

Automotive Technology | Two Year Program: Scope & Sequence

Year 1, Semester 1

AT101 Automotive Technologies Core Curriculum
(19 Weeks)

District Pre-Assessment

Unit 1 (2 Weeks, 25 hours)

Shop Orientation, Tools & Safety:

- Basic Hand Tools
- Shop Safety
- Maintenance
- Fasteners Gaskets, Seals & Sealants
- Vehicle Maintenance, Fluid Servicing & Recycling

Certification: SP2 Safety Certification

CTSO Integration (Leadership Skills): Officer Elections

Professional Skills: 4.A-4.F

Academic Standards: 7. EE.B.3, ELA. 11-12.W.8

Work-based Learning: Guest Speaker

Technical Standard: 9.1-9.27

Unit 2 (8 Weeks, 100 hours)

Basic Electrical/Electronic Systems:

- Electrical Principles
- Circuit Types & Ohm's Law
- Electric & Electronic Components
- Electrical Tools & Testing Equipment
- Wiring Diagrams & Wiring Repairs
- Basic Electrical Tests

Certifications: ASE A-6 Electrical/Electronic Systems Certification

CTSO Integration (Leadership Skills): Officer Training, SkillsUSA Fall Leadership Conference, Chapter Meeting

Professional Skills: 1.A-1.D

Academic Standards: ELA.11-12.W.4, 5.NF.B.3

Work-based Learning: Guest Speaker, Resume Writing

Technical Standard: 6.1-6.7, 6.9- 6.11

Unit 3 (9 Weeks, 112 hours)

Engine Repair:

- Engine Design & Construction
- Engine Size & Performance Measurements
- Cooling & Lubrication System Diagnosis & Repair
- Engine Mechanical Diagnosis & Repair
- Engine Removal, Disassembly & Cleaning
- Engine Reassembly, Installation and Break-in

Certification: ASE A-1 Engine Repair Certification, NC3 Torque and Precision Measurement Instruments

CTSO Integration (Leadership Skills): Chapter Meeting, Chapter Social, Community Service

Event

Professional Skills: 2.A-2.C,

Academic Standards: ELA.11-12.R.1r,L.4, G-GMD.A3

Work-based Learning: Guest Speaker, Workplace Visit

Technical Standard: 1.1-1.15

Semester Final Exam

Year 1, Semester 2

AT102 Automotive Technologies I
(18 Weeks)

Unit 4 (6 Weeks, 75 hours)

Advanced Electrical/Electronic Systems:

- 12-V and HV Battery
- Alternator System Diagnosis & Repair
- Starting System Diagnosis & Repair
- Lights, Instrumentation, Wipers & Horn

Certifications: ASE A-6 Electrical/Electronic Systems

Certification, NC3 Multimeter

CTSO Integration (Leadership Skills): SkillsUSA Region 5 Conference, Chapter Meeting

Professional Skills: 3.A-E

Academic Standards: 5.NF.B.3, R1-7, ELA11-12.SL2

Work-based Learning: Guest Speaker, Job Shadow

Technical Standard: 6.8, 6.12- 6.38

Unit 5 (8 Weeks, 100 hours)

Brake & Anti-Lock Braking Systems:

- Brake System Diagnosis, Service & Repair
- Anti-Lock Brakes, Traction Control & Stability Control
- Certifications: ASE A-5 Brake Certification, NC3 Pro-Cut

CTSO Integration (Leadership Skills): SkillsUSA Arizona

Conference, Chapter Meetings, Fundraiser Event

Professional Skills: 8A-I

Academic Standards: 7.G.B4, ELA SL4.6

Work-based Learning: Guest Speaker

Technical Standard: 5.1-5.37

Unit 6 (4 Weeks, 50 hours)

Basic Heating, Ventilation & Air Conditioning (HVAC) Operation:

- Heating and A/C Diagnosis, Service and Repair
- Certifications: ASE A-8 HVAC Certification, EPA 609 Certification, ASE G-1 Maintenance & Light Repair (MLR)

CTSO Integration (Leadership Skills): Chapter Meetings, End of Year Banquet
Professional Skills: 7A-C
Academic Standards: R1.7,7EEB.3
Work-based Learning: Guest Speaker
Technical Standard: 7.1-7.8

District Post-Assessment

Year 2, Semester 1

AT201 Automotive Technologies II
(19 Weeks)

Unit 1 (1 Week, 12.5 hours)

Shop Orientation, Tools & Safety:

- Basic Hand Tools
- Shop Safety
- Maintenance
- Fasteners Gaskets, Seals & Sealants
- Vehicle Maintenance, Fluid Servicing & Recycling

Certification: SP2 Safety Certification

CTSO Integration (Leadership Skills): Officer Elections

Professional Skills: 4A-F

Academic Standards: ELAW4,5

Work-based Learning: Guest Speaker, Job application

Technical Standard: 9.1-9.27

Unit 2 (1 Week, 12.5 Hours)

Review Unit:

- Electrical | Electronic Systems

CTSO Integration (Leadership Skills): Officer Training

Professional Skills: 4A-F

Academic Standards:W4.5NF.B3

Work-Based Learning: Guest Speaker

Technical Standard: 6.1-6.38

Unit 3 (5 Weeks, 62.5 hours)

Advanced Heating, Ventilation & Air Conditioning (HVAC):

- Heating and A/C Diagnosis, Service and Repair

Certifications: ASE A-8 HVAC Certification, EPA 609 Certification

CTSO Integration (Leadership Skills): Chapter Meetings

Professional Skills: 7A-C

Academic Standards: R1.7,7EEB.3

Work-based Learning: Guest Speaker

Technical Standard: 7.1-7.8

Unit 4 (12 Weeks, 150 Hours)

Engine Performance:

- Ignition System Diagnosis, Testing & Repair
- Automotive Fuels & Combustion Efficiency
- Fuel Tanks, Pumps, Lines & Filters Diagnosis & Repair
- Exhaust System Diagnosis & Repair
- Computer System Fundamentals
- On Board Diagnostics & Scan Tools Computer System Service
- Emission Control System Testing, Service & Repair
- Engine Performance & Driveability
- Advanced Diagnostics
- Engine Tune-Up
- Certifications: ASE A-9 Engine Performance Certification, NC3 Solus Ultra

CTSO Integration (Leadership Skills): SkillsUSA Fall Leadership Conference, Chapter Meetings, Community Service Project, Fundraiser Event

Professional Skills: 5A-E, 6A-C

Academic Standards: 6RP.A3, ELA 11-12 W8

Work-Based Learning: Guest Speaker

Technical Standard: 8.1-8.15

Semester Final Exam

Year 2, Semester 2

AT202 Automotive Technologies Advanced Systems
(18 Weeks)

Unit 5 (10 Weeks, 125 Hours)

Suspension & Steering:

- Tire, Wheel Service & Repair
- Wheel Bearing Diagnosis Service & Repair
- Suspension System Diagnosis & Repair
- Steering System Diagnosis & Repair
- Wheel Alignment

Certification: ASE A-4 Suspension & Steering Certification

CTSO Integration (Leadership Skills): SkillsUSA Region 5

Conference, Chapter Meetings, Chapter Social

Professional Skills:9 A-C

Academic Standards: 8 GB7, ELA 11SL4

Work-Based Learning: Guest Speaker, Workplace Visit

Technical Standard: 4.1-4.36

Unit 6 (4 Weeks, 50 Hours)

Manual Drivetrain & Axles:

- Clutch Diagnosis Service & Repair
- Manual Transmission Diagnosis Service & Repair
- Drive Shaft & Transfer Case Diagnosis, Service and Repair
- Differential & Rear Drive Axle Diagnosis, Service & Repair

Certification: ASE A-3 Manual Drivetrain & Axles Certification

CTSO Integration (Leadership Skills): SkillsUSA State

Conference, Chapter Meetings, Community Service Project

Professional Skills: 8 A-I

Academic Standards: 8 GB7, ELA 11-12 L4

Work-Based Learning: Guest Speaker, Mock Interviews

Technical Standard: 3.1-3.15

Unit 7 (4 Weeks, 50 Hours)

Automatic Transmission | Transaxle:

- Transaxle & Front Drive Axle Diagnosis, Service & Repair
- Automatic Transmission Diagnosis, Service & Repair
- Diagnostic Procedures

Certification: ASE A-2 Automatic Transmission Certification,

ASE AST Certification

CTSO Integration (Leadership Skills): End of year banquet

Professional Skills: 9A-C

Academic Standards: 6 RP A.3, ELA 11-12 L4

Work-Based Learning: Guest Speaker, Internship

Technical Standard: 2.1-2.11

ADE Technical Skills Assessment