

Curriculum at a Glance
Transportation Technology
Grade 10-12

The transportation industry is a constantly changing field. Today's vehicles have an increasing number of computerized controls. Modern day vehicles have close to 100 computer modules on board that all communicate over a complex CAN (Central area network) bus. Today's technicians need to be able to trouble shoot not only mechanical but also electrical issues. Problem solving skill and critical thinking are essential in all areas of the transportation industry. This course teaches students to problem solve and diagnose problems in a modern transportation lab environment.

Unit Description	Content and/or Skills
1. Safety	<ul style="list-style-type: none"> ● General lab/ shop safety rules and procedures ● Proper use of personal protective equipment ● The purpose and functions of OSHA ● Correct and safe use of a vehicle hoist
2. Automotive careers	<ul style="list-style-type: none"> ● Exploration of various ASE certification requirements ● Explore the careers paths in the Automotive and Transportation industry ● Proper preparation of a work order ● Estimating part and labor cost ● Using Alldata and or other similar industry accepted data base software to look identify vehicle service information
3. Engine service Construction	<ul style="list-style-type: none"> ● Use and identify vehicle service schedules ● Identify and describe the functions of the parts of the internal combustion engine ● Use micrometers, dial indicators, feeler gages and other various measurement tools to measure parts accurately to the nearest 1/1000 of an inch ● Use Alldata or other similar data base software to compare measurements to specifications.
4. Automotive Cooling systems	<ul style="list-style-type: none"> ● Properly identify the parts of an automotive cooling system ● Identify the thermal energy transfer that takes place in an automotive cooling system

	<ul style="list-style-type: none"> ● Diagnose various component issues of the cooling system such as thermostats and cooling fans ● Determine and measure the proper mix of water and anti-freeze in the cooling system using a hydrometer
5. Basic Automotive Electronics	<ul style="list-style-type: none"> ● Use of a basic digital multi-meter to measure voltage current and resistance. ● Identify ohms law and apply it to the automotive field ● Diagnose basic circuit for open and short circuit faults. ● Use Alldata to search vehicle wiring diagrams and connector views ● Trouble shoot parallel and series circuits ● Determine the functionality of a circuit using a voltage drop test
6. Batteries, Starting and Charging Systems	<ul style="list-style-type: none"> ● Identify the components of an electric motor, generator and solenoid ● Perform various battery tests such as load and conductance tests ● Perform starting voltage and draw tests ● Diagnose starting system related issues ● Diagnose charging system related issues.
7. Electronic Vehicle Controls	<ul style="list-style-type: none"> ● Identify the function of sensors and actuators ● Diagnose automotive module and CAN bus related issues ● Use a scan to identify and define various OBD2 trouble codes. ● Service and repair emissions control systems
8. Alternative Energy Sources	<ul style="list-style-type: none"> ● Explore alternative fuel sources for vehicles ● Explore hybrid technology ● Discuss and analyze the implications of driverless vehicles in the future.