## Technical Certificate Requirements

<table>
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<tr>
<th>Course Title</th>
<th>Credits</th>
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<td>AUT 100 Shop Safety/Management</td>
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<td>AUT 132 Engine Performance 2</td>
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<td>AUT 133 Engine Performance 3</td>
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<td>AUT 155 Automotive Diesel Technologies</td>
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<td>AUT 131 Engine Performance 1</td>
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<td>AUT 160 Hybrid/Electric Vehicles</td>
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<td>AUT 135 Electrical 1</td>
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<td>AUT 146 Brakes 1</td>
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<td>AUT 150 Brakes 2</td>
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<td>AUT 221 Manual Drive Train 1</td>
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<td>AUT 210 Automotive HVAC</td>
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<td>AUT 241 Automatic Transmissions &amp; Transaxles 1</td>
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<td>AUT 222 Manual Drive Train 2</td>
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<td>AUT 242 Automatic Transmissions &amp; Transaxles 2</td>
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### Associate of Applied Science Degree Requirements

**Required Technical Courses**

- Automotive Technology Technical Certificate: 52 credits
- AUT 160 Hybrid/Electric Vehicles: 1 credit
- AUT 155 Automotive Diesel Technologies: 1 credit
- AUT 260 ASE Preparation: 1 credit

**General Education (course numbers 100 or above)**

- Verbal Communications: 3 credits
- Written Communications: 3 credits
- Mathematics, and/or Computer Science: 6 credits
- Social Sciences and/or Humanities and Fine Arts: 3 credits

**Technical Certificate**

- Total Credits: 52

**General Education**

- Total Credits: 15

**Total AAS Credits**

- Total Credits: 67

### Admission Criteria

- Successfully complete applicable preadmission testing and/or advising

At Salina Tech, ASE certified master technicians provide training and mentor students. The major areas of car repair are taught as well as preparation for ASE certification and employment skills. Our shop facilities are excellent and are equipped with the latest tools and equipment. Students work on customers' cars with real problems providing instructor-supervised service throughout the eighteen months of the program.

The Automotive Technology program is accredited by the National Automotive Technicians Education Foundation (NATEF), a division of the National Institute of Automotive Service Excellence (ASE); High school students must start the Automotive Technology program as juniors.
Career Opportunities: General Mechanic, Front End Specialist, Transmission Specialist, Parts Person, Brake Specialist, Tune-up Specialist, Service Writer, Factory Representative

Course Descriptions

AUT 100 Shop Safety/Management, 1 credit. 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, 2 credits. (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 and 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. (Prerequisite: 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. (Prerequisite: AUT 100) Through a variety of learning and assessment activities students explore the theory and operation of 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. (Prerequisite: AUT 115) Through a variety of learning and assessment activities students can: demonstrate the ability to remove an automotive engine; install an automotive engine; to inspect and repair cylinder head, valve trains and timing defects; to disassemble short block; to inspect 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. (Prerequisite: AUT 100) In this course students complete work order 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, identify engine mechanical integrity through a variety of learning and assessment activities.

AUT 132 Engine Performance 2, 4 credits. (Prerequisites: AUT 135, AUT 131) Students 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. (Prerequisite: AUT 132) Students 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. (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; 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. (Prerequisite: AUT 135)**
In this course students perform battery diagnosis, perform battery service, starting system diagnosis, starting system repair, charging system diagnosis, charging system repair, identify current flow on starting and charging system diagrams through a variety of learning and assessment activities.

**AUT 146 Brakes 1, 3 credits.**
In this course students examine the components of the drum and disc braking systems. Through classroom and shop learning experiences, students diagnose, inspect and repair brakes, bearings and hub assemblies.

**AUT 150 Brakes 2, 2 credits. (Prerequisite: 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. (Prerequisite: AUT 100)**
In this course students develop a basic understanding of diesel engine operation and perform basic repairs to automotive diesel engines.

**AUT 160 Hybrid Electrical Vehicles, 1 credit (Prerequisite: AUT 100)**
This course covers 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. (Prerequisite: 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 (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. (Prerequisite: AUT 221)
Students 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. (Prerequisite: 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. (Prerequisite: 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 I, 3 credits. (Prerequisite: AUTO 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 II, 3 credits. (Prerequisite: 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. (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 do practice tests for the ASE exam.