Complete Automotive Technology

This comprehensive training program is geared toward creating the “complete” technician in automotive, and alternative fuel technologies. The occupational degree program covers fuel systems, chassis, drive trains, automobiles, live components, and a wide variety of visual training aids. Electricity and Electronics have a major influence on Automotive Technology, and every phase of this program supports some form of Electricity and Electronics training.

Course	Course Title	Clock Hours	Weeks	Quarter Credit Hours
AUT-101	Engine Repair	150	6	8.50
AUT-102	Automatic Transmissions & Transaxles	150	6	8.50
AUT-103	Manual Drive Train & Axles	150	6	8.50
AUT-104	Steering & Suspension	150	6	8.50
AUT-105	Brakes	150	6	8.50
AUT-106	Electrical & Electronic Systems	150	6	9.00
AUT-107	Heating & Air Conditioning	150	6	9.00
AUT-108	Engine Performance I	150	6	9.00
AUT-109	Engine Performance II	150	6	9.00
AUT-110	Hybrid Electric Vehicles	150	6	8.50
AUT-111	Body Control Systems	150	6	9.00
AUT-112	Street Performance & Welding	150	6	8.50
		1800	72	104.50

AUT-101 Engine Repair
Students will learn the safety principles, tools, and equipment necessary to operate in a safe shop environment. Students will learn the theory, operation, disassembly, and reassembly of an internal combustion engine. Students will also be introduced to the fuel properties of many conventional and alternative fuels used in piston engine application.

AUT-102 Automatic Transmission & Transaxle
Students will learn the theory involved in automatic transmission operation. They will learn how to inspect, diagnose, disassemble, and reassemble transmissions and transaxles. Students will also learn how to properly complete a work order and how to research vehicle service information and specifications.

AUT-103 Manual Drive Train & Axles
Students will learn the theory and operation of manual transmissions, transaxles, clutches and power train components. Diagnosis, disassembly, and reassembly will be included. Students will have an opportunity to become familiarized with performance clutch upgrades and current modifications being practiced for increased street performance.

AUT-104 Steering & Suspension
The principles of operation, inspection, diagnosis, and repair of the chassis, steering, and suspension systems are the basis for this course. Students will perform two and four wheel alignments, utilizing alignment equipment. Students will become proficient in the use of tire and wheel balancing equipment. Students will have an opportunity to discuss how to make suspension adjustments, as well as how to compute antiroll bar rates. They will also learn about aftermarket suspension systems upgrades.

AUT-105 Brakes
Students will learn how to troubleshoot, diagnose, and repair hydraulic brake systems, brake drums, disc brakes, and antilock brake components. Scan tools will be used to diagnose antilock brake system failure. Tasks will include complete brake relining using measuring tools and brake lathes. Students will also learn about aftermarket braking components and their proper applications and performance upgrades will be included.

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AUT-106 Electrical/Electronic Systems I
Students will be introduced to the fundamentals of electricity utilizing Ohm's and Watt's Law, as well as how to read schematics, understanding both terms and symbols. They will then be trained in the proper use of DVOMs and how to take proper readings. Battery composition and service will be covered, followed by the inspection, diagnosis, and repair of starting and charging systems.

AUT-107 Heating & Air Conditioning
Students will learn the operating principles of heating and air conditioning systems, followed by the diagnostic and repair procedures of air conditioning systems. They will perform tasks that utilize recovery and recharging equipment and will test and repair both heating and air conditioning components including electrical control systems. Students will also explore aftermarket performance cooling system upgrades. The MACS Refrigerant Test Certificate is offered in this course as well.

AUT-108 Engine Performance I
Using electrical and electronic testing equipment, students will learn theory and principles of engine ignition systems including solid state component operation and test procedures. Computer operation, sensors and actuator function, component testing and diagnosis along with on board diagnostic systems will be introduced. The course will also include multiplexing electronic vehicle systems.

AUT-109 Engine Performance II
Students will learn proper diagnostic procedures for engine drivability related systems such as air induction, ignition, computer, and fuel injection. On board diagnostics I and on board diagnostics II, theory and operation will be covered, followed by the diagnosis, repair, and measuring of emissions utilizing IM240 standards. The course will conclude with advanced level engine performance testing such as the logical diagnostic procedures used to inspect and test sensors and actuators and vehicle restraint system devices.

AUT-110 Hybrid Electrical Vehicles
Students will become familiar with a comprehensive study of current trends in alternative fuel vehicle designs. They will also learn practical service, diagnosis, and repair procedures on live hybrid vehicles.

AUT-111 Body Control Systems and Welding
This course will familiarize the students with serial communication buses comprising the networked electronic control units which have been growing exponentially. Networked modules include integrated radio controllers, lane departure and side blind zone alert modules, remote function actuator modules, supplemental restraint controllers and body control system modules bridged through gateways communicating via an electrical or optical signal employing a well-defined protocol. Students will understand the structure of a typical network for effective diagnosis of the body control system.

AUT-112 Street Performance
This course is designed to offer students a different perspective in Automotive Technology. An understanding of components and applications required to compete successfully in the expanding area of aftermarket street performance is offered, and contrasts are made to the professional racing industry. This class features many other manufacturers products used to enhance the learning experience. The students will have the opportunity to learn about performance braking systems, front and rear suspension setups, steering systems, and chassis tuning. Engine performance enhancement studies include ignition, exhaust, superchargers, turbochargers, fuel systems, introduction to carburetors and performance computer tuning for street legal vehicles. This module also presents an introduction to welding equipment and techniques including Oxyacetylene and Metal Inert Gas welding.

Courses applicable to both Diploma or Associate of Applied Science Degree Programs