



Automotive Systems Technology Credential: Diploma in Automotive Systems Technology D6016000

This curriculum prepares individuals for employment as Automotive Service Technicians. It provides an introduction to automotive careers and enhances the student's awareness of having to meet the challenges of this fast and ever-changing field.

Classroom and lab experience integrates technical and academic course work. Emphasis is placed on theory, servicing and operation of brakes, electrical/electronic systems, engine performance, steering/suspension, automatic transmission/transaxles, engine repair, climate control, and manual drive trains.

Upon completion of this curriculum students should be prepared for ASE certification and be ready for full-time employment in dealerships and repair shops in the automotive service industry. Cooperative education opportunities may be available at some North Carolina Community Colleges.

Program Length: 3 semesters

Career Pathway Options: Associate in Applied Science Degree in Automotive Systems Technology (Higher entrance standards required); Diploma in Automotive Systems Technology

Program Sites:

Lee Campus - Day Program

Course Requirements for Automotive Systems Technology Diploma

A. General Education Courses (6 SHC) C-L-SHC
 *ENG 102 Applied Communications II 3-0-3
 *MAT 101 Applied Mathematics I 2-2-3

B. Required Major Core Courses (19 SHC)
 AUT 141 Suspension & Steering Sys. 2-4-4
 AUT 151 Brake Systems 2-2-3

Required Subject Area
 AUT 161 Electrical Systems 2-6-4
 AUT 181 Engine Perf. - Electrical 2-3-3
 AUT 183 Engine Performance-Fuels 2-3-3
 AUT 185 Emission Control 1-2-2

C. Other Major Hours Required for Graduation (17 SHC)
 AUT 111 Basic Auto Technology 1-2-2
 AUT 115 Engine Fundamentals 2-3-3
 AUT 162 Chassis Electr/Electronics 2-2-3
 AUT 171 Heating & Air Condition 2-3-3
 AUT 184 Engine Perf.-Fuel Lab 0-3-1
 CIS 111 Basic PC Literacy 1-2-2
 Major Elective 3

Major Elective Listing (3 SHC)
 AUT 152 Brake Systems Lab 0-2-1
 AUT 163 Chassis Electr/Electr. Lab 0-2-1
 AUT 182 Engine Perf.-Electrical Lab 0-3-1
 COE 111 Co-op Work Exp. I 0-10-1
 COE 112 Co-op Work Exp. I 0-20-2
 COE 121 Co-op Work Exp. II 0-10-1

*These courses are not transferable to the AAS Degree.

Total Semester Hours Credit Required for Graduation: 42

Semester Curriculum for Automotive Systems Technology Diploma

1st Semester (Fall) C-L-SHC
 AUT 111 Basic Auto Technology 1-2-2
 AUT 115 Engine Fundamentals 2-3-3
 AUT 151 Brake Systems 2-2-3
 AUT 161 Electrical Systems 2-6-4
 AUT 185 Emission Control 1-2-2
 Major Elective 1
 CIS 111 Basic PC Literacy 1-2-2
 9-19-17

2nd Semester (Spring)
 AUT 141 Suspension & Steering Sys 2-4-4
 AUT 162 Chassis Electr/Electronics 2-2-3
 AUT 171 Heating & AC 2-3-3
 Major Elective 1
 *ENG 102 Applied Communications II 3-0-3
 *MAT 101 Applied Mathematics I 2-2-3
 11-13-17

3rd Semester (Summer)
 AUT 181 Engine Perf.-Electrical 2-3-3
 AUT 183 Engine Perf.-Fuels 2-3-3
 AUT 184 Engine Perf.-Fuels Lab 0-3-1
 Major Elective 1
 4-12-8

*These courses are not transferable to the AAS Degree.

Total Semester Hours Credit: 42

AUT 111 Basic Auto Technology 1-2-2

This course introduces basic concepts, terms, workplace safety, regulations, and service information relating to automotive technology. Emphasis is placed on developing familiarity with automotive components along with basic identification and proper use of various hand and power tools and shop equipment. Upon completion, students should be able to define and use terms associated with automobiles and identify and use basic tools and shop equipment.

AUT 115 Engine Fundamentals 2-3-3

This course covers the theory, construction, inspection, diagnosis, and repair of internal combustion engines and related systems. Topics include fundamental operating principles of engines and diagnosis, inspection, adjustment, and repair of automotive engines using appropriate service information. Upon completion, students should be able to perform basic diagnosis/repair of automotive

engines using appropriate tools, equipment, procedures, and service information.

AUT 141 Suspension & Steering Sys 2-4-4
This course covers principles of operation, types, and diagnosis/repair of suspension and steering systems to include steering geometry. Topics include manual and power steering systems and standard and electronically controlled suspension and steering systems. Upon completion, students should be able to service and repair various steering and suspension components, check and adjust various alignment angles, and balance wheels.

AUT 151 Brake Systems 2-2-3
This course covers principles of operation and types, diagnosis, service, and repair of brake systems. Topics include drum and disc brakes involving hydraulic, vacuum boost, hydra-boost, electrically powered boost, and anti-lock and parking brake systems. Upon completion, students should be able to diagnose, service, and repair various automotive braking systems.

AUT 161 Electrical Systems 2-6-4
This course covers basic electrical theory and wiring diagrams, test equipment, and diagnosis/repair/replacement of batteries, starters, alternators, and basic electrical accessories. Topics include diagnosis and repair of battery, starting, charging, lighting, and basic accessory systems problems. Upon completion, students should be able to diagnose, test, and repair the basic electrical components of an automobile.

AUT 162 Chassis Elect & Electronics 2-2-3
This course covers electrical/electronic diagnosis/repair, including wiring diagrams, instrumentation, and electronic/computer-controlled devices and accessories. Topics include interpreting wiring diagrams and diagnosis and repair of chassis electrical and electronic systems. Upon completion, students should be able to read and interpret wiring diagrams and determine/perform needed repairs on chassis electrical and electronic systems.

AUT 171 Heating & Air Conditioning 2-3-3
This course covers the theory of refrigeration and heating, electrical/electronic/pneumatic controls, and diagnosis/repair of climate control systems. Topics include diagnosis and repair of climate control components and systems, recovery/recycling of refrigerants, and safety and environmental regulations. Upon completion, students should be able to describe the operation, diagnose, and safely service climate control systems using appropriate tools, equipment, and service information.

AUT 181 Engine Perfor.-Electrical 2-3-3
This course covers the principles, systems, and procedures required for diagnosing and restoring engine performance using electrical/electronics test equipment. Topics include procedures for diagnosis and repair of ignition, emission control, and related electronic systems. Upon completion, students should be able to describe operation of and diagnose/repair ignition/emission control systems using appropriate test equipment and service information.

AUT 183 Engine Performance-Fuels 2-3-3
This course covers the principles of fuel delivery/management, exhaust/emission systems, and procedures for diagnosing and restoring engine performance using appropriate test equipment. Topics include procedures for diagnosis/repair of fuel

delivery/management and exhaust/emission systems using appropriate service information. Upon completion, students should be able to describe, diagnose, and repair engine fuel delivery/management and emission control systems using appropriate service information and diagnostic equipment.

AUT 184 Engine Perfor-Fuels Lab 0-3-1
Corequisites: AUT 183
This course provides a laboratory setting to enhance the skills for diagnosing and repairing fuel delivery/management and emission systems. Emphasis is placed on practical experiences that enhance the topics presented in AUT 183. Upon completion, students should be able to apply the laboratory experiences to the concepts presented in AUT 183.

AUT 185 Emission Controls 1-2-2
This course covers the design and function of emission control devices. Topics include chemistry of combustion as well as design characteristics and emission control devices which limit tailpipe, crankcase, and evaporative emissions. Upon completion, students should be able to troubleshoot, test, and service emission control systems.

CIS 111 Basic PC Literacy 1-2-2
This course provides a brief overview of computer concepts. Emphasis is placed on the use of personal computers and software applications for personal and workplace use. Upon completion, students should be able to demonstrate basic personal computer skills.

ENG 102 Applied Communications II 3-0-3
Prerequisites: 80 CPT reading RED 090 and 74 CPT writing scores (ENG 090 and 090A) or 18 ACT score or 370/R450 verbal SAT score.
This course is designed to enhance writing and speaking skills for the workplace. Emphasis is placed on generating short writings such as job application documents, memoranda, and reports and developing interpersonal communication skills with employees and the public. Upon completion, students should be able to prepare effective, short, and job-related written and oral communications. *The computer is used as a writing and design tool for this course. This is a diploma-level course.*

MAT 101 Applied Mathematics I 2-2-3
Prerequisites: CPT arithmetic score of 31 (MAT 060) or ACT score of 18, or SAT mathematics score of 410/450R
This course is a comprehensive review of arithmetic with basic algebra designed to meet the needs of certificate and diploma programs. Topics include arithmetic and geometric skills used in measurement, ratio and proportion, exponents and roots, applications of percent, linear equations, formulas, and statistics. Upon completion, students should be able to solve practical problems in their specific areas of study. *This course is intended for certificate and diploma programs.*