

Basic Automotive – AUMT 1001-344

Semester: Fall 2025

Instructor: Andy Homan

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Student Learning Outcomes (SLOs)

By the end of this course, students will be able to:

1. Identify and describe the function of major automotive shop equipment.
2. Explain the operating principles of two-stroke and four-stroke internal combustion engines, including diesel engines.
3. Demonstrate knowledge of basic shop safety practices and proper use of safety equipment.
4. Recognize and explain the basic functions of common vehicle systems and controls.
5. Identify and properly use basic hand and power tools used in automotive repair.
6. Locate and interpret key automotive product information, such as VINs, decals, and manuals.

Course Syllabus – Basic Automotive 1001

Course Title: Introduction to Basic Automotive Systems

Course Code: AUTO 1001

Credits: 3

Format: Face-to-Face (with hands-on lab activities)

Instructor: Andrew Homan

Contact Info: ahoman@southplainscollege.edu andrew.homan@brownfieldisd.net office hours 730am -230pm

Location: Brownfield Auto Tech Shop Room 16

Meeting Times: Mon-Thurs after 230 pm

Course Description:

This entry-level course introduces students to fundamental automotive concepts and repair environments. Students will explore shop equipment, engine operation, vehicle systems, safety practices, and tool identification, even if they have no prior experience or driving ability.

Course Objectives:

- Understand how an automotive shop is set up and operated
- Explain engine function and vehicle system basics
- Emphasize safety in all shop and lab procedures
- Provide hands-on experiences with tools and vehicle components

Course Competencies

- Safe operation of shop tools and equipment.
- Use of PPE and adherence to shop safety rules.
- Basic automotive terminology and system identification.
- Reading and applying information from owner's manuals and labels.
- Hands-on demonstrations of equipment and tool use.

Textbook/Materials

- **Required:** Instructor-provided handouts and digital resources.
- **Safety Equipment:** Safety glasses, closed-toe non-slip shoes, appropriate shop clothing.
- **Optional:** Mechanic's gloves, small notebook for shop notes.

Grading Criteria

Category	Number of Items
Quizzes	14
Exams	6
Assignments	3
Attendance	1
Total: 100%	

Units & Weekly Schedule

Unit 1 – Large Equipment in Automotive Repair Shops (Weeks 1–2)

- **Topics:** Vehicle lifts (four-post, twin-post, scissor), solvent tanks, paint booth, air compressors, ADAS machines, brake lathes, wheel balancers, tire machines.
- **Skills:** Identify, explain, and demonstrate safe use of major shop equipment.
- **Assessment:** Unit Task – Shop Equipment Identification & Demonstration.

Unit 2 – How an Internal Combustion Engine Works (Weeks 3–4)

- **Topics:** Four-stroke gasoline, two-stroke gasoline, and four-stroke diesel operation.
- **Skills:** Identify cycles, components, and differences between engine types.
- **Assessment:** Unit Task – Engine Cycle Explanation & Diagram.

Unit 3 – Shop Safety (Weeks 5–6)

- **Topics:** PPE, emergency equipment, shop behavior, hazard prevention.
- **Skills:** Apply safety procedures in simulated and real shop situations.
- **Assessment:** Unit Task – Safety Walkthrough & Hazard Report.

Unit 4 – Vehicle System Operation (Weeks 7–9)

- **Topics:** Steering, pedal controls, brakes, HVAC, power windows/mirrors/seats, infotainment controls.
- **Skills:** Locate and explain the function of interior and system controls.
- **Assessment:** Unit Task – Vehicle Systems Scavenger Hunt.

Unit 5 – Hand Tools (Weeks 10–12)

- **Topics:** Sockets, ratchets, screwdrivers, bench vises, jacks, drain pans, work lights.
- **Skills:** Correct tool selection, safe handling, and maintenance.
- **Assessment:** Unit Task – Hand Tool ID & Function Demonstration.

Unit 6 – Automotive Product Information Locations (Weeks 13–15)

- **Topics:** VIN locations, manufacturer decals, owner's manuals, tire data decals.
- **Skills:** Locate, read, and interpret product information for service and repair.

- **Assessment:** Unit Task – VIN & Label Location Project.

Week 16 – Final Review & Practical Exam

- **Comprehensive review** of all units.
- Final **written and practical assessments**.

Attendance Policy

Attendance is essential for skill development and safety training. More than two unexcused absences may result in loss of participation points. All missed hands-on activities must be made up by arrangement with the instructor.

Safety

Safety is the top priority. Students must comply with PPE requirements at all times in the shop. Unsafe behavior will result in removal from class and possible disciplinary action.

Course Format

- Lectures with visual aids
- Hands-on shop demonstrations
- Group activities and projects
- Unit tasks with rubrics
- Quizzes and exams