Program Planning Guide  
Automotive Systems Technology, Diploma (D60160)

Program Length: 3 semesters  
Career Pathway Options: Associate in Applied Science Degree in Automotive Systems Technology  
Program Sites: Lee Campus - Day Program

### Suggested Course Schedule:

<table>
<thead>
<tr>
<th>Suggested Course Schedule</th>
<th>HOURS</th>
<th>Grade</th>
<th>Semester</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td><strong>1st Semester (Fall)</strong></td>
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<tr>
<td>AUT 151  Brake Systems</td>
<td>2</td>
<td>3</td>
<td>3</td>
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<tr>
<td>AUT 151A  Brake Systems Lab</td>
<td>0</td>
<td>3</td>
<td>1</td>
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<tr>
<td>CIS 111  Basic PC Literacy</td>
<td>1</td>
<td>2</td>
<td>2</td>
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<td>MAT 110  Mathematical Measurement &amp; Literacy</td>
<td>2</td>
<td>2</td>
<td>3</td>
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<tr>
<td>TRN 110  Intro to Transport Tech</td>
<td>1</td>
<td>2</td>
<td>2</td>
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<tr>
<td>TRN 120  Basic Transp Electricity</td>
<td>4</td>
<td>3</td>
<td>5</td>
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<td><strong>Total Semester Hours Credit:</strong></td>
<td>11</td>
<td>15</td>
<td>17</td>
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**2nd Semester (Spring)**

| AUT 141  Suspension & Steering Systems    | 2     | 3     | 3        |       |
| AUT 141A  Suspension & Steering Lab       | 0     | 3     | 1        |       |
| AUT 163  Adv. Automotive Electricity      | 2     | 3     | 3        |       |
| AUT 163A  Adv. Automotive Electricity Lab | 0     | 3     | 1        |       |
| AUT 181  Engine Performance I             | 2     | 3     | 3        |       |
| AUT 181A  Engine Performance Lab           | 0     | 3     | 1        |       |
| ENG 102  Applied Communications           | 3     | 0     | 3        |       |
| **Total Semester Hours Credit:**          | 9     | 18    | 15       |       |

**3rd Semester (Summer)**

| AUT 114  Safety and Emissions             | 1     | 2     | 2        |       |
| AUT 114A  Safety and Emissions Lab        | 0     | 2     | 1        |       |
| AUT 183  Engine Performance II            | 2     | 6     | 4        |       |
| TRN 140  Transp. Climate Control          | 1     | 2     | 2        |       |
| TRN 140A  Transp Climate Control Lab      | 1     | 2     | 2        |       |
| **Total Semester Hours Credit:**          | 5     | 14    | 11       |       |

Total Semester Hours Credit: 42

### Course Descriptions:

**AUT 114  Safety and Emissions  1-2-2**  
This course covers the laws, procedures, and specifications needed to perform a North Carolina State Safety and Emissions inspection. Topics include brake, steering and suspension, lighting, horn, windshield wiper, tire, mirrors, and emission control devices inspection. Upon completion, students should be able to perform complete and thorough North Carolina State Safety and Emissions inspections.

**AUT 114A  Safety and Emissions Lab  0-2-1**  
Corequisite: AUT 114  
This course is an optional lab that allows students to enhance their understanding of North Carolina State Emissions Inspection failures. Topics include evaporative, positive crankcase ventilation, exhaust gas recirculation and exhaust emissions systems operation, including catalytic converter failure diagnosis. Upon completion, students should be able to employ diagnostic strategies to repair vehicle emissions failures resulting from North Carolina State Emissions inspection.

**AUT 141  Suspension & Steering Sys  2-3-3**  
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 steering and suspension components, check and adjust alignment angles, repair tires, and balance wheels.

**AUT 141A  Suspension & Steering Lab  0-3-1**  
Corequisite: AUT 141

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AUT 151  Brake Systems  2-3-3
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 151A  Brake Systems Lab  0-3-1
Corequisite: AUT 151
This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include drum and disc brakes involving hydraulic, vacuum-boost, hydra-boost, electrically powered boost, and anti-lock, parking brake systems. Upon completion, students should be able to diagnose, service, and repair various automotive braking systems.

AUT 163  Adv Auto Electricity  2-3-3
Prerequisite: TRN 120
This course covers electronic theory, wiring diagrams, test equipment, and diagnosis, repair, and replacement of electronics, lighting, gauges, horn, wiper, accessories, and body modules. Topics include networking and module communication, circuit construction, wiring diagrams, circuit testing, and troubleshooting. Upon completion, students should be able to properly use wiring diagrams, diagnose, test, and repair wiring, lighting, gauges, accessories, modules, and electronic concerns.

AUT 163A  Adv Auto Electricity Lab  0-3-1
Corequisite: AUT 163
This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include networking and module communication, circuit construction, wiring diagrams, circuit testing, troubleshooting, and emerging electrical/electronic systems technologies. Upon completion, students should be able to properly use wiring diagrams, diagnose, test, and repair wiring, lighting, gauges, accessories, modules, and electronic concerns.

AUT 181  Engine Performance 1  2-3-3
This course covers the introduction, theory of operation, and basic diagnostic procedures required to restore engine performance to vehicles equipped with complex engine control systems. Topics include an overview of engine operation, ignition components and systems, fuel delivery, injection components and systems, and emission control devices. Upon completion, students should be able to describe operation and diagnose/repair basic ignition, fuel, and emission-related driveability problems using appropriate test equipment/service information.

AUT 181A  Engine Performance 1 Lab  0-3-1
Corequisite: AUT 181

AUT 183  Engine Performance 2  2-6-4
Prerequisite: AUT 181
This course covers study of the electronic engine control systems, the diagnostic process used to locate engine performance concerns, and procedures used to restore normal operation. Topics will include currently used fuels and fuel systems, exhaust gas analysis, emission control components and systems, OBD II (on-board diagnostics), and inter-related electrical/electronic systems. Upon completion, students should be able to diagnose and repair complex engine performance concerns using appropriate test equipment and service information.

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

MAT 110  Math Measurement & Literacy  2-2-3
Prerequisite: Take one set:
Set 1: DMA 010, DMA 020, and DMA 030
Set 2: MAT 060 and MAT 070
Set 3: MAT 060 and MAT 080
Set 4: MAT 060 and MAT 090
Set 5: MAT 095 or appropriate placement scores.
This course provides an activity-based approach that develops measurement skills and mathematical literacy using technology to solve problems for non-math intensive programs. Topics include unit conversions and estimation within a variety of measurement systems; ratio and proportion; basic geometric concepts; financial literacy; and statistics including measures of central tendency, dispersion, and charting of data. Upon completion, students should be able to demonstrate the use of mathematics and technology to solve practical problems, and to analyze and communicate results.
TRN 110  Intro to Transport Tech  1-2-2
This course covers workplace safety, hazardous materials, environmental regulations, hand tools, service information, basic concepts, vehicle systems, and common transportation industry terminology. Topics include familiarization with major vehicle systems, proper use of various hand and power tools, material safety data sheets, and personal protective equipment. Upon completion, students should be able to demonstrate appropriate safety procedures, identify and use basic shop tools, and describe government regulations regarding transportation repair facilities.

TRN 120  Basic Transp Electricity  4-3-5
This course covers basic electrical theory, wiring diagrams, test equipment, and diagnosis, repair and replacement of batteries, starters, and alternators. Topics include Ohm's Law, circuit construction, wiring diagrams, circuit testing, and basic troubleshooting. Upon completion, students should be able to properly use wiring diagrams, diagnose, test, and repair basic wiring, battery, starting, charging, and electrical concerns.

TRN 140  Transp Climate Control  1-2-2
This course covers the theory of refrigeration and heating, electrical/electronic/pneumatic controls, and diagnosis and 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 diagnose and repair vehicle climate control systems.

TRN 140A  Transp Climate Cont Lab  1-2-2
Corequisites: TRN 140
This course provides experiences for enhancing student skills in the diagnosis and repair of transportation climate control systems. Emphasis is placed on reclaiming, recovery, recharging, leak detection, climate control components, diagnosis, air conditioning equipment, tools and safety. Upon completion, students should be able to describe the operation, diagnose, and safely service climate control systems using appropriate tools, equipment, and service information.

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