

***AUTOMOTIVE SERVICE
TECHNICIAN
CURRICULUM FRAMEWORK***



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INTRODUCTION

The Nevada CTE Curriculum Frameworks are a resource for Nevada's public and charter schools to design, implement, and assess their CTE programs and curriculum. The content standards identified in this document are listed as a model for the development of local district programs and curriculum. They represent rigorous and relevant expectations for student performance, knowledge, and skill attainment which have been validated by industry representatives.

The intent of this document is to provide a resource to districts as they develop and implement CTE programs and curricula.

This program ensures the following thresholds are met:

- The CTE course and course sequence teaches the knowledge and skills required by industry through applied learning methodology and, where appropriate, work-based learning experiences that prepare students for careers in high-wage, high-skill and/or high-demand fields. Regional and state economic development priorities shall play an important role in determining program approval. Some courses also provide instruction focused on personal development.
- The CTE course and course sequence includes leadership and employability skills as an integral part of the curriculum.
- The CTE course and course sequence are part of a rigorous program of study and include sufficient technical challenge to meet state and/or industry-standards.

The CTE program components include the following items:

- Program of Study
- State Skill Standards
- Employability Skills for Career Readiness Standards
- Career Technical Student Organizations (CTSO)
- Curriculum Framework
- CTE Assessments:
 - Workplace Readiness Skills Assessment
 - End-of-Program Technical Assessment
- Certificate of Skill Attainment
- CTE Endorsement on a High School Diploma
- CTE College Credit

**NEVADA DEPARTMENT OF EDUCATION
CURRICULUM FRAMEWORK FOR
AUTOMOTIVE SERVICE TECHNICIAN**

PROGRAM TITLE:	AUTOMOTIVE SERVICE TECHNICIAN
STATE SKILL STANDARDS:	AUTOMOTIVE SERVICE TECHNICIAN
STANDARDS REFERENCE CODE:	AST
CAREER CLUSTER:	TRANSPORTATION, DISTRIBUTION & LOGISTICS
CAREER PATHWAY:	FACILITY & MOBILE EQUIPMENT MAINTENANCE
PROGRAM LENGTH:	4 LEVELS (L1, L2, L3, L4C)
PROGRAM ASSESSMENTS:	AUTOMOTIVE SERVICE TECHNICIAN WORKPLACE READINESS SKILLS
CTSO:	SKILLSUSA
GRADE LEVEL:	9-12
AVAILABLE INDUSTRY CERTIFICATIONS/LICENSES PROVIDERS:	AUTOMOTIVE SERVICE EXCELLENCE (ASE) OSHA

PROGRAM PURPOSE

The purpose of this program is to prepare students for postsecondary education and employment in the Automotive Service Technician industry.

The program includes the following state standards:

- Nevada CTE Skill Standards: Automotive Service Technician
- Employability Skills for Career Readiness
- Nevada Academic Content Standards (alignment shown in the Nevada CTE Skill Standards):
 - Science (based on the Next Generation Science Standards)
 - English Language Arts (based on the Common Core State Standards)
 - Mathematics (based on the Common Core State Standards)
- Common Career Technical Core (alignment shown in the Nevada CTE Skill Standards)

CAREER CLUSTERS

The National Career Clusters™ Framework provides a vital structure for organizing and delivering quality CTE programs through learning and comprehensive programs of study (POS). In total, there are 16 Career Clusters in the National Career Clusters™ Framework, representing more than 79 Career Pathways to help students navigate their way to greater success in college and career. As an organizing tool for curriculum design and instruction, Career Clusters™ provide the essential knowledge and skills for the 16 Career Clusters™ and their Career Pathways.*

*Cite: National Association of State Directors of Career Technical Education Consortium. (2012). Retrieved from <http://www.careertech.org/career-clusters/glance/careerclusters.html>

PROGRAM OF STUDY

The program of study illustrates the sequence of academic and career and technical education coursework that is necessary for the student to successfully transition into postsecondary educational opportunities and employment in their chosen career path. (NAC 389.803)

PROGRAM STRUCTURE

The core course sequencing provided in the following table serves as a guide to schools for their programs of study. Each course is listed in the order in which it should be taught and has a designated level. Complete program sequences are essential for the successful delivery of all state standards in each program area.

AUTOMOTIVE SERVICE TECHNICIAN	
Core Course Sequence	
AUTOMOTIVE SERVICE TECHNICIAN	LEVEL
Automotive Service Technician I	L1
Automotive Service Technician II	L2
Automotive Service Technician III	L3
Automotive Service Technician IV	L4C

The core course sequencing with the complementary courses provided in the following table serves as a guide to schools for their programs of study. Each course is listed in the order in which it should be taught and has a designated level. A program does not have to utilize all of the complementary courses in order for their students to complete their program of study. Complete program sequences are essential for the successful delivery of all state standards in each program area.

AUTOMOTIVE SERVICE TECHNICIAN	
Core Course Sequence with Complementary Courses	
AUTOMOTIVE SERVICE TECHNICIAN	LEVEL
Automotive Service Technician I	L1
Automotive Service Technician II	L2
Automotive Service Technician II LAB*	L2L
Automotive Service Technician III	L3
Automotive Service Technician III LAB*	L3L
Automotive Service Technician IV	L4C
Automotive Service Technician IV LAB*	L4L

*Complementary Courses

STATE SKILL STANDARDS

The state skill standards are designed to clearly state what the student should know and be able to do upon completion of an advanced high school career and technical education (CTE) program. The standards are designed for the student to complete all standards through their completion of a program of study. The standards are designed to prepare the student for the end-of-program technical assessment directly aligned to the standards. (Paragraph (a) of Subsection 1 of NAC 389.800)

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS

Employability skills, often referred to as “soft skills”, have for many years been a recognizable component of the standards and curriculum in career and technical education programs. The twenty-one standards are organized into three areas: (1) Personal Qualities and People Skills; (2) Professional Knowledge and Skills; and (3) Technology Knowledge and Skills. The standards are designed to ensure students graduate high school properly prepared with skills employers prioritize as the most important. Instruction on all twenty-one standards must be part of each course of the CTE program. (Paragraph (d) of Subsection 1 of NAC 389.800)

CURRICULUM FRAMEWORK

The Nevada CTE Curriculum Frameworks are organized utilizing the recommended course sequencing listed in the Program of Study and the CTE Course Catalog. The framework identifies the recommended content standards, performance standards, and performance indicators that should be taught in each course.

CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOS)

To further the development of leadership and technical skills, students must have opportunities to participate in one or more of the Career and Technical Student Organizations (CTSOS). CTSOs develop character, citizenship, and the technical, leadership and teamwork skills essential for the workforce and their further education. Their activities are considered a part of the instructional day when they are directly related to the competencies and objectives in the course. (Paragraph (a) of Subsection 3 of NAC 389.800)

WORKPLACE READINESS SKILLS ASSESSMENT

The Workplace Readiness Skills Assessment has been developed to align with the Nevada CTE Employability Skills for Career Readiness Standards. This assessment provides a measurement of student employability skills attainment. Students who complete a program will be assessed on their skill attainment during the completion level course. Completion level courses are identified by the letter “C”. (e.g., Level = L3C) (Paragraph (d) of Subsection 1 of NAC 389.800)

END-OF-PROGRAM TECHNICAL ASSESSMENT

An end-of-program technical assessment has been developed to align with the Nevada CTE Skill Standards for this program. This assessment provides a measurement of student technical skill attainment. Students who complete a program will be assessed on their skill attainment during the completion level course. Completion level courses are identified by the letter “C”. (e.g., Level = L3C) (Paragraph (e) of Subsection 1 of NAC 389.800)

CERTIFICATE OF SKILL ATTAINMENT

Each student who completes a course of study must be awarded a certificate which states that they have attained specific skills in the industry being studied and meets the following criteria: A student must maintain a 3.0 grade point average in their approved course of study, pass the Workplace Readiness Skills Assessment, and pass the end-of-program technical assessment. (Subsection 4 of NAC 389.800)

CTE ENDORSEMENT ON A HIGH SCHOOL DIPLOMA

A student qualifies for a CTE endorsement on their high school diploma after successfully completing the following criteria: 1) successful completion of a CTE course of study in a program area, 2) successful completion of academic requirements governing receipt of a standard diploma, and 3) meet all requirements for the issuance of the Certificate of Skill Attainment. (NAC 389.815)

CTE COLLEGE CREDIT

CTE College Credit is awarded to students based on articulation agreements established by each college for the CTE program, where the colleges will determine the credit value of a full high school CTE program based on course alignment. An articulation agreement will be established for each CTE program designating the number of articulated credits each college will award to students who complete the program.

CTE College Credit is awarded to students who: (1) complete the CTE course sequence with a grade-point average of 3.0 or higher; (2) pass the state end-of-program technical assessment for the program; and (3) pass the Workplace Readiness Assessment for employability skills.

Pre-existing articulation agreements will be recognized until new agreements are established according to current state policy and the criteria shown above.

Please refer to the local high school's course catalog or contact the local high school counselor for more information. (Paragraph (b) of Subsection 3 of NAC 389.800)

ACADEMIC CREDIT FOR CTE COURSEWORK

Career and technical education courses meet the credit requirements for high school graduation (1 unit of arts and humanities or career and technical education). Some career and technical education courses meet academic credit for high school graduation. Please refer to the local high school's course catalog or contact the local high school counselor for more information. (NAC 389.672)

**CORE COURSE:
RECOMMENDED STUDENT PERFORMANCE STANDARDS**

COURSE TITLE:	Automotive Service Technician I
ABBR. NAME:	AUTO SERV I
CREDITS:	1
LEVEL:	L1
CIP CODE:	47.0604
PREREQUISITE:	None
CTSO:	SkillsUSA
COURSE DESCRIPTION	
<p>This course will introduce students to the operational and scientific nature of the automotive component systems including fuel, intake, exhaust, ignition, lubrication, braking, cooling, and suspension systems. Practical application of safe work habits and the correct use of tools and precision test instruments will be emphasized throughout the course. Students will utilize the AYES school to career activities, curriculum, and processes. The program must be certified and follow the national NATEF - AST program standards and requirements of AYES (Automotive Youth Education Systems).</p>	

TECHNICAL STANDARDS

CONTENT STANDARD 1.0 : IDENTIFY AND UTILIZE SAFETY PROCEDURES AND PROPER TOOLS

Performance Standard 1.1 : Demonstrate General Lab Safety Rules and Procedures

Performance Indicators : 1.1.1-1.1.12, 1.1.15

Performance Standard 1.2 : Identify and Utilize Proper Tools

Performance Indicators : 1.2.1-1.2.5

CONTENT STANDARD 2.0 : PERFORM BASIC VEHICLE SERVICE

Performance Standard 2.1 : Identify and Utilize Vehicle Service Information

Performance Indicators : 2.1.1-2.1.6

Performance Standard 2.2 : Prepare a Vehicle for Service

Performance Indicators : 2.2.1-2.2.5

Performance Standard 2.3 : Prepare a Vehicle for the Customer

Performance Indicators : 2.3.1

CONTENT STANDARD 3.0 : APPLY CONCEPTS OF ENGINE REPAIR (A1)

Performance Standard 3.1 : Perform General Engine Diagnosis

Performance Indicators : 3.1.1-3.1.4

Performance Standard 3.4 : Perform Lubrication and Cooling Systems Diagnosis and Repair

Performance Indicators : 3.4.10

CONTENT STANDARD 4.0 : ANALYZE AUTOMATIC TRANSMISSION/TRANSAXLE SYSTEMS (A2)

Performance Standard 4.1 : Perform General Transmission/Transaxle Diagnosis

Performance Indicators : 4.1.2, 4.1.4

CONTENT STANDARD 5.0 : ANALYZE MANUAL DRIVETRAIN AND AXLE SYSTEMS (A3)

Performance Standard 5.1 : Perform General Drivetrain Diagnosis

Performance Indicators : 5.1.2-5.1.3

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Performance Standard 5.2 : Perform Clutch Diagnosis and Repair

Performance Indicators : 5.2.5

Performance Standard 5.5 : Assess Ring and Pinion Gears and Differential Case Assembly

Performance Indicators : 5.5.1

Performance Standard 5.7 : Perform Four-wheel Drive/All-wheel Drive Component Diagnosis and Repair

Performance Indicators : 5.7.3

CONTENT STANDARD 6.0 : ANALYZE SUSPENSION AND STEERING SYSTEMS (A4)

Performance Standard 6.1 : Prepare Vehicle for General Suspension and Steering Systems Service

Performance Indicators : 6.1.1

Performance Standard 6.6 : Perform Wheel and Tire Diagnosis and Repair

Performance Indicators : 6.6.1-6.6.4, 6.6.6-6.6.9

CONTENT STANDARD 7.0 : ANALYZE BRAKE SYSTEMS (A5)

Performance Standard 7.1 : Perform General Brake Systems Diagnosis

Performance Indicators : 7.1.1-7.1.2, 7.1.4

Performance Standard 7.2 : Perform Hydraulic System Diagnosis and Repair

Performance Indicators : 7.2.9, 7.2.11

Performance Standard 7.4 : Perform Disk Brake Diagnosis and Repair

Performance Indicators : 7.4.3, 7.4.11

CONTENT STANDARD 8.0 : ANALYZE ELECTRICAL / ELECTRONIC SYSTEMS (A6)

Performance Standard 8.1 : Perform General Electronic Systems Diagnosis

Performance Indicators : 8.1.1-8.1.6, 8.1.9, 8.1.11, 8.1.13

Performance Standard 8.2 : Perform Battery Diagnosis and Service

Performance Indicators : 8.2.1-8.2.6

Performance Standard 8.3 : Perform Starting System Diagnosis and Repair

Performance Indicators : 8.3.5

Performance Standard 8.5 : Perform Lighting Systems Diagnosis and Repair

Performance Indicators : 8.5.2

CONTENT STANDARD 9.0 : ANALYZE HEATING AND AIR CONDITIONING SYSTEMS (A7)

Performance Standard 9.1 : Perform General A/C Systems Diagnosis

Performance Indicators : 9.1.2

Performance Standard 9.2 : Perform Refrigeration System Component Diagnosis and Repair

Performance Indicators : 9.2.1

Performance Standard 9.3 : Perform Heating, Ventilation, and Engine Cooling Systems Diagnosis and Repair

Performance Indicators : 9.3.1

CONTENT STANDARD 10.0 : ANALYZE ENGINE PERFORMANCE (A8)

Performance Standard 10.1 : Perform General Engine Diagnosis

Performance Indicators : 10.1.2

Performance Standard 10.4 : Perform Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair

Performance Indicators : 10.4.4

CONTENT STANDARD 11.0 : INVESTIGATE TRANSPORTATION SYSTEMS

Performance Standard 11.1 : Assess Transportation Systems

Performance Indicators : 11.1.1-11.1.2

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS**CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

Performance Indicators : 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

Performance Indicators : 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

Performance Indicators : 1.3.1-1.3.4

ALIGNMENT TO THE NEVADA ACADEMIC CONTENT STANDARDS*

English Language Arts: Reading Standards for Literacy in Science and Technical Subjects
Writing Standards for Literacy in Science and Technical Subjects
Speaking and Listening

Mathematics: Mathematical Practices
Algebra-Creating Equations
Algebra-Reasoning with Equations and Inequalities
Functions-Linear, Quadratic, and Exponential Models

* Refer to the Automotive Service Technician Standards for alignment by performance indicator

**CORE COURSE:
RECOMMENDED STUDENT PERFORMANCE STANDARDS**

COURSE TITLE:	Automotive Service Technician II
ABBR. NAME:	AUTO SERV II
CREDITS:	1
LEVEL:	L2
CIP CODE:	47.0604
PREREQUISITE:	Automotive Service Technician I
CTSO:	SkillsUSA
COURSE DESCRIPTION	
<p>This course is a continuation of Automotive Service Technician I. This course provides intermediate automotive technology students with laboratory activities, including tasks with advanced equipment, to diagnose and service modern automotive systems. This course focuses on safety, engine repair, drive axles, heating and air conditioning, engine performance, braking systems, basic electrical systems, and employability skills. Students will utilize the AYES school to career activities, curriculum, and processes. The program must be certified and follow the national NATEF - AST program standards and requirements of AYES (Automotive Youth Education Systems). The appropriate use of technology and industry-standard equipment is an integral part of this course.</p>	

TECHNICAL STANDARDS

CONTENT STANDARD 1.0 : IDENTIFY AND UTILIZE SAFETY PROCEDURES AND PROPER TOOLS

Performance Standard 1.1 : Demonstrate General Lab Safety Rules and Procedures

Performance Indicators : 1.1.13-1.1.14

CONTENT STANDARD 3.0 : APPLY CONCEPTS OF ENGINE REPAIR (A1)

Performance Standard 3.1 : Perform General Engine Diagnosis

Performance Indicators : 3.1.5, 3.1.7

Performance Standard 3.4 : Perform Lubrication and Cooling Systems Diagnosis and Repair

Performance Indicators : 3.4.1, 3.4.3-3.4.4, 3.4.6-3.4.8, 3.4.11-3.4.12

CONTENT STANDARD 4.0 : ANALYZE AUTOMATIC TRANSMISSION/TRANSAXLE SYSTEMS (A2)

Performance Standard 4.1 : Perform General Transmission/Transaxle Diagnosis

Performance Indicators : 4.1.3

Performance Standard 4.2 : Perform In-Vehicle Transmission/Transaxle Maintenance and Repair

Performance Indicators : 4.2.2, 4.2.4-4.2.5

Performance Standard 4.3 : Perform Off-Vehicle Transmission/Transaxle Repair

Performance Indicators : 4.3.2

CONTENT STANDARD 5.0 : ANALYZE MANUAL DRIVETRAIN AND AXLE SYSTEMS (A3)

Performance Standard 5.1 : Perform General Drivetrain Diagnosis

Performance Indicators : 5.1.4

Performance Standard 5.5 : Assess Ring and Pinion Gears and Differential Case Assembly

Performance Indicators : 5.5.2

Performance Standard 5.6 : Perform Drive Axle Diagnosis and Repair

Performance Indicators : 5.6.1

Performance Standard 5.7 : Perform Four-wheel Drive/All-wheel Drive Component Diagnosis and Repair

Performance Indicators : 5.7.4

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CONTENT STANDARD 6.0 : ANALYZE SUSPENSION AND STEERING SYSTEMS (A4)

Performance Standard 6.2 : Perform Steering Systems Diagnosis and Repair

Performance Indicators : 6.2.1, 6.2.9-6.2.15

Performance Standard 6.3 : Perform Suspension Systems Diagnosis and Repair

Performance Indicators : 6.3.3, 6.3.5, 6.3.9, 6.3.12

CONTENT STANDARD 7.0 : ANALYZE BRAKE SYSTEMS (A5)

Performance Standard 7.2 : Perform Hydraulic System Diagnosis and Repair

Performance Indicators : 7.2.8, 7.2.10, 7.2.12-7.2.13

Performance Standard 7.3 : Perform Drum Brake Diagnosis and Repair

Performance Indicators : 7.3.2-7.3.6

Performance Standard 7.4 : Perform Disk Brake Diagnosis and Repair

Performance Indicators : 7.4.1-7.4.2, 7.4.4-7.4.10, 7.4.12

Performance Standard 7.6 : Perform Miscellaneous Diagnosis and Repair (Wheel Bearings, Parking Brakes, Electrical, etc.)

Performance Indicators : 7.6.1-7.6.8

CONTENT STANDARD 8.0 : ANALYZE ELECTRICAL / ELECTRONIC SYSTEMS (A6)

Performance Standard 8.1 : Perform General Electronic Systems Diagnosis

Performance Indicators : 8.1.7-8.1.8, 8.1.10

Performance Standard 8.3 : Perform Starting System Diagnosis and Repair

Performance Indicators : 8.3.1-8.3.4

Performance Standard 8.4 : Perform Charging System Diagnosis and Repair

Performance Indicators : 8.4.1-8.4.5

Performance Standard 8.5 : Perform Lighting Systems Diagnosis and Repair

Performance Indicators : 8.5.3

Performance Standard 8.7 : Perform Horn and Wiper/Washer Diagnosis and Repair

Performance Indicators : 8.7.1, 8.7.3

Performance Standard 8.8 : Perform Accessories Diagnosis and Repair

Performance Indicators : 8.8.8-8.8.9

CONTENT STANDARD 9.0 : ANALYZE HEATING AND AIR CONDITIONING SYSTEMS (A7)

Performance Standard 9.1 : Perform General A/C Systems Diagnosis

Performance Indicators : 9.1.9

CONTENT STANDARD 10.0 : ANALYZE ENGINE PERFORMANCE (A8)

Performance Standard 10.2 : Analyze Computerized Engine Controls

Performance Indicators : 10.2.1-10.2.2, 10.2.4

Performance Standard 10.4 : Perform Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair

Performance Indicators : 10.4.3, 10.4.9

CONTENT STANDARD 11.0 : INVESTIGATE TRANSPORTATION SYSTEMS

Performance Standard 11.1 : Assess Transportation Systems

Performance Indicators : 11.1.3

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS**CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

Performance Indicators : 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

Performance Indicators : 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

Performance Indicators : 1.3.1-1.3.4

ALIGNMENT TO THE NEVADA ACADEMIC CONTENT STANDARDS*

English Language Arts: Reading Standards for Literacy in Science and Technical Subjects
Writing Standards for Literacy in Science and Technical Subjects
Speaking and Listening

Mathematics: Mathematical Practices

* Refer to the Automotive Service Technician Standards for alignment by performance indicator

**CORE COURSE:
RECOMMENDED STUDENT PERFORMANCE STANDARDS**

COURSE TITLE:	Automotive Service Technician III
ABBR. NAME:	AUTO SERV III
CREDITS:	1
LEVEL:	L3
CIP CODE:	47.0604
PREREQUISITE:	Automotive Service Technician II
CTSO:	SkillsUSA
COURSE DESCRIPTION	
<p>This course is a continuation of Automotive Service Technician II. This course provides advanced automotive technology students with in-depth study and skill development in engine performance, brakes, steering and suspension service, and drive train service. Students will utilize the AYES school to career activities, curriculum, and processes. The program must be certified and follow the national NATEF - AST program standards and requirements of AYES (Automotive Youth Education Systems). The appropriate use of technology and industry-standard equipment is an integral part of this course.</p>	

TECHNICAL STANDARDS

CONTENT STANDARD 3.0 : APPLY CONCEPTS OF ENGINE REPAIR (A1)

Performance Standard 3.3 : Perform Engine Block Assembly Diagnosis and Repair

Performance Indicators : 3.3.1

CONTENT STANDARD 4.0 : ANALYZE AUTOMATIC TRANSMISSION/TRANSAXLE SYSTEMS (A2)

Performance Standard 4.2 : Perform In-Vehicle Transmission/Transaxle Maintenance and Repair

Performance Indicators : 4.2.3

CONTENT STANDARD 5.0 : ANALYZE MANUAL DRIVETRAIN AND AXLE SYSTEMS (A3)

Performance Standard 5.4 : Perform Drive Shaft and Half Shaft, Universal and Constant-Velocity (CV) Joint Diagnosis and Repair

Performance Indicators : 5.4.1-5.4.5

Performance Standard 5.5 : Assess Ring and Pinion Gears and Differential Case Assembly

Performance Indicators : 5.5.3-5.5.4

Performance Standard 5.6 : Perform Drive Axle Diagnosis and Repair

Performance Indicators : 5.6.2-5.6.4

CONTENT STANDARD 6.0 : ANALYZE SUSPENSION AND STEERING SYSTEMS (A4)

Performance Standard 6.2 : Perform Steering Systems Diagnosis and Repair

Performance Indicators : 6.2.2-6.2.8, 6.2.16-6.2.19

Performance Standard 6.3 : Perform Suspension Systems Diagnosis and Repair

Performance Indicators : 6.3.1-6.3.2, 6.3.4, 6.3.6-6.3.8, 6.3.10-6.3.11

Performance Standard 6.4 : Perform Related Suspension and Steering Service

Performance Indicators : 6.4.1-6.4.3

Performance Standard 6.5 : Perform Wheel Alignment, Diagnosis, Adjustment and Repair

Performance Indicators : 6.5.1-6.5.9

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Performance Standard 6.6 : Perform Wheel and Tire Diagnosis and Repair

Performance Indicators : 6.6.5, 6.6.10-6.6.11

CONTENT STANDARD 7.0 : ANALYZE BRAKE SYSTEMS (A5)

Performance Standard 7.1 : Perform General Brake Systems Diagnosis

Performance Indicators : 7.1.3

Performance Standard 7.2 : Perform Hydraulic System Diagnosis and Repair

Performance Indicators : 7.2.1-7.2.7

Performance Standard 7.3 : Perform Drum Brake Diagnosis and Repair

Performance Indicators : 7.3.1

Performance Standard 7.5 : Perform Power-Assist Units Diagnosis and Repair

Performance Indicators : 7.5.1-7.5.5

Performance Standard 7.7 : Perform Electronic Brake, Traction and Stability Control Systems Diagnosis and Repair

Performance Indicators : 7.7.1-7.7.3

CONTENT STANDARD 8.0 : ANALYZE ELECTRICAL / ELECTRONIC SYSTEMS (A6)

Performance Standard 8.1 : Perform General Electronic Systems Diagnosis

Performance Indicators : 8.1.12

Performance Standard 8.2 : Perform Battery Diagnosis and Service

Performance Indicators : 8.2.7-8.2.9

Performance Standard 8.3 : Perform Starting System Diagnosis and Repair

Performance Indicators : 8.3.6

Performance Standard 8.5 : Perform Lighting Systems Diagnosis and Repair

Performance Indicators : 8.5.1, 8.5.4

Performance Standard 8.6 : Perform Gauges, Warning Devices, and Driver Information Systems Diagnosis and Repair

Performance Indicators : 8.6.1-8.6.2

Performance Standard 8.7 : Perform Horn and Wiper/Washer Diagnosis and Repair

Performance Indicators : 8.7.2

Performance Standard 8.8 : Perform Accessories Diagnosis and Repair

Performance Indicators : 8.8.1-8.8.7, 8.8.10

CONTENT STANDARD 10.0 : ANALYZE ENGINE PERFORMANCE (A8)

Performance Standard 10.1 : Perform General Engine Diagnosis

Performance Indicators : 10.1.1, 10.1.3-10.1.10

Performance Standard 10.2 : Analyze Computerized Engine Controls

Performance Indicators : 10.2.3

Performance Standard 10.4 : Perform Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair

Performance Indicators : 10.4.1-10.4.2, 10.4.5-10.4.8, 10.4.10-10.4.11

Performance Standard 10.5 : Perform Emissions Control Systems Diagnosis and Repair

Performance Indicators : 10.5.1-10.5.8

CONTENT STANDARD 11.0 : INVESTIGATE TRANSPORTATION SYSTEMS

Performance Standard 11.1 : Assess Transportation Systems

Performance Indicators : 11.1.4

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS**CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

Performance Indicators : 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

Performance Indicators : 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

Performance Indicators : 1.3.1-1.3.4

ALIGNMENT TO THE NEVADA ACADEMIC CONTENT STANDARDS*

English Language Arts: Reading Standards for Literacy in Science and Technical Subjects
Writing Standards for Literacy in Science and Technical Subjects
Speaking and Listening

Mathematics: Mathematical Practices

* Refer to the Automotive Service Technician Standards for alignment by performance indicator

**CORE COURSE:
RECOMMENDED STUDENT PERFORMANCE STANDARDS**

COURSE TITLE:	Automotive Service Technician IV
ABBR. NAME:	AUTO SERV IV
CREDITS:	1
LEVEL:	L4C
CIP CODE:	47.0604
PREREQUISITE:	Automotive Service Technician III
PROGRAM ASSESSMENTS:	AUTOMOTIVE SERVICE TECHNICIAN WORKPLACE READINESS SKILLS
CTSO:	SkillsUSA

COURSE DESCRIPTION

This course is a continuation of Automotive Service Technician III. This course provides advanced automotive technology students with in-depth study and skill development in the repair of automotive engines, automatic transmission, manual transmission, drive train service, and air conditioning system service. Students will utilize the AYES school to career activities, curriculum, and processes. The program must be certified and follow the national NATEF - AST program standards and requirements of AYES (Automotive Youth Education Systems). The appropriate use of technology and industry-standard equipment is an integral part of this course. An internship may be incorporated into the course of study to assist students in making a transition from school to work. Upon successful completion of this course, students will have acquired entry-level skills for employment and be prepared for postsecondary education.

TECHNICAL STANDARDS

CONTENT STANDARD 3.0 : APPLY CONCEPTS OF ENGINE REPAIR (A1)

Performance Standard 3.1 : Perform General Engine Diagnosis

Performance Indicators : 3.1.6, 3.1.8-3.1.10

Performance Standard 3.2 : Perform Cylinder Head and Valve Train Diagnosis and Repair

Performance Indicators : 3.2.1-3.2.6

Performance Standard 3.4 : Perform Lubrication and Cooling Systems Diagnosis and Repair

Performance Indicators : 3.4.2, 3.4.5, 3.4.9

CONTENT STANDARD 4.0 : ANALYZE AUTOMATIC TRANSMISSION/TRANSAXLE SYSTEMS (A2)

Performance Standard 4.1 : Perform General Transmission/Transaxle Diagnosis

Performance Indicators : 4.1.1, 4.1.5-4.1.9

Performance Standard 4.2 : Perform In-Vehicle Transmission/Transaxle Maintenance and Repair

Performance Indicators : 4.2.1

Performance Standard 4.3 : Perform Off-Vehicle Transmission/Transaxle Repair

Performance Indicators : 4.3.1, 4.3.3-4.3.5

CONTENT STANDARD 5.0 : ANALYZE MANUAL DRIVETRAIN AND AXLE SYSTEMS (A3)

Performance Standard 5.1 : Perform General Drivetrain Diagnosis

Performance Indicators : 5.1.1

Performance Standard 5.2 : Perform Clutch Diagnosis and Repair

Performance Indicators : 5.2.1-5.2.4, 5.2.6-5.2.7

Performance Standard 5.3 : Perform Transmission/Transaxle Diagnosis and Repair

Performance Indicators : 5.3.1-5.3.2

Performance Standard 5.7 : Perform Four-wheel Drive/All-wheel Drive Component Diagnosis and Repair

Performance Indicators : 5.7.1-5.7.2

CONTENT STANDARD 9.0 : ANALYZE HEATING AND AIR CONDITIONING SYSTEMS (A7)

Performance Standard 9.1 : Perform General A/C Systems Diagnosis

Performance Indicators : 9.1.1, 9.1.3-9.1.8

Performance Standard 9.2 : Perform Refrigeration System Component Diagnosis and Repair

Performance Indicators : 9.2.2-9.2.11

Performance Standard 9.3 : Perform Heating, Ventilation, and Engine Cooling Systems Diagnosis and Repair

Performance Indicators : 9.3.2-9.3.3

Performance Standard 9.4 : Perform Operating Systems and Related Controls Diagnosis and Repair

Performance Indicators : 9.4.1-9.4.8

Performance Standard 9.5 : Perform Refrigerant Recovery, Recycling, and Handling Techniques

Performance Indicators : 9.5.1-9.5.4

CONTENT STANDARD 10.0 : ANALYZE ENGINE PERFORMANCE (A8)

Performance Standard 10.1 : Perform General Engine Diagnosis

Performance Indicators : 10.1.11

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS

CONTENT STANDARD 1.0 : DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS

Performance Standard 1.1 : Demonstrate Personal Qualities and People Skills

Performance Indicators : 1.1.1-1.1.7

Performance Standard 1.2 : Demonstrate Professional Knowledge and Skills

Performance Indicators : 1.2.1-1.2.10

Performance Standard 1.3 : Demonstrate Technology Knowledge and Skills

Performance Indicators : 1.3.1-1.3.4

ALIGNMENT TO THE NEVADA ACADEMIC CONTENT STANDARDS*

English Language Arts: Reading Standards for Literacy in Science and Technical Subjects
Writing Standards for Literacy in Science and Technical Subjects
Speaking and Listening

Mathematics: Mathematical Practices

* Refer to the Automotive Service Technician Standards for alignment by performance indicator

**COMPLEMENTARY COURSE(S):
RECOMMENDED STUDENT PERFORMANCE STANDARDS**

Programs that utilize the complementary courses can include the following courses. The lab courses allow additional time to be utilized in developing the processes, concepts, and principles as described in the classroom instruction. The standards and performance indicators for each lab course are shown in the corresponding course listed in the previous section.

COURSE TITLE:	Automotive Service Technician II LAB
ABBR. NAME:	AUTO SERV II L
CREDITS:	1
LEVEL:	L2L
CIP CODE:	47.0604
PREREQUISITE:	Concurrent enrollment in Automotive Service Technician II
CTSO:	SkillsUSA
COURSE DESCRIPTION	
This course is designed to expand the students' opportunities for applied learning. This course provides an in-depth lab experience that applies the processes, concepts, and principles as described in the classroom instruction. The coursework will encourage students to explore and develop advanced skills in their program area. The appropriate use of technology and industry-standard equipment is an integral part of this course.	

COURSE TITLE:	Automotive Service Technician III LAB
ABBR. NAME:	AUTO SERV III L
CREDITS:	1
LEVEL:	L3L
CIP CODE:	47.0604
PREREQUISITE:	Concurrent enrollment in Automotive Service Technician III
CTSO:	SkillsUSA
COURSE DESCRIPTION	
This course is designed to expand the students' opportunities for applied learning. This course provides an in-depth lab experience that applies the processes, concepts, and principles as described in the classroom instruction. The coursework will encourage students to explore and develop advanced skills in their program area. The appropriate use of technology and industry-standard equipment is an integral part of this course.	

COURSE TITLE:	Automotive Service Technician IV LAB
ABBR. NAME:	AUTO SERV IV L
CREDITS:	1
LEVEL:	L4L
CIP CODE:	47.0604
PREREQUISITE:	Concurrent enrollment in Automotive Service Technician IV
CTSO:	SkillsUSA

COURSE DESCRIPTION

This course is designed to expand the students' opportunities for applied learning. This course provides an in-depth lab experience that applies the processes, concepts, and principles as described in the classroom instruction. The coursework will encourage students to explore and develop advanced skills in their program area. The appropriate use of technology and industry-standard equipment is an integral part of this course.