

Name: [Click here to enter text.](#)      Date: [Click here to enter a date.](#)      Year of Relevant Catalog: 2023-2024

### Technical Education Courses

Fall Semester – Year 1				Spring Semester – Year 1				
Course Title		Status	Credits	Course Title		Status	Credits	
AUT 100	Shop Safety/Management		1	AUT 132	Engine Performance 2 (Pre-req: AUT 100, AUT 131, AUT 135)		4	
AUT 109	Steering and Suspension 1 (Pre-req: AUT 100)		3	AUT 133	Engine Performance 3 (Pre-req: AUT 100, AUT 131, AUT 132, AUT 135)		3	
AUT 110	Steering and Suspension 2 (Pre-req: AUT 100, AUT 109)		2	AUT 155	Automotive Diesel Technologies (Pre-req: AUT 132)		1	
AUT 131	Engine Performance 1 (Pre-req: AUT 100)		3	AUT 160	Hybrid/Electric Vehicles (Pre-req: AUT 132, AUT 240)		1	
AUT 135	Electrical 1 (Pre-req: AUT 100)		3	AUT 235	Electrical 3 (Pre-req: AUT 100, AUT 135, AUT 140)		3	
AUT 140	Electrical 2 (Pre-req: AUT 135)		2	AUT 240	Electrical 4 (Pre-req: AUT 100, AUT 135, AUT 140, AUT 235)		2	
			<b>Total Credits</b>				<b>Total Credits</b>	<b>14</b>

Fall Semester – Year 2				Spring Semester – Year 2				
Course Title		Status	Credits	Course Title		Status	Credits	
AUT 115	Engine Repair 1 (Pre-req: AUT 100)		2	AUT 146	Brakes 1 (Pre-req: AUT 100)		3	
AUT 120	Engine Repair 2 (Pre-req: AUT 100, AUT 115)		3	AUT 150	Brakes 2 (Pre-req: AUT 100, AUT 140, AUT 146)		2	
AUT 221	Manual Drive Train 1 (Pre-req: AUT 100)		1	AUT 210	Automotive HVAC (Pre-req: AUT 100, AUT 140)		4	
AUT 241	Automatic Transmissions and Transaxles 1 (Pre-req: AUT 100, AUT 140)		3	AUT 222	Manual Drive Train 2 (Pre-req: AUT 100, AUT 221)		3	
AUT 242	Automatic Transmissions and Transaxles 2 (Pre-req: AUT 100, AUT 241)		3	AUT 260	ASE Preparation (Pre-req: AUT 100)		1	
			<b>Total Credits</b>				<b>Total Credits</b>	<b>13</b>
							<b>Total Technical Certificate Credits</b>	<b>53</b>

**All courses listed with a prerequisite required must be passed with a C or better before moving on to the next course.**

## Associate of Applied Science Degree

Requirements		Status	Credits
<b>Technical Certificate</b>			
Certificate, Automotive Technology			53
<b>General Education Courses</b>			
<b>Written Communications (3 credit hours)</b>			
ENG 100	Technical Writing		3
ENG 101	English Composition I		3
ENG 102	English Composition II ( <b>Pre-req: ENG 101</b> )		3
<b>Verbal Communications (3 credit hours)</b>			
COM 102	Interpersonal Communications		3
COM 105	Public Speaking		3
<b>Mathematics (3 credit hours)</b>			
MAT 101	Technical Math		3
MAT 105	Intermediate Algebra		3
MAT 150	College Algebra		3
<b>Computer Science/Science (3 credit hours)</b>			
CSA 105	Intro to Computer Applications & Concepts		3
<b>Social Sciences and/or Humanities and Fine Arts (3 credit hours)</b>			
HIS 105	US History I		3
HUM 101	Ethics in the Workplace		3
PSY 101	General Psychology		3
SOC 103	Marriage and Families		3
		<b>Technical Certificate</b>	<b>53</b>
		<b>General Education</b>	<b>15</b>
		<b>Total AAS Credits</b>	<b>68</b>

### PROGRAM OUTCOMES

- Diagnose, service, and repair automotive electrical systems.
- Diagnose, service, and repair disc, drum, and anti-lock braking systems and brakes.
- Diagnose, service, and repair suspension and steering systems.
- Diagnose, service, and repair heating and air conditioning systems.
- Diagnose, service, and repair engines.
- Diagnose, service, and repair heating and automatic transmissions and transaxles.
- Diagnose, service, and repair manual drive trains and axles.

### GENERAL EDUCATION PROGRAM OUTCOMES

- Compose coherent written communication.
  - Deliver coherent oral communication.
  - Show proficiency in locating, analyzing, documenting, and ethically using information sources.
  - Perform and interpret calculations.
  - Develop logical problem-solving skills and/or critical thinking skills.
  - Identify appropriate strategies for gathering, analyzing, and displaying data to draw conclusions from scientific data.
  - Collaborate effectively, which cultivates a respect for human diversity.
- Demonstrate technology literacy appropriate to area of study.

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Student Signature

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Advisor

The physical demands described here are representative of those that must be met by a student to successfully perform the essential functions of working in this field. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this program, the student is regularly required to stand, walk, and talk or hear. The student frequently is required to sit and use hands to handle or feel. The student is occasionally required to reach with hands and arms; climb or balance; and stoop, kneel, crouch, or crawl. The student must work in various weather conditions such as excessive heat or cold. The student must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this field include close vision, distance vision, color vision, peripheral vision, depth perception, and ability to adjust focus.

## **AUTOMOTIVE TECHNOLOGY**

### **AUT 100 Shop Safety/Management**

1 credit (.8:4)

This course provides students with an understanding of current safety regulations, established safety practices, hazard recognition, and the impact of behavior and environment on injury prevention. Students will also learn to complete repair orders, order parts, do vehicle inspections and manage a tool room.

### **AUT 109 Steering and Suspension 1**

3 credits (1:4)

(Prerequisite: AUT 100)

This course provides an understanding of theory and practical application of front and rear suspension and complete steering systems and alignment. This includes the study of alignment angles, suspension, steering gears, shock and strut assemblies, the basic causes for tire and wheel unbalance, and the application of fraction and degrees, ratios and geometry, as it applies to alignment.

### **AUT 110 Steering and Suspension 2**

2 credits (1:2)

(Prerequisites: AUT 100, AUT 109)

In this course, students perform complex diagnostics and repair on steering and suspension systems. Students also perform pre-alignment inspection and complex repairs of wheel and tire systems.

### **AUT 115 Engine Repair 1**

2 credits (1:2)

(Prerequisite: AUT 100)

Through a variety of learning and assessment activities, students explore the theory and operation of an internal combustion engine; demonstrate the basic ability to inspect and repair engine lubrication; and demonstrate the basic ability to inspect and repair engine cooling systems.

### **AUT 120 Engine Repair 2**

3 credits (1:4)

(Prerequisites: AUT 100, AUT 115)

Through a variety of learning and assessment activities, students can demonstrate the ability to remove an automotive engine; install an automotive engine; inspect and repair a cylinder head, valve trains and timing defects; disassemble a short block; inspect a short block; inspect a cylinder head and valve train; repair a cylinder head and valve train; and perform advanced level engine diagnosis.

### **AUT 131 Engine Performance 1**

3 credits (1:4)

(Prerequisite: AUT 100)

In this course, students complete work orders and check history, identify engine mechanical integrity, explore the fundamentals of fuel system theory, identify fuel system concerns, explore the fundamentals of ignition theory; identify ignition system concerns, identify induction system concerns, identify exhaust system concerns, and identify engine mechanical integrity through a variety of learning and assessment activities.

### **AUT 132 Engine Performance 2**

4 credits (1.5:5)

(Prerequisites: AUT 100, AUT 131, AUT 135)

Students will perform ignition, fuel, induction, and mechanical system diagnosis; perform ignition, fuel, induction, and mechanical system service; and verify repair of these systems through a variety of learning and assessment activities.

### **AUT 133 Engine Performance 3**

3 credits (1:)

(Prerequisites: AUT 100, AUT 131, AUT 132, AUT 135)

Students will perform exhaust and emission systems diagnosis, exhaust and emission systems service, and verify exhaust and emission systems repair through a variety of learning and assessment activities.

### **AUT 135 Electrical 1**

3 credits (1:4)

Revised: March 2023

(Prerequisite: AUT 100)

In this course, students complete service work orders; describe the relationship between voltage, ohms and amperage; perform basic electrical circuit repairs; identify electrical system faults; identify basic wiring diagram symbols, components, and legend information; perform basic electrical circuit measurements using a DVOM; and describe basic circuit characteristics of series, parallel and series parallel circuits through a variety of classroom and shop learning and assessment activities.

#### **AUT 140 Electrical 2**

2 credits (0:4)

(Prerequisite: AUT 135)

In this course, students perform battery diagnosis and service, starting system diagnosis and repair, charging system diagnosis and repair, and identify current flow on starting and charging system diagrams through a variety of learning and assessment activities.

#### **AUT 146 Brakes 1**

3 credits (1:4)

(Prerequisite: AUT 100)

In this course, students examine the components of the drum and disc braking systems. Through classroom and shop learning experiences, students will diagnose, inspect, and repair brakes, bearings and hub assemblies.

#### **AUT 150 Brakes 2**

2 credits (1:2)

(Prerequisites: AUT 100, AUT 140, AUT 146)

In this course, students determine necessary brake system correction; conduct system pressure tests utilizing service specifications; perform diagnosis and correction for poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system; conduct inspection, fabrication and/or replacement of brake lines and hoses; diagnose poor stopping noise vibration, pulling, grabbing, dragging or pedal pulsation concerns. Students perform service specifications pertaining to the removal, cleaning and refinishing procedures on brake drums; perform drum brake repair and replacement procedures; diagnose poor stopping noise vibration, pulling, grabbing, dragging or pedal pulsation concerns. Students perform disc brake repair and replacement procedures; machine rotor according to service specifications; perform caliper piston retraction where applicable; inspect and test power assist systems; determine necessary action on wheel bearing noise, wheel shimmy and vibration concern diagnoses; perform the removal, inspection and replacement of bearing and hub assemblies.

#### **AUT 155 Automotive Diesel Technologies**

1 credit (.7:6)

(Prerequisite: AUT 132)

In this course, students develop a basic understanding of diesel engine operation and will perform basic repairs to automotive diesel engines.

#### **AUT 160 Hybrid/Electric Vehicles**

1 credit (.7:6)

(Prerequisites: AUT 132, AUT 240)

This course will cover the different types of systems used in today's hybrid/electric vehicles along with the safety precautions that are a must when servicing these vehicles. Honda, Toyota, Ford, GM, Chrysler, BMW, and Zenn vehicles are covered in this course.

#### **AUT 210 Automotive HVAC**

4 credits (1.5:5)

(Prerequisites: AUT 100, AUT 140)

Through a variety of learning and assessment activities, students explore the fundamentals of automotive HVAC operations and environmental concerns; identify the appropriate refrigerant recovery and recycling guidelines; service refrigerant, recycling and handling systems; document fundamental heating and air conditioning system concerns; perform fundamental diagnostics of A/C systems; perform fundamental diagnostics of refrigeration systems components; perform fundamental repairs of refrigeration systems components; perform fundamental diagnostics of heating, ventilation, and engine cooling systems; perform fundamental repairs of heating, ventilation, and engine cooling systems; perform fundamental diagnostics of operating systems and related controls; perform fundamental repairs of operating systems and related controls; perform complex diagnostics of A/C systems; document complex heating and air conditioning system concerns; perform complex diagnostics of refrigeration system components; perform complex repairs of refrigeration system components; perform complex diagnostics of heating, ventilation, and engine cooling systems.

#### **AUT 221 Manual Drive Train 1**

1 credit (.5:1)

(Prerequisite: AUT 100)

Through a variety of learning and assessment activities, students determine the general transfer case diagnosis procedures; explore the fundamentals of transfer case operation and transfer case removal, inspection and repair, according to service specifications; conduct the diagnosis, inspection and replacement of drive axle shafts and supporting components; conduct the diagnosis, inspection adjustment and repair of four- and all-wheel drive components.

#### **AUT 222 Manual Drive Train 2**

3 credits (1:24)

(Prerequisites: AUT 100, AUT 221)

Students will determine the general drive train diagnosis procedures; explore the fundamentals of clutch operation; explore the fundamentals of clutch removal, inspection and repair; determine the power flow of the manual transmission and transaxle; perform fundamental manual transmission and

transaxle inspection and repair, according to service specifications; perform fundamental differential inspection and repair, according to service specifications; perform fundamental diagnosis, inspection and replacement of drive axle shafts and supporting components; perform fundamental diagnosis, inspection, adjustment and repair of four- and all-wheel drive components; diagnose drive train issues; diagnose clutch concerns; perform the removal, inspection and/or repair of the clutch and its components; conduct a transmission and transaxle inspection and repair according to service specifications; conduct a differential inspection and repair according to service specifications; conduct the diagnosis, inspection and replacement of drive axle shafts and supporting components; conduct the diagnosis, inspection, adjustment and repair of four- and all-wheel drive components.

**AUT 235 Electrical 3**

3 credits (1:4)

(Prerequisites: AUT 100, AUT 135, AUT 140)

Through a variety of learning and assessment activities, students learn to diagnose open circuit, short circuit, grounded circuit, and high resistance problems. Students also use test equipment to identify computer circuit problems, and current flow on lighting, gauges, and warning devices on wiring diagrams.

**AUT 240 Electrical 4**

2 credits (1:2)

(Prerequisites: AUT 100, AUT 135, AUT 140, AUT 235)

Through a variety of learning and assessment activities, students learn to diagnose open circuit, short circuit, grounded circuit, and high resistance problems. Students also use test equipment to identify computer circuit problems, current flow on lighting, gauges, warning devices, driver information systems, horns, wiper/washer, accessory circuits, and SRS circuits on wiring diagrams.

**AUT 241 Automatic Transmissions and Transaxles 1**

3 credits (1:4)

(Prerequisites: AUT 100, AUT 140)

This class explores the concepts of theory, operation, maintenance, inspection and servicing of automatic transmissions and transaxles. Students will disassemble and reassemble automatic transmissions, transaxles and components.

**AUT 242 Automatic Transmissions and Transaxles 2**

3 credits (1:4)

(Prerequisites: AUT 100, AUT 241)

This class explores the concepts of theory, operation, maintenance, diagnosis, repair and verification of automatic transmissions/transaxles electrical system.

**AUT 260 ASE Preparation**

1 credit (.7:6)

(Prerequisite: AUT 100)

In this course, the expectations an employer would require of a good employee will be covered—time management, productivity, attendance, etc. The ASE certification process will be discussed, and students will complete practice tests for the ASE exam.