pedal Assemblies
5. 38S01W205 – Master Cylinders, Brake Lines, Fittings & Unions
6. 38S01W206 – Brake Booster Types, Components, & Operation
7. 38S02W101 – Course Introduction
8. 38S02W102 – Introduction to Brake Service
9. 38S02W103 – Low Spongy Brake Pedal Diagnostic Routines
10. 38S02W104 – High Effort Wheel Lock Up Diagnostic Routines
11. 38S02W105 – Pull Drift Drag Diagnostic Routines

Unit 3: (Disc, Drum, Parking Brake Operation and Repair)

38S01W2 – (3 modules) 38S02W1 - (1 module)

1. 38S01W207 – Disc Brake Systems
2. 38S01W208- Drum Brake Systems
3. 38S01W209 – Parking and Trailer Brake Systems
4. 38S02W106 – NVH Diagnostic Routines

Unit 4: (Anti- Lock Brakes)

1. F40210110305 – Anti-lock Brake and Stability Control
2. 30N26W308 – Hybrid Brake Systems

SCANS COMPETENCIES

C-1 **TIME** - Selects goal - relevant activities, ranks them, allocates time, prepares and follows schedules.

C-2 **MONEY** - Uses or prepares budgets, makes forecasts, keeps records and makes adjustments to meet objectives.

C-3 **MATERIALS AND FACILITIES** - Acquires, stores, allocates, and uses materials or space efficiently.

C-4 **HUMAN RESOURCES** - Assesses skills and distributes work accordingly, evaluates performances and provides feedback.

INFORMATION - Acquires and Uses Information

C-5 Acquires and evaluates information.

C-6 Organizes and maintains information.

C-7 Interprets and communicates information.

C-8 Uses computers to process information.

INTERPERSONAL–Works With Others

C-9 Participates as members of a team and contributes to group effort.

C-10 Teaches others new skills.

C-11 Serves Clients/Customers–works to satisfy customer's expectations.

C-12 Exercises Leadership–communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies.

C-13 Negotiates-works toward agreements involving exchanges of resources; resolves divergent interests.

C-14 Works With Diversity–works well with men and women from diverse backgrounds.

SYSTEMS–Understands Complex Interrelationships

C-15 Understands Systems–knows how social, organizational, and technological systems work and operates effectively with them.

C-16 Monitors and Corrects Performance–distinguishes trends, predicts impacts on system operations, diagnoses systems performance and corrects malfunctions.

C-17 Improves or Designs Systems–suggests modifications to existing systems and develops new or alternative systems to improve performance.

TECHNOLOGY–Works With a Variety of Technologies

C-18 Selects Technology–chooses procedures, tools, or equipment, including computers and related technologies.

C-19 Applies Technology to Task–understands overall intent and proper procedures for setup and operation of equipment.

C-20 Maintains and Troubleshoots Equipment–prevents, identifies, or solves problems with equipment, including computers and other technologies.

FOUNDATION SKILLS

BASIC SKILLS–Reads, Writes, Performs Arithmetic and Mathematical Operations, Listens and Speaks

F-1 Reading–locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.

F-2 Writing–communicates thoughts, ideas, information and messages in writing and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.

F-3 Arithmetic–performs basic computations; uses basic numerical concepts such as whole numbers, etc.

F-4 Mathematics–approaches practical problems by choosing appropriately from a variety of mathematical techniques.

F-5 Listening–receives, attends to, interprets, and responds to verbal messages and other cues.

F-6 Speaking–organizes ideas and communicates orally.

THINKING SKILLS–Thinks Creatively, Makes Decisions, Solves Problems, Visualizes and Knows How to Learn and Reason

F-7 Creative Thinking–generates new ideas.

F-8 Decision-Making–specifies goals and constraints, generates alternatives, considers risks, evaluates and chooses best alternative.

F-9 Problem Solving–recognizes problems, devises and implements plan of action.

F-10 Seeing Things in the Mind's Eye–organizes and processes symbols, pictures, graphs, objects, and other information.

F-11 Knowing How to Learn–uses efficient learning techniques to acquire and apply new knowledge and skills.

F-12 Reasoning–discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.

PERSONAL QUALITIES–Displays Responsibility, Self-Esteem, Sociability, Self-Management, Integrity and Honesty

F-13 Responsibility–exerts a high level of effort and perseveres towards goal attainment.

F-14 Self-Esteem–believes in own self-worth and maintains a positive view of self.

F-15 Sociability–demonstrates understanding, friendliness, adaptability, empathy and polite-ness in group settings.

F-16 Self-Management–assesses self accurately, sets personal goals, monitors progress and exhibits self-control.

F-17 Integrity/Honesty–chooses ethical courses of action.