

AUTO 1800 Brakes, Suspension, Alignment & Tire Balancing I Syllabus

Instructor and Class Information

Instructor Name	Shane Schmidt
Email	shane.schmidt@lexschools.org
Phone	308-324-4691
Office Location	Lexington High School Skills Armory – 302 South Washington St.
Office Hours	7:10 a.m. – 3:45 p.m. Monday – Friday

Additional Instructor Information

Start Date	1/3/2024
End Date	5/21/2024

Course Information

Course Description

An introduction to brakes, suspension, steering, alignment, and their impact on car safety. The course also teaches the basic procedures in balancing tires.

Purpose/Goals

This course will introduce the student to the types of brake systems, steering systems, suspension systems, alignments, and tire balancing. The student will learn how these elements interact to make the car safe and achieve optimum operation.

Target Population

Students working toward becoming automotive technicians.

Textbooks

Textbook and workbook will be given to students at the beginning of the year. Students will be responsible for textbook and workbook care and return at the end of course.

Student Supplies

Pen

Notebook

Safety glasses (optional – no tinted safety glasses allowed)

School issued device

Grading Information

98-100 A+	85-89 B	74-76 D+
93-97 A	82-84 C+	70-73 D
90-92 B+	77-81 C	<70 F

Instructor Grading Information

The student will be graded on their attendance, ability to work with others on projects, participation in class, workbook assignments, tests, and quizzes.

Shop – 55%

Tests – 25%

Workbooks/Quizzes – 20%

All late work will be 50% off and 1 point off every day after due date.

Semester Final Grading

1st Quarter – 45% / 2nd Quarter – 45% / 1st Semester Final – 10%

3rd Quarter – 45% / 4th Quarter – 45% / 2nd Semester Final – 10%

Course Competencies

1. Demonstrate proper safety procedures.

Learning Objectives 1.a. Demonstrate safety procedures as they apply to projects assigned by instructor. 1.b. Apply all safety practices while completing assigned projects. 1.c. Comply with all EPA regulations.

Criteria

Performance will meet expectations when the student: 1.1. carries out safe shop practices. 1.2. uses proper PPE in the lab environment. 1.3. implements a clean and organized work environment.

2. Demonstrate proper procedures in setting up and machining brake drums.

Learning Objectives 2.a. Complete assigned projects using all safety procedures. 2.b. Demonstrate proper set up and lathe operations in completing assigned project. 2.c. Follow all EPA regulations.

Criteria

Performance will meet expectations when the student: 2.1. carries out machining to a brake drum or disc to eliminate runout. 2.2. carries out measurements of a drum or disc before machining to verify thickness. 2.3. carries out measurement of a drum or disc after machining to verify safe thickness.

3. Demonstrate steps in diagnosing brake problems and correcting brake problems.

Learning Objectives 3.a. Demonstrate proper procedures to inspect and diagnose a typical brake system. 3.b. Utilize diagnostic charts for correcting brake malfunctions. 3.c. Demonstrate proper safety procedures.

Criteria

Performance will meet expectations when the student: 3.1. uses service information and brake equipment to service brake systems. 3.2. uses flow charts to troubleshoot braking concerns. 3.3. identifies the customer concern before starting diagnosis and confirms fix after repair.

4. Service different types of emergency brakes.

Learning Objectives 4.a. Describe the operation of emergency brakes. 4.b. Distinguish the types of emergency brake systems. 4.c. Check safety procedures for each emergency brake systems.

Criteria

Performance will meet expectations when the student: 4.1. carries out diagnosis and repair to emergency brakes. 4.2. completes a written test covering theory and diagnosis of emergency brakes. 4.3. identifies proper function after repair.

5. Service different types of master cylinders.

Learning Objectives 5.a. Describe the operation of the different types of master cylinders. 5.b. Compare the differences in each master cylinder. 5.c. Apply safety precautions. 5.d. Adhere to EPA regulations.

Criteria

Performance will meet expectations when the student: 5.1. completes an exam covering master cylinder theory and operation. 5.2. uses service information and flow charts to diagnose master cylinder concerns. 5.3. executes proper bench bleeding of a new master cylinder and installs onto a vehicle.

6. Inspect vehicle tires for abnormal wear and proper inflation.

Learning Objectives 6.a. Follow proper procedure for tire removal. 6.b. Use the proper tools for tire removal. 6.c. Identify specific tire wear concerns and recommend necessary action.

Criteria

Performance will meet expectations when the student: 6.1. completes an exam covering tire wear concerns. 6.2. identifies abnormal tire concerns by a visual inspection. 6.3. identifies proper tire inflation.

7. Balance tires using tire balancer.

Learning Objectives 7.a. Demonstrate mounting tire on balancer. 7.b. Demonstrate attaching correct weights to wheel. 7.c. Apply the results of the tire balance and mount tire at correct vehicle location.

Criteria

Performance will meet expectations when the student: 7.1. carries out proper set up of a tire balancer, and performs a tire balance. 7.2. identifies proper tire inflation. 7.3. carries out installation of a tire in the correct location based on balance results to eliminate tire pull and vibration.

8. Identify components of the brake system. Learning Objectives 8.a. Locate components on the vehicle. 8.b. Explain function of each component. 8.c. Explain how a pressure rise impacts each component.

Criteria

Performance will meet expectations when the student: 8.1. completes a written exam covering brake system components. 8.2. identifies each brake system component. 8.3. explains the operation and purpose of brake system components.

Please see the school calendar for scheduled student days: 2022-2023 LPS School Year Calendar is available at <https://www.lexschools.org/calendar/>