Automotive Technology | Two Year Program: Scope & Sequence

Year 1, Semester 1
AT101 Automotive Technologies I
(18 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

Academic Standards: 7. EE.B.3, ELA. 11-12.W8

Work-based Learning: Guest Speaker
Technical Standard: 9.1-9.27

Unit 2 (16 Weeks, 200 hours)

**Electrical/Electronic Systems:**
- Electrical Principles
- Circuit Types & Ohm’s Law
- Electric & Electronic Components
- Electrical Tools & Testing Equipment
- Wiring Diagrams & Wiring Repairs
- Basic Electrical Tests
- 12-V and HV Battery
- Alternator System Diagnosis & Repair
- Starting System Diagnosis & Repair
- Lights, Instrumentation, Wipers & Horn Certification: ASE A-6 Electrical/Electronic Systems

Certification, NC3 Multimeter

CTSO Integration (Leadership Skills): Officer Training, SkillsUSA
Fall Leadership Conference, Chapter Meeting
Academic Standards: ELA.11-12.W4, 5.NF.B.3

Work-based Learning: Guest Speaker, Resume Writing
Technical Standard: 6.1-6.7, 6.9-6.11

Semester Final Exam

Year 1, Semester 2
AT102 Automotive Technologies II
(18 Weeks)

**Unit 3 (10 Weeks, 125 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.R1r,L.4, G-GMD.A3

Work-based Learning: Guest Speaker, Workplace Visit
Technical Standard: 1.1-1.15

**Unit 4 (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, Job Shadow

Technical Standard: 5.1-5.37

District Post-Assessment
Year 2, Semester 1
AT201 Automotive Technologies III
(18 Weeks)

Unit 5 (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 6 (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 7 (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

Unit 8 (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

Semester Final Exam

Year 2, Semester 2
AT202 Automotive Technologies IV
(19 Weeks)

Unit 9 (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 10 (9 Weeks, 112.5 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

Automotive Technologies 47.0600.20
© West-MEC Rev. Rev. 6/2021
Unit 11 (6 Weeks, 75 Hours)

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

ADE Technical Skills Assessment