



Automotive Systems Technology
Credential: Associate in Applied Science
Degree in Automotive Systems Technology
A6016000

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: 5 semesters

Career Pathway Options: Associate in Applied Science Degree in Automotive Systems Technology

Program Sites:

Lee Campus - Day Program

Course Requirements for Automotive Systems Technology Degree

A. General Education Courses (15/16 SHC)		C-L-SHC
ENG 110	Freshman Composition	3-0-3
	OR	
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
ENG 116	Technical Report Writing	3-0-3
	OR	
ENG 114	Prof. Research & Reporting	3-0-3
	Humanities Elective	3-0-3
	Social Science Elective	3-0-3
MAT 115	Mathematical Models	2-2-3
B. Required Major Core Courses (22 SHC)		
AUT 141	Suspension & Steering Sys	2-4-4
AUT 151	Brake Systems	2-2-3
Required Subject Areas		
AUT 161	Electrical Systems	2-6-4
AUT 181	Engine Perf.-Electrical	2-3-3
AUT 183	Engine Perf.-Fuels	2-3-3
AUT 185	Emission Control	1-2-2
AUT 281	Adv. Engine Performance	2-2-3
C. Other Major Hours Required for Graduation (36 SHC)		
AUT 111	Basic Auto Technology	1-2-2
AUT 115	Engine Fundamentals	2-3-3
AUT 116	Engine Repair	1-3-2
AUT 162	Chassis Electr/Electronics	2-2-3
AUT 164	Automotive Electrical	2-2-3

AUT 171	Heating & Air Condition	2-3-3
AUT 184	Engine Perf.-Fuel Lab	0-3-1
AUT 221	Automatic Transmissions	2-6-4
AUT 231	Manual Drive Train/Axles	2-3-3
AUT 282	Engine Electrical Mgmt	3-9-6
CIS 111	Basic PC Literacy	1-2-2
	Major Elective	4

Major Elective Listing (4 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
AUT 232	Manual Dr. Train/Axles 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
COE 122	Co-op Work Exp II	0-20-2

D. Other Required Hours (2 SHC)

WLD 112	Basic Welding Processes	1-3-2
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Total Semester Hours Credit Required for Graduation: 75/76

Semester Curriculum for Automotive Systems Technology Degree

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
CIS 111	Basic PC Literacy	1-2-2
	Major Elective	1
		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
ENG 110	Freshman Composition	3-0-3
MAT 115	Mathematical Models	2-2-3
	Major Elective	1
		11-14-17
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
4th Semester (Fall)		
AUT 116	Engine Repair	1-3-2
AUT 164	Automotive Electrical	2-2-3
AUT 221	Automatic Transmissions	2-6-4
AUT 231	Manual Drive Train/Axles	2-3-3
ENG 116	Technical Report Writing	3-0-3
	Major Elective	1
		10-14-16
5th Semester (Spring)		
AUT 281	Adv Engine Performance	2-2-3
AUT 282	Engine Electrical Mgmt	3-9-6
WLD 112	Basic Welding Processes	1-3-2
	Humanities Elective	3-0-3
	Social Science Elective	3-0-3
		12-14-17
Total Semester Hours Credit:		75/76

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 116 Engine Repair	1-3-2	
This course covers service/repair/rebuilding of block, head, and internal engine components. Topics include engine repair/reconditioning using service specifications. Upon completion, students should be able to rebuild/recondition an automobile engine to service specifications.		
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 164 Automotive Electronics	2-2-3	
This course covers fundamentals of electrical/electronic circuitry, semi-conductors, and microprocessors. Topics include Ohm's law, circuits, AC/DC current, solid state components, digital applications, and the use of digital multimeters. Upon completion, students should be able to apply Ohm's law to diagnose and repair electrical/electronic circuits using digital multimeters and appropriate service information.		
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	
<i>Corequisites: AUT 183</i>		
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.		
AUT 221 Automatic Transmissions	2-6-4	
This course covers operation, diagnosis, service, and repair of automatic transmissions/transaxles. Topics include hydraulic, pneumatic, mechanical, and electrical/electronic operation of automatic drive trains and the use of appropriate service tools and equipment. Upon completion, students should be able to explain operational theory and diagnose and repair automatic drive trains.		

modeling. Upon completion, students should be able to solve practical problems, reason and communicate with mathematics, and work confidently, collaboratively, and independently.

AUT 231 Manual Drive Trains/Axles 2-3-3

This course covers the operation, diagnosis, and repair of manual transmissions/transaxles, clutches, driveshafts, axles, and final drives. Topics include theory of torque, power flow, and manual drive train service and repair using appropriate service information, tools, and equipment. Upon completion, students should be able to explain operational theory and diagnose and repair manual drive trains.

AUT 281 Adv Engine Performance 2-2-3

This course utilizes service information and specialized test equipment to diagnose/repair power train control systems. Topics include computerized ignition, fuel and emission systems, related diagnostic tools and equipment, data communication networks, and service information. Upon completion, students should be able to perform advanced engine performance diagnosis and repair.

AUT 282 Engine Elec Management 3-9-6

This course includes principles, systems, and procedures required for diagnosing and restoring engine performance/driveability and emission control through mechanical, electrical, and gas analysis. Emphasis is placed on diagnostics using mechanical, electrical (including on-board), and gas analysis to determine root causes for repair purposes. Upon completion, students should be able to diagnose and repair PCM-related engine performance/driveability and emission problems.

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 110 Freshman Composition 3-0-3

Prerequisites: 65 CPT reading score and 86 CPT writing score, or 18 ACT score, or 450 verbal SAT score, or satisfactory completion of developmental requirements.

This course is the first course in a series of two designed to develop informative and business writing skills. Emphasis is placed on logical organization of writing, including effective introductions and conclusions, precise use of grammar, and appropriate selection and use of sources. Upon completion, students should be able to produce clear, concise, well-organized short papers. *This course does **not** qualify for university transfer.*

ENG 116 Technical Report Writing 3-0-3

Prerequisites: ENG 110 or ENG 111

This course, the second in a series of two, introduces layout and design of technical reports used in business and industry. Emphasis is placed on audience analysis, data collection and analysis, technical writing style and organization, oral presentation or technical data, and the appropriate use of graphics in written and oral presentations. Upon completion, students should be able to produce written and oral reports using a variety of technical communication models.

MAT 115 Mathematical Models 2-2-3

Prerequisites: CPT arithmetic score of 57 (MAT 060) and an algebra score of 38 (MAT 070), or ACT score of 18, or SAT mathematics score of 410/450R.

This course develops the ability to utilize mathematical skills and technology to solve problems at a level found in non-mathematics-intensive programs. Topics include applications to percent, ratio and proportion, formulas, statistics, functional notation, linear functions and their groups, probability, sampling techniques, scatter plots, and

WLD 112 Basic Welding Processes 1-3-2

This course introduces basic welding and cutting. Emphasis is placed on beads applied with gases, mild steel fillers, and electrodes and the capillary action of solder. Upon completion, students should be able to set up welding and oxy-fuel equipment and perform welding, brazing, and soldering processes.