



## Automotive Service

### Program Information

Automotive Service consists of testing, diagnosing, repairing, and maintaining the mechanical, hydraulic, and electrical systems of the modern automobile.

The Automotive Service program at Trenholm State Community College is designed to teach a student the basic principles of all eight areas of the National Automotive Technicians Education Foundation certifications (engine repair, automatic transmissions/transaxle, manual drive train and axles, suspension and steering, brakes, electrical/electronic systems, heating and air conditioning, and engine performance) as required by industry today.

### Occupational Choices

Employment of automotive service technicians and mechanics is projected to decline 4 percent from 2019 to 2029.

The number of vehicles already in use is expected to continue to rise, and some service technicians will still be needed to perform basic maintenance and repair tasks, such as replacing brake pads and changing oil. Increasingly, however, new vehicles are being built with interconnected sensors, cameras, and instruments that allow for predictive maintenance and remote diagnosis, thus reducing maintenance workhours.

The graduates of the Automotive Service Technology Program have technical skills and knowledge that prepares them to enter varied fields. They can go into parts distribution, retail parts sales, tractor mechanics, truck repair, automotive manufacturing plants and the related suppliers.

Source: Bureau of Labor and Statistics Occupational Outlook Handbook, 2019-2029 Edition, 2021 Survey

### Average Full-Time Wage

The median annual wage for automotive service technicians and mechanics was \$42,090 in 2019. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than \$24,400, and the highest 10 percent earned more than \$68,880.

Source: Bureau of Labor and Statistics Occupational Outlook Handbook, 2019-2029 Edition, 2021 Survey

### Awards Available

Associate of Applied Science  
Automotive Service

Certificate  
Automotive Service

Short Term Certificate  
Automotive Service  
Brakes/Steering/Suspension Concentration  
Engine Performance Concentration  
Transmission Concentration  
Electrical/Electronic Concentration  
Engines Concentration  
Air Conditioning and Heating Concentration

### Program Contact

Reuben Buice  
Program Coordinator/Instructor  
334-420-4362  
Location: Patterson Site - Bldg. G

As part of ongoing planning and evaluation, the College regularly evaluates student learning outcomes for each program.

### Estimated Program Length & Cost \*

Award	Length	Credit Hours	Tuition/Fees	Books	Tools	Supplies
Associate Degree	6 Terms	68	\$10,948	\$350	\$750	\$0
Certificate	5 Terms	52	\$8,372	\$350	\$750	\$0
Short Term Certificates (3)	2 Terms	13	\$2,093	\$350	\$750	\$0
Short Term Certificates (3)	2 Terms	10	\$1,610	\$350	\$750	\$0

\* Tax not included. Prices are subject to change without prior notice; cost of books may vary considerably among suppliers. Cost of general education books is in addition to the total listed above. The length of the program is based on full-time status of 12-15 credit hours per term. Enrollment in transitional level general education courses will alter the length of the program.

## Associate of Applied Science Automotive Service

### General Education Requirements (16 hours)

#### Area I - Written Composition (3 hours)

ENG-101	English Composition I	3
ENG-102	English Composition II	3
ENG-130	Technical Report Writing	3

#### Area II - Humanities & Fine Arts (3 hours)

(Humanities and Arts disciplines include but are not limited to: Area/Ethnic Studies, Art and Art History, Foreign Languages, Music and Music History, Philosophy, Ethics, Religious Studies, Theater and Dance.)

**Note:** If SPH-106, SPH-107, SPA-101 or SPA-102 has been taken an additional 3 semester hours in Humanities and Fine Arts must be taken to satisfy requirements in Area II.

#### Arts:

ART-100	Art Appreciation	3
MUS-101	Music Appreciation	3

#### Humanities:

PHL-106	Intro to Philosophy	3
PHL-206	Ethics & Society	3
REL-100	History of World Religions	3
REL-151	Survey of Old Testament	3
REL-152	Survey of New Testament	3
SPA-101	Intro Spanish I	3
SPA-102	Intro Spanish II	3
SPH-106	Fundamentals of Oral Comm	3
SPH-107	Fundamentals of Public Speaking	3

#### Literature:

ENG-251	American Literature I	3
ENG-252	American Literature II	3
ENG-261	English Literature I	3
ENG-262	English Literature II	3
ENG-271	World Literature I	3
ENG-272	World Literature II	3

#### Area III - Natural Science & Mathematics (6-7 hours)

(In addition to Mathematics, disciplines in the Natural Sciences include: Astronomy, Biological Sciences, Chemistry, Geology, Physical Geography, Earth Science, Physics, and Physical Science.)

**Note:** 3 semester hours in MTH must be completed. Additional hours can be taken in the Natural Science area.

#### Mathematics:

MTH-100	Intermediate Algebra	3
MTH-104	Plane Trigonometry	3
MTH-110	Finite Mathematics	3
MTH-112	Precalculus Algebra	3
MTH-116	Mathematical Applications	3

#### Natural Sciences:

BIO-101	Introduction to Biology I	4
BIO-102	Introduction to Biology II	4
BIO-103	Principles of Biology I	4
BIO-104	Principles of Biology II	4
PHS-111	Physical Science I	4
PHS-112	Physical Science II	4
PHY-120	Introduction to Physics	4

#### Area IV - History, Social & Behavioral Sciences (3 hours):

(Social and Behavioral Sciences include, but are not limited to: Anthropology, Economics, Geography, Political Science, Psychology, and Sociology.)

**Note:** Must complete 3 semester hours.

#### History:

HIS-101	Western Civilization I	3
HIS-102	Western Civilization II	3
HIS-121	World History I	3
HIS-122	World History II	3
HIS-201	United States History I	3
HIS-202	United States History II	3

#### Social and Behavioral Sciences:

PSY-200	General Psychology	3
PSY-210	Human Growth and Development	3
SOC-200	Introduction to Sociology	3
POL-200	Introduction to Political Science	3
POL-211	American National Government	3

#### Area V: Pre-Professional/College Requirements:

(Courses appropriate to the degree requirements and major of the individual student and electives.)

#### College Requirements:

ORI-101	Orientation to College	1
ASE-101	Fundamentals of Automotive Tech	3
ASE-112	Electrical Fundamentals	3
ASE-121	Braking Systems	3
ASE-122	Steering and Suspension	3
ASE-124	Automotive Engines	3
ASE-130	Drive Train and Axles	3
ASE-133	Motor Vehicle Air Conditioning	3
ASE-162	Electrical and Electronic Systems	3
ASE-212	Adv Electrical & Electronic Systems	3
ASE-220	Advanced Automotive Engines	3
ASE-221	Light Diesel for Automotive	3
ASE-224	Manual Transmission and Transaxle	3
ASE-230	Automatic Transmission & Transaxle	3
ASE-239	Engine Performance	3
ASE-244	Engine Performance and Diagnostics	3
ASE-246	Automotive Emissions	3
ASE-251	Dealership Work Experience	3
ASE-261	Dealership Work Experience	3
ASE-263	Hybrid and Electric Vehicles	3
	Elective	3

#### Electives:

CIS-146	Microcomputer Applications	3
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**Area V Credit Hours: 55**

**Total Credit Hours: 71**

## Certificate Automotive Service

### General Education Requirements (6 hours)

#### Area I - Written Composition (3 hours)

ENG-101	English Composition I	3
ENG-102	English Composition II	3
ENG-130	Technical Report Writing	3

#### Area II - Humanities & Fine Arts (0 hours)

(Humanities and Arts disciplines include but are not limited to: Area/Ethnic Studies, Art and Art History, Foreign Languages, Music and Music History, Philosophy, Ethics, Religious Studies, Theater and Dance.)

**Note:** If SPH-106, SPH-107, SPA-101 or SPA-102 has been taken an additional 3 semester hours in Humanities and Fine Arts must be taken to satisfy requirements in Area II.

#### Arts:

ART-100	Art Appreciation	3
MUS-101	Music Appreciation	3

#### Humanities:

PHL-106	Intro to Philosophy	3
PHL-206	Ethics & Society	3
REL-100	History of World Religions	3
REL-151	Survey of Old Testament	3
REL-152	Survey of New Testament	3
SPA-101	Intro Spanish I	3
SPA-102	Intro Spanish II	3
SPH-106	Fundamentals of Oral Comm	3
SPH-107	Fundamentals of Public Speaking	3

#### Literature:

ENG-251	American Literature I	3
ENG-252	American Literature II	3
ENG-261	English Literature I	3
ENG-262	English Literature II	3
ENG-271	World Literature I	3
ENG-272	World Literature II	3

#### Area III - Natural Science & Mathematics (3 hours)

(In addition to Mathematics, disciplines in the Natural Sciences include: Astronomy, Biological Sciences, Chemistry, Geology, Physical Geography, Earth Science, Physics, and Physical Science.)

**Note:** 3 semester hours in MTH must be completed. Additional hours can be taken in the Natural Science area.

#### Mathematics:

MTH-100	Intermediate Algebra	3
MTH-104	Plane Trigonometry	3
MTH-110	Finite Mathematics	3
MTH-112	Precalculus Algebra	3
MTH-116	Mathematical Applications	3

#### Natural Sciences:

BIO-101	Introduction to Biology I	4
BIO-102	Introduction to Biology II	4
BIO-103	Principles of Biology I	4
BIO-104	Principles of Biology II	4
PHS-111	Physical Science I	4
PHS-112	Physical Science II	4
PHY-120	Introduction to Physics	4

**Area IV - History, Social & Behavioral Sciences (0 hours):**  
(Social and Behavioral Sciences include, but are not limited to: Anthropology, Economics, Geography, Political Science, Psychology, and Sociology.)

#### History:

HIS-101	Western Civilization I	3
HIS-102	Western Civilization II	3
HIS-121	World History I	3
HIS-122	World History II	3
HIS-201	United States History I	3
HIS-202	United States History II	3

#### Social and Behavioral Sciences:

PSY-200	General Psychology	3
PSY-210	Human Growth and Development	3
SOC-200	Introduction to Sociology	3
POL-200	Introduction to Political Science	3
POL-211	American National Government	3

#### Area V: Pre-Professional/College Requirements:

(Courses appropriate to the degree requirements and major of the individual student and electives.)

#### College Requirements:

ORI-101	Orientation to College	1
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ASE-101	Fundamentals of Automotive Tech	3
ASE-112	Electrical Fundamentals	3
ASE-121	Braking Systems	3
ASE-122	Steering and Suspension	3
ASE-124	Automotive Engines	3
ASE-130	Drive Train and Axles	3
ASE-133	Motor Vehicle Air Conditioning	3
ASE-162	Electrical and Electronic Systems	3
ASE-212	Adv Electrical & Electronic Systems	3
ASE-220	Advanced Automotive Engines	3
ASE-221	Light Diesel for Automotive	3
ASE-224	Manual Transmission and Transaxle	3
ASE-230	Automatic Transmission & Transaxle	3
ASE-239	Engine Performance	3
ASE-244	Engine Performance and Diagnostics	3
ASE-246	Automotive Emissions	3

#### Electives:

CIS-146	Microcomputer Applications	3
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**Area V Credit Hours: 49**

**Total Credit Hours: 55**

Short Term Certificate  
Automotive Service  
Brakes/Steering/Suspension

**Area V: Pre-Professional/College Requirements:**  
(Courses appropriate to the degree requirements and major of the individual student and electives.)

**College Requirements:**

ORI-101	Orientation to College	1
ASE-101	Fundamentals of Automotive Tech	3
ASE-121	Braking Systems	3
ASE-122	Steering and Suspension	3

**Total Credit Hours: 10**

Short Term Certificate  
Automotive Service  
Electrical/Electronic

**Area V: Pre-Professional/College Requirements:**  
(Courses appropriate to the degree requirements and major of the individual student and electives.)

**College Requirements:**

ORI-101	Orientation to College	1
ASE-101	Fundamentals of Automotive Tech	3
ASE-112	Electrical Fundamentals	3
ASE-162	Electrical and Electronic Systems	3
ASE-212	Adv Electrical & Electronic Systems	3

**Total Credit Hours: 13**

Short Term Certificate  
Automotive Service  
Engine Performance

**Area V: Pre-Professional/College Requirements:**  
(Courses appropriate to the degree requirements and major of the individual student and electives.)

**College Requirements:**

ORI-101	Orientation to College	1
ASE-101	Fundamentals of Automotive Tech	3
ASE-239	Engine Performance	3
ASE-244	Engine Performance and Diagnostics	3
ASE-246	Automotive Emissions	3

**Total Credit Hours: 13**

Short Term Certificate  
Automotive Service  
Engines

**Area V: Pre-Professional/College Requirements:**  
(Courses appropriate to the degree requirements and major of the individual student and electives.)

**College Requirements:**

ORI-101	Orientation to College	1
ASE-101	Fundamentals of Automotive Tech	3
ASE-124	Automotive Engines	3
ASE-220	Advanced Automotive Engines	3

**Total Credit Hours: 10**

Short Term Certificate  
Automotive Service  
Transmission

**Area V: Pre-Professional/College Requirements:**  
(Courses appropriate to the degree requirements and major of the individual student and electives.)

**College Requirements:**

ORI-101	Orientation to College	1
ASE-101	Fundamentals of Automotive Tech	3
ASE-130	Drive Train and Axles	3
ASE-224	Manual Transmission and Transaxle	3
ASE-230	Automatic Transmission & Transaxle	3

**Total Credit Hours: 13**

Short Term Certificate  
Automotive Service  
Air Conditioning & Heating

**Area V: Pre-Professional/College Requirements:**  
(Courses appropriate to the degree requirements and major of the individual student and electives.)

**College Requirements:**

ORI-101	Orientation to College	1
ASE-101	Fundamentals of Automotive Tech	3
ASE-133	Motor Vehicle Air Conditioning	3
ASE-212	Adv Electrical & Electronic Systems	3

**Total Credit Hours: 10**

## Course Descriptions Automotive Service

Course #	Course Title	Credit Hours
<b>ASE-101</b>	<b>FUNDAMENTALS OF AUTOMOTIVE TECHNOLOGY</b> PREREQUISITE: None. This course provides basic instruction in Fundamentals of Automotive Technology. This is a CORE course and supports CIP Codes 15.0803 and 47.0604.	<b>3</b>
<b>ASE-112</b>	<b>ELECTRICAL FUNDAMENTALS</b> PREREQUISITE: None This course introduces the principles and laws of electricity. Emphasis is placed on wiring diagrams, test equipment, and identifying series, parallel and series-parallel circuits. Upon completion, students should be able to calculate, build, and measure circuits. This is a CORE course.	<b>3</b>
<b>ASE-121</b>	<b>BRAKING SYSTEMS</b> PREREQUISITE: None This course provides instruction in automotive technology or auto mechanics. Emphasis is placed on the practical application of brakes. This is a CORE course. ABR-223 – Automotive Mechanical Components is a suitable substitute for this course.	<b>3</b>
<b>ASE-122</b>	<b>STEERING AND SUSPENSION</b> PREREQUISITE: None. This course provides instruction in automotive technology or auto mechanics. Emphasis is placed on the practical application of steering and suspension. This is a CORE course. ABR-255 – Steering and Suspension is a suitable substitute for this course.	<b>3</b>
<b>ASE-124</b>	<b>AUTOMOTIVE ENGINES</b> PREREQUISITE: None. This course provides instruction on the operation, design, and superficial repair of automotive engines. Emphasis is placed on understanding the four stroke cycle, intake and exhaust manifolds and related parts, engine mechanical timing components, engine cooling and lubrication system principles and repairs, and basic fuel and ignition operation. This is a CORE course and supports CIP Codes 47.0604 and 15.0803.	<b>3</b>
<b>ASE-130</b>	<b>DRIVE TRAIN AND AXLES</b> PREREQUISITE: None. This course provides basic instruction in automotive drive trains and axles. Emphasis is placed on the understanding and application of basic internal and external operation relating to proper operation and driveability. This is a CORE course. ABR-223 – Automotive Mechanical Components is a suitable substitute for this course.	<b>3</b>
<b>ASE-133</b>	<b>MOTOR VEHICLE AIR CONDITIONING</b> PREREQUISITE: None. This course provides basic instruction in theory, operation, and repair of automotive heating and air conditioning systems. Emphasis is placed on the understanding and repair of vehicle air conditioning and heating systems, including but not limited to air management, electrical and vacuum controls, refrigerant recovery, and component replacement. ABR-258 – Heating and AC in Collision Repair is a suitable substitute for this course.	<b>3</b>
<b>ASE-162</b>	<b>ELECTRICAL AND ELECTRONIC SYSTEMS</b> PREREQUISITE: ASE-112 or instructor approval This is an intermediate course in automotive electrical and electronic systems. Emphasis is placed on troubleshooting and repair of battery, starting, charging, and lighting systems, subsystems, and components. This is a CORE course.	<b>3</b>
<b>ASE-212</b>	<b>ADVANCED ELECTRICAL AND ELECTRONIC SYSTEMS</b> PREREQUISITE: ASE-162 or instructor permission This course provides instruction in advanced automotive electrical and electronic systems. Emphasis is placed on troubleshooting and repair of advanced electrical and electronic systems, subsystems, and components.	<b>3</b>
<b>ASE-220</b>	<b>ADVANCED AUTOMOTIVE ENGINES</b> PREREQUISITE: None This course provides in-depth instruction concerning internal engine diagnosis, overhaul and repair, including but not necessarily limited to the replacement of timing chains, belts, and gears, as well as the replacement or reconditioning of valve train components as well as replacement of pistons, connecting rods, piston rings, bearings, lubrication system components, gaskets, and oil seals. This course supports CIP Codes 47.0604 and 15.0803.	<b>3</b>



<b>Course #</b>	<b>Course Title</b>	<b>Credit Hours</b>
<b>ASE-221</b>	<b>LIGHT DIESEL FOR AUTOMOTIVE</b> This course will introduce students to basic light diesel fundamentals, operation, diagnosis, and repair. Emphasis is placed on design, maintenance, fuel systems, computer control and interrelated systems.	<b>3</b>
<b>ASE-224</b>	<b>MANUAL TRANSMISSION/TRANSAXLE</b> PREREQUISITE: None This course covers basic instruction in manual transmission and transaxles. Emphasis is placed on the understanding and application of basic internal and external operation relating to proper operation and driveability. This course supports CIP Codes 15.0803 and 47.0604.	<b>3</b>
<b>ASE-230</b>	<b>AUTOMATIC TRANSMISSION/TRANSAXLE</b> PREREQUISITE: None This course provides basic instruction in automatic transmissions and transaxles. Emphasis is placed on the comprehension of principles and powerflow of automatic transmissions and repairing or replacing internal and external components. This is a CORE course and supports CIP Codes 15.0803 and 47.0604.	<b>3</b>
<b>ASE-239</b>	<b>ENGINE PERFORMANCE</b> PREREQUISITE: None This course provides basic instruction in engine performance with emphasis on fuel and ignition systems relating to engine operation. This is a CORE course and supports CIP Code 15.0803 and 47.0604.	<b>3</b>
<b>ASE-244</b>	<b>ENGINE PERFORMANCE AND DIAGNOSTICS</b> PREREQUISITE: None This course provides advanced instruction in engine performance. Emphasis is placed on engine management and computer controls of ignition, fuel, and emissions systems relating to engine performance and driveability. This is a CORE course and supports CIP Codes 15.0803 and 47.0604.	<b>3</b>
<b>ASE-246</b>	<b>AUTOMOTIVE EMISSIONS</b> PREREQUISITE: None This is an introductory course in automotive emission systems. Emphasis is placed on troubleshooting and repair of systems, subsystems, and components. This course supports CIP code 15.0803 and 47.0604.	<b>3</b>
<b>ASE-251</b>	<b>DEALERSHIP WORK EXPERIENCE</b> PREREQUISITE: None At the end of each on-campus period, the student returns to the sponsoring dealership to complete this segment of the program working full-time under the supervision of the dealership student work coordinator. He/she is expected to complete work assignments in the dealership that will reinforce and parallel the course work just completed at the college. Although indicated as 15 contact hours, students generally work on a full-time basis (40 hours per week) at the dealership. An evaluation of the students in dealership work performance is completed by the dealership supervisor.	<b>3</b>
<b>ASE-261</b>	<b>DEALERSHIP WORK EXPERIENCE</b> PREREQUISITE: None At the end of each on-campus period, the student returns to the sponsoring dealership to complete this segment of the program working full-time under the supervision of the dealership student work coordinator. He/she is expected to complete work assignments in the dealership that will reinforce and parallel the course work just completed at the college. Although indicated as 15 contact hours, students generally work on a full-time basis (40 hours per week) at the dealership. An evaluation of the students in dealership work performance is completed by the dealership supervisor.	<b>3</b>
<b>ASE-263</b>	<b>HYBRID &amp; ELECTRIC VEHICLES</b> PREREQUISITE: As determined by college. This course is designed to measure a technician's knowledge of the skills needed to diagnose both high and low voltage electrical/electronic problems, as well as other supporting system problems on hybrid/electric vehicles. This course prepares students for the ASE Light Duty Hybrid/Electric Vehicle Specialist (LE) certification.	<b>3</b>