



G-E-T High School Curriculum
Align, Explore, Empower
Scope and Sequence
Automotive Technology 1

Unit 1 - Shop Safety, Tools and Equipment Demonstration and Training 2.5 weeks/ongoing

Students will get S/P2 access to complete their required auto safety training. Students will receive demonstrations and training on the automotive lifts, jacks, power tools, learn the location of hand tools, recycling of fluids, spontaneous combustion cans, etc. In addition, students will get continued exposure around a vehicle that presents various safety concerns - battery disconnect, fuel disconnect, spark plug removal, alternator inspection, etc.

In this unit,

Students will recognize and demonstrate shop safety during lab activities - Examples.

Students will disconnect the battery when welding, maintenance of the alternator or starter and anytime repair procedures calls for it.

Students will lift a vehicle with a hoist and floor jack and jack stands.

Students will identify and draw the auto shop layout for wash sinks, hazardous waste disposal, waste cans, fire extinguishers, and more.

Students will identify and properly use many hand and power tools -Examples.

Students will know how to identify and properly maintain ratchets, wrenches, drivers, hammers, extensions, sockets, pliers, and more.

Students will know how to identify and demonstrate proper usage of the air drill, air hammer, impact, air shears, die grinder, digital multimeter, butterfly impact, bench grinder, and more.

Standards for Automotive Technology 1

TR1.c.11.h: Demonstrate safe and proficient use of specialty tools and equipment related to servicing transportation vehicles.

PE1.b.11.h: Demonstrate and follow proper safety procedures for tools and machines used in power and energy systems.

MNF.1.a.7.h: Identify safety and health protections and procedures that are critical to worker well-being.

MNF.1.a.8.h: Use appropriate tools, materials, and machines to repair a malfunctioning system.

MNF.1.c.6.h: Learn how to cooperate with others in ways to exhibit respect for individual and cultural differences and for the attitudes and feelings of others.

Unit 2 - Service Information/VIN/Under the Hood

2 weeks/ongoing

Students will get very familiar with VIN location (17 digit), the information provided on the driver-side door, under the hood and in the Owner's manual. In addition, students will learn how to use AllData and Napa ProLink as a resource to find important information on various vehicles. Students will look at scheduled maintenance and maintenance intervals.

In this unit,

Students will utilize vehicle service information and prepare vehicles for service - Examples.

Students will use owner's manuals, vehicle stickers, tire plaque cards, VIN and other resources to research applicable information on the vehicle.

Students identify information needed and the service requested on a repair order (identifix and AllData).

Ensure the vehicle is prepared to return to the customer - no tools left behind, no handprints/grease marks, etc.

Standards for (Automotive Technology 1)

TR1.b.7.h: Interpret preventive maintenance schedules and recommended service intervals for vehicles.

TR1.b.9.h: Explain that all systems demand specific repair procedures in order to achieve highest performance and efficiency.

TR1.c.10.h: Students will perform tasks related directly to current national standards per transportation area(NATEF).

Unit 3 - General Maintenance and Repair

3 weeks/ongoing

Students will get many demonstrations and opportunities to get hands-on for vehicle repair. Students will work in smaller groups completing many entry level labs for maintenance intervals like: oil change, tire rotation, battery inspection, tire balancing, belt inspection, etc. The students will be required to use AllData for repair procedures and safety concerns.

In this unit,

Students will demonstrate general maintenance and repair - Examples.

Students will demonstrate multiple maintenance repairs like: oil changes, tire rotation, wheel balancing, tire removal, battery cleaning and testing, aiming headlights, fuses, lights, locks, windows, air filter, fluid levels, brake service, spark plugs and wires, cooling system service, etc.

Students might demonstrate struts, shocks, sway bar links, ball joints, etc. repair if the problem on a vehicle arises.

Students will be able to read and demonstrate how to properly use a digital multimeter - Examples.

Students will identify and demonstrate how to properly measure ohms, AC/DC voltage, AC/DC amperage, and continuity of circuits using a digital multimeter.

Standards for (Automotive Technology 1)

TR1.c.9.h: Develop measurement skills in electrical/electronic, mechanical and hydraulic applications that are necessary to efficiently repair vehicles.

TR1.c.10.h: Students will perform tasks related directly to current national standards per transportation area(NATEF).

TR1.c.11.h: Demonstrate safe and proficient use of specialty tools and equipment related to servicing transportation vehicles.

BB1.e.6.h: Select and perform an appropriate maintenance is the process in order for the product or system to continue functioning properly and to extend its life.

BB1.d.6.h: Perform a voltage drop test and describe the relationship between voltage, current and resistance with a multimeter.

ENG5.a.6.h: Diagnose a system that is malfunctioning and use tools, materials, or machines to repair it.

Unit 4 - Main Automotive Systems and Components

8 weeks

Students will work in the classroom and shop setting to stay engaged learning the different automotive systems. Many shop activities will be provided to help students distinguish each system and their parts. Students will have opportunities to work in groups and around vehicles to acquire this knowledge. This unit is broken into sub units for each major system.

In this unit,

Students will recognize and discuss various automotive systems - lubrication, brakes, cooling, fuel, ignition and electrical.

Students will be able to recognize what FEED BIC LESS stands for and connect that those 11 systems are the main breakdown of an automobile. FEED BIC LESS = Fuel, Exhaust, Emission, Drive Train, Brake, Ignition, Cooling, Lubrication, Electrical, Steering, and Suspension.

Students will understand that the electrical system of an automobile consists of electrical accessories like lights, horns, switches, relays, fuses, motors; as well as the **Starting** and **Charging** system. The students will know the basic components that make up the starting and charging system.

Students will identify 4 parts or components for each main automotive system.

Students will list and show that the fuel system is made up of many parts and components: injectors, fuel rail, fuel pressure regulator, schrader valve, fuel filter, sending unit, etc.

Students will list and show that the brake system is made up of many parts and components: ABS computer, master cylinder, brake booster, pads, shoes, drums, calipers, rotors, e-brake, etc.

Standards for (Automotive Technology 1)

TR1.b.8.h: Define the interdependency of individual systems within a vehicle.

TR1.b.9.h: Explain that all systems demand specific repair procedures in order to achieve highest performance and efficiency.

BB1.d.7.h: Inspect and test components such as switches, connectors, relays, solid state devices and conductors and take

appropriate action.

Unit 5- (Welding, Fastener and Thread Repair)

(Length of Unit - 2.5 weeks)

Students will use the welding area to learn the various welding terminology and get hands-on experiences welding multiple pieces of metal. This unit prepares students for exhaust repair. In addition, the students are exposed to fastener repair using taps and dies. Also, the students learn how to repair threads with helicoils (great for spark plugs).

In this unit, students will ...

Demonstrate proper use of metal working equipment - MIG welding, oxy-acetylene torque, plasma cutting, etc.
Students will select the correct equipment, perform critical steps in the right order, position themselves correctly and employ proper heating, cutting and welding techniques.

Be able to perform common fastener and thread repair - taps, dies, helicoil, etc.

Students will drill holes to tolerance, tap holes to fit bolts, cut bolts to extract and tap holes to install thread inserts.

Standards for (Automotive Technology 1)

TR1.c.10.h: Students will perform tasks related directly to current national standards per transportation area(NATEF).

TR1.c.11.h: Demonstrate safe and proficient use of specialty tools and equipment related to servicing transportation vehicles.

PE1.b.11.h: Demonstrate and follow proper safety procedures for tools and machines used in power and energy systems.

MNF1.a.8.h: Use appropriate tools, materials, and machines to repair a malfunctioning system.

MNF1.g.8.h: Demonstrate the ability to choose proper welding supplies given the process.

MNF1.g.9.h: Identify different types of welding machines.

MNF1.g.11.h: Demonstrate safety and choose the proper safety equipment given the process being used (GMAW, oxy-acetylene, plasma cutting, etc.).

MNF1.g.12.h: Identify different types of welding joints and be able to demonstrate the ability to perform the welds (butt, lap, tee, edge, corner).

MNF1.h.7.h: Demonstrate the proper safety and use with plasma cutting equipment.

MNF1.h.8.h: Demonstrate how to use oxy-acetylene and plasma cutting.