

AUTOMOTIVE TECHNOLOGY (AUT)

AUT 101. Automotive Fundamentals and Service Information. 3 Credit Hours.

Automotive Fundamentals and Service Information is an entry-level course that exposes the student to all aspects of automotive safety procedures and precautions. Additionally, students receive training on what types of electronic service information is available for technicians and how to access vehicle-specific repair procedures and specifications. Students will also become proficient using precision measuring tools using metric and standard measurements.

Prerequisites: Reading Proficiency

AUT 103. Automotive Vehicle Inspection and Light Maintenance. 3 Credit Hours.

Automotive Vehicle Inspection and Light Maintenance will illustrate the fundamentals of basic vehicle maintenance and inspection for entry-level employment. Students will gain experience in the course from instructor-led lectures and hands-on application of identifying and performing typical light maintenance and inspection procedures.

Prerequisites: AUT 101 and Reading Proficiency

AUT 105. Automotive Maintenance and Service. 3 Credit Hours.

Automotive Maintenance and Service teaches students entry-level skills to properly inspect, maintain, and service a modern vehicle. Students will gain exposure to various types of automotive fluids and learn how to properly exchange those fluids in accordance with the manufacturer's procedures. Additionally, students will learn how to replace common maintenance items such as wiper blades, automotive lights, and filters. This course will also cover how to properly dismount, repair, and mount a tire on a wheel and balance the assembly.

Prerequisites: AUT 101, AUT 103, and Reading Proficiency

AUT 107. Automotive Steering and Suspension Service. 3 Credit Hours.

Automotive Steering and Suspension Service explores various types of steering and suspension designs and teaches detailed component testing procedures. Components include ball joints, struts, tie rod ends, and bushings. Students will also gain in-depth knowledge of performing two and four-wheel alignments using current wheel alignment technology.

Prerequisites: AUT 101, AUT 103, AUT 105, and Reading Proficiency

AUT 110. Automotive Electrical Principles. 3 Credit Hours.

Automotive Electrical Principles will build the foundation for direct current (DC) electricity. Students will learn the relationship between electrical circuits and units of electrical measurements while using a digital multi-meter (DMM). Students will gain practical experience in testing, diagnosing, and repairing electrical circuits and components on modern vehicles. An emphasis will be placed on ignition systems, starting, charging, and lighting circuits.

Prerequisites: AUT 101 and Reading Proficiency

AUT 112. Automotive Brake Systems Service and Diagnosis. 3 Credit Hours.

Automotive Brake Systems Service and Diagnosis helps develop skills needed to inspect, service, and repair modern disc/drum brakes that are hydraulically controlled. Additional emphasis will focus on the operation and diagnosis of electronic braking systems. Students will identify Anti-Lock Brakes, Traction Control, Stability Control, the associated components, as well as diagnostic and repair procedures determined by the automobile manufacturer.

Prerequisites: AUT 101 and Reading Proficiency

AUT 114. Automotive Engine Repair and Diagnosis. 3 Credit Hours.

Automotive Engine Repair and Diagnosis teaches the theory and application of the 4-cycle internal combustion engine. Students will learn to identify components, disassemble the engine, inspect components, measure to determine acceptable wear limits, and reassemble the engine. Additionally, students will learn how to diagnose engine conditions using common testing procedures.

Prerequisites: AUT 101 and Reading Proficiency

AUT 116. Automotive Powertrain Controls. 3 Credit Hours.

Automotive Powertrain Controls explores the relationship between fuel delivery and engine control management. Students will learn how to identify and test a fuel delivery system. Students will identify different types of powertrain sensors and the appropriate testing procedures using various scan tools, Oscilloscope (DSO), and a Digital Multi-Meter (DMM). Additionally, students learn the relationship between On-Board Diagnostics Second Generation (OBDII) and vehicle networks.

Prerequisites: AUT 101 and Reading Proficiency

AUT 150. Automotive Fuel and Induction Systems. 3 Credit Hours.

This course is a study of fuel and induction systems which includes gasoline fuel delivery systems, and diesel engines. Diagnosis and repair techniques as well as basics of the control systems will be covered. Corequisite: AUT 151

AUT 151. Automotive Engine Operation. 3 Credit Hours.

This course will be concerned with theory, design and repair procedures of the automotive engine including valves and lower engine service. Additional lab hours required.

AUT 156. Automotive Electricity. 3 Credit Hours.

This course is a study of the fundamentals of automotive electricity, magnetism, induction, and the use of wiring diagrams. This course also includes operating principles, diagnosis and repair of starting systems, charging systems, ignition systems, batteries, lighting and accessory circuits. Additional lab hours required.

AUT 158. Charts, Diagrams and Handbook Usage. 2 Credit Hours.

This course teaches the use of handbooks, with emphasis upon interpreting specifications and automotive charts and diagrams.

AUT 167. Automotive Electronics. 3 Credit Hours.

This course deals with advanced electrical systems including basics of electronic engine control systems, electronic functions, electronic system diagnosis and repair. Additional lab hours may be required.

Prerequisites: AUT 156

AUT 168. Suspension and Steering I. 3 Credit Hours.

This course will be concerned with the design principles, diagnosis and repair of the front and rear suspension systems including front-end alignment, 4-wheel alignment, manual and power steering assemblies and related components to include gears and linkages, as well as tire and wheel balance. Additional lab hours required.

AUT 169. Suspension and Steering II. 3 Credit Hours.

Continuation of AUT 168 including the design, principles of operation, diagnosis and repair of the following components conventional brake systems, anti-lock brake systems, electronic steering and ride control systems. Attention is given to live car diagnosis and repair procedures related to frame, suspension, steering, and brake components. Additional lab hours required.

Prerequisites: AUT 168

AUT 200. Automotive Fieldwork Operations. 5 Credit Hours.

Automotive Fieldwork Operations introduces students to three different roles within an automotive repair facility. These positions include; service manager, parts manager, and technician. As a service manager, students will learn appointment scheduling, creating repair orders, communicating with customers, and the billing process. The parts manager is responsible for ensuring parts are ordered, billed, and returned correctly. The technician will be responsible for the practical application of diagnosing, testing, and repairing the vehicle. Students will rotate through each of these positions throughout the semester to provide practical real-world experience.

Prerequisites: AUT 107, AUT 110, AUT 112, AUT 114, AUT 116 and Reading Proficiency

AUT 203. Automotive Manual Drivetrain. 3 Credit Hours.

Automotive Manual Drivetrain covers the theory of operation, service procedures and diagnosis of manual transmissions, transfer cases, constant velocity joints, differential/axles, and clutches. Students will disassemble these components to determine internal operation and service procedures. There will be a focus on the service and maintenance of the components. Additionally, students will gain the skills needed to diagnose and determine if these components can be repaired or replaced.

Prerequisites: AUT 101 and Reading Proficiency

AUT 210. Automotive Transmissions and Transaxles. 3 Credit Hours.

Automotive Transmissions and Transaxles emphasizes the service, operation, diagnosis, and repair procedures of automatic transmissions and transaxles. Students will learn how to maintain and service multiple types of automatic transmissions. They will also disassemble an automatic transmission/transaxle to determine the internal operation and fluid flow. A complete breakdown of these units will allow students to inspect and test individual components and compare them against manufacturer specifications. There will also be a focus on diagnosing automatic transmission driveability concerns.

Prerequisites: AUT 101 and Reading Proficiency

AUT 212. Automotive Heating, Ventilation, and Air Conditioning. 3 Credit Hours.

Automotive Heating, Ventilation, and Air Conditioning (HVAC) emphasize the principles, operation, and diagnosis of heating and air conditioning features found in automobiles. Students will learn how to recover, recharge, and recycle refrigerants used in these systems. Additionally, an in-depth look at the ventilation system will cover the operation and diagnosis of blend and mode doors. NOTE: students will be required to be certified in the recovering and recycling of refrigerants in accordance with EPA standards. Additional costs will be required.

Prerequisites: AUT 110 and Reading Proficiency

AUT 256. Automotive Powertrains. 3 Credit Hours.

Theory of operation and service and service procedures of drive lines, constant velocity joints, manual transmissions and transaxles, differentials and clutches.

Prerequisites: AUT 281

Corequisites: AUT 272 and AUT 282

AUT 271. Diagnostic Equipment and Emissions. 3 Credit Hours.

Students will learn proper diagnosis and troubleshooting procedures and related test equipment including oscilloscopes, infra-red exhaust analyzers, meters, gauges and diagnostic lane exposure. Additional lab hours required.

Prerequisites: AUT 150, AUT 167 and AUT 169

AUT 272. Accessories, Controls and Air Conditioning. 3 Credit Hours.

This course emphasizes theory, operation and design of power windows, power seats, speed controls, vacuum systems, other accessories, and air conditioning. Additional lab hours may be required.

Prerequisites: AUT 271, AUT 281 and AUT 291

AUT 273. Automatic Transmissions and Transaxles. 3 Credit Hours.

This course emphasizes the operations, theory, design and repair procedures of automatic transmissions and transaxles. Additional lab hours required.

Prerequisites: AUT 150, AUT 167 and AUT 169

AUT 281. Automotive Field Work I. 5 Credit Hours.

This is an advanced course with practical application on customer's vehicles, involving student work on the diagnosis, testing, and repair of vehicles. Students have the responsibility of all shop functions. Emphasis of lab work will include five of the ASE service specialty areas. Additional lab hours required.

Prerequisites: AUT 150, AUT 156, and AUT 169

Corequisites: AUT 271, AUT 273, AUT 291

AUT 282. Automotive Field Work II. 5 Credit Hours.

Continuation of AUT 281. Emphasis of lab work will include all eight ASE service specialty areas. Additional lab hours required.

Prerequisites: AUT 273, AUT 271, and AUT 281

AUT 291. Automotive Service Management. 2 Credit Hours.

This is a Service Advisor training course complete with necessary management practices enabling a student to understand the set-up of the automotive service department. The studies include customer relations, repair order writing, and economics of shop operations. Additional hours required.