

AUTOMOTIVE TECHNOLOGY CURRICULUM FRAMEWORK



This document was prepared by:

Office of Career Readiness, Adult Learning, and Education Options
Nevada Department of Education
755 N. Roop Street, Suite 201
Carson City, NV 89701

www.doe.nv.gov

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VISION

All Nevadans ready for success in the 21st century

MISSION

To improve student achievement and educator effectiveness by ensuring opportunities, facilitating learning, and promoting excellence



INTRODUCTION

The Nevada Career and Technical Education (CTE) Curriculum Frameworks are a resource for Nevada's public schools 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.

This curriculum framework ensures the following:

- CTE course(s) 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 in-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.
- CTE course(s) and course sequence includes leadership and employability skills as an integral part of the curriculum.
- CTE course(s) and course sequence is part of a rigorous program of study and includes sufficient technical challenge to meet state and/or industry-standards.

**NEVADA DEPARTMENT OF EDUCATION
CURRICULUM FRAMEWORK FOR
AUTOMOTIVE TECHNOLOGY**

PROGRAM INFORMATION

Program Title: Automotive Technology
State Skill Standards: Automotive Technology
Standards Reference Code: AUTO
Career Cluster: Transportation, Distribution & Logistics
Career Pathway: Facility & Mobile Equipment Maintenance
Program Length: 2-year, completed sequentially
Program Assessments: Automotive Technology
Workplace Readiness Skills
CTSO: SkillsUSA
Grade Level: 9-12
Industry Certifications: Automotive Service Excellence (ASE)
OSHA

PROGRAM PURPOSE

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

The program includes the following state standards:

- Nevada CTE Skill Standards: Automotive Technology
- Employability Skills for Career Readiness
- Nevada Academic Content Standards (alignment shown in the Nevada CTE Skill Standards):
 - English Language Arts
 - Mathematics
 - Science
- 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 <https://cte.careertech.org/sites/default/files/CareerClustersPathways.pdf> and <https://www.air.org/sites/default/files/CTEClusters.pdf>

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 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. Complete program sequences are essential for the successful delivery of all state standards in each program area. A program does not have to utilize the complementary courses for students to complete their program of study.

AUTOMOTIVE TECHNOLOGY**Required Core Course Sequence (R) with Complementary Courses (C)**

Required/ Complementary	Course Title	Abbreviated Name	CIP Code	SCED Subject Area	SCED Course Identifier	SCED Course Level	SCED Unit Credit	SCED Course Sequence	SCED Course Number
R	Automotive Technology I	AUTO TECH I	47.0600	20	104	G	1.00	12	20104G1.0012
R	Automotive Technology II	AUTO TECH II	47.0600	20	104	G	1.00	22	20104G1.0022
C	Intermediate Automotive Technology	INT AUTO TECH	47.0600	20	104	E	1.00	11	20104E1.0011
C	Automotive Technology Advanced Studies	AUTO TECH AS	47.0600	20	104	E	1.00	11	20104E1.0011
C	Automotive Technology II LAB	AUTO TECH II L	47.0600	20	104	E	1.00	22	20104E1.0022
C	Intermediate Automotive Technology LAB	INT AUTO TECH L	47.0600	20	104	E	1.00	11	20104E1.0011
C	CTE Work Experience - Transportation Distribution and Logistics	WORK EXPER TRANS	99.0016	20	998	G	1.00	11	20998G1.0011

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 in the Program Structure table as SCED Course Level “G” and SCED Course Sequence 22 or 33. (Paragraph (d) of Subsection 1 of NAC 389.800)

END-OF-PROGRAM TECHNICAL ASSESSMENT

An end-of-program technical assessment may be implemented for those programs with current industry validated standards 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 in the Program Structure table as SCED Course Level “G” and SCED Course Sequence 22 or 33. (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) completion of a CTE course of study in a program area; (2) 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 COURSES**RECOMMENDED STUDENT PERFORMANCE STANDARDS****COURSE INFORMATION**

Course Title: Automotive Technology I
Abbreviated Name: AUTO TECH I
Credits: 1
Prerequisite: None
CTSO: SkillsUSA

COURSE DESCRIPTION

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.

TECHNICAL STANDARDS**CONTENT STANDARD 1.0: INTEGRATE CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOS)**

Performance Standard 1.1: Explore the History and Organization of CTSOs

Performance Indicators: 1.1.1-1.1.3

Performance Standard 1.2: Develop Leadership Skills

Performance Indicators: 1.2.1-1.2.6

Performance Standard 1.3: Participate in Community Service

Performance Indicators: 1.3.1-1.3.3

Performance Standard 1.4: Develop Professional and Career Skills

Performance Indicators: 1.4.1-1.4.5

Performance Standard 1.5: Understand the Relevance of Career and Technical Education (CTE)

Performance Indicators: 1.5.1-1.5.3

CONTENT STANDARD 2.0: IDENTIFY AND UTILIZE SAFETY PROCEDURES AND PROPER TOOLS

Performance Standard 2.1: Demonstrate General Lab Safety Rules and Procedures

Performance Indicators: 2.1.1-2.1.15

Performance Standard 2.2: Identify and Utilize Proper Tools

Performance Indicators: 2.2.1 – 2.2.5

CONTENT STANDARD 3.0: PERFORM BASIC VEHICLE SERVICE

Performance Standard 3.1: Identify and Utilize Vehicle Service Information

Performance Indicators: 3.1.1-3.1.6

Performance Standard 3.2: Prepare a Vehicle for Service

Performance Indicators: 3.2.1-3.2.5

Performance Standard 3.3: Prepare a Vehicle for the Customer

Performance Indicators: 3.3.1

CONTENT STANDARD 4.0: APPLY CONCEPTS OF ENGINE REPAIR (A1)

Performance Standard 4.1: Demonstrate General Engine Service Techniques

Performance Indicators: 4.1.1-4.1.5

- Performance Standard 4.3: Perform Lubrication and Cooling Systems Service and Repair
Performance Indicators: 4.3.1-4.3.2
- CONTENT STANDARD 5.0: ANALYZE AUTOMATIC TRANSMISSION/TRANSAXLE FOR SERVICE (A2)**
- Performance Standard 5.1: Perform General Transmission/Transaxle Service
Performance Indicators: 5.1.1-5.1.4
- Performance Standard 3.2: Perform In-Vehicle Transmission/Transaxle Service and Repair
Performance Indicators: 5.2.1-5.2.2
- CONTENT STANDARD 6.0: ANALYZE MANUAL DRIVETRAIN AND AXLES FOR SERVICE (A3)**
- Performance Standard 6.1: Perform General Drivetrain Service
Performance Indicators: 6.1.1-6.1.3
- Performance Standard 6.2: Investigate Clutch Systems for Service and Repair
Performance Indicators: 6.2.1-6.2.2
- Performance Standard 6.4: Assess Differential Case Assembly for Service
Performance Indicators: 6.4.1-6.4.2
- Performance Standard 6.5: Assess Four-wheel Drive/All-wheel Drive Component for Service and Repair
Performance Indicators: 6.5.1
- CONTENT STANDARD 7.0: PERFORM SUSPENSION AND STEERING SERVICE AND REPAIR (A4)**
- Performance Standard 7.1: Prepare Vehicle for General Suspension and Steering Systems Service
Performance Indicators: 7.1.1-7.1.2
- Performance Standard 7.2: Perform Steering Systems Service and Repair
Performance Indicators: 7.2.1-7.2.2
- Performance Standard 7.4: Perform Wheel and Tire Service and Repair
Performance Indicators: 7.4.1-7.4.8
- CONTENT STANDARD 8.0: ANALYZE BRAKE SYSTEMS FOR SERVICE AND REPAIR (A5)**
- Performance Standard 8.1: Demonstrate Knowledge of General Brake Systems
Performance Indicators: 8.1.1-8.1.4
- Performance Standard 8.2: Perform Hydraulic System Service and Repair
Performance Indicators: 8.2.1-8.2.4
- Performance Standard 8.3: Perform Drum Brake Service and Repair
Performance Indicators: 8.3.1-8.3.2
- Performance Standard 8.6: Perform Miscellaneous Service and Repair (Wheel Bearings, Parking Brakes, Electrical, etc.)
Performance Indicators: 8.6.1
- CONTENT STANDARD 9.0: ANALYZE ELECTRICAL / ELECTRONIC SYSTEMS (A6)**
- Performance Standard 9.1: Perform General Electronic Systems Diagnostics and Service
Performance Indicators: 9.1.1-9.1.2
- Performance Standard 9.2: Perform Battery Service
Performance Indicators: 9.2.1-9.2.3
- Performance Standard 9.5: Perform Light System and Accessories Service and Repair
Performance Indicators: 9.5.1-9.5.2

CONTENT STANDARD 10.0: ANALYZE HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) SYSTEMS (A7)

Performance Standard 10.1: Demonstrate Knowledge of HVAC Systems

Performance Indicators: 10.1.1-10.1.2

Performance Standard 10.2: Inspect Heating, Ventilation, and Engine Cooling Systems

Performance Indicators: 10.2.1**CONTENT STANDARD 11.0: ANALYZE ENGINE PERFORMANCE (A8)**

Performance Standard 11.1: Perform General Engine Service

Performance Indicators: 11.1.1**CONTENT STANDARD 12.0: INVESTIGATE TRANSPORTATION SYSTEMS**

Performance Standard 12.1: Assess Transportation Systems

Performance Indicators: 12.1.1-12.1.4**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
Geometry
Numbers and Quantity

Science: Physical Science

*Refer to the Automotive Technology Standards for alignment by performance indicator.

COURSE INFORMATION

Course Title: Automotive Technology II
Abbreviated Name: AUTO TECH II
Credits: 1
Prerequisite: Automotive Technology I
Program Assessments: Automotive Technology
Workplace Readiness Skills
CTSO: SkillsUSA

COURSE DESCRIPTION

This course is a continuation of Automotive Technology 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, automatic transmission, manual transmission, manual drive train, drive axles, clutch systems, suspension and steering, heating and air conditioning, engine performance, braking systems, and basic electrical systems. The appropriate use of technology and industry-standard equipment is an integral part of this course. 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 1.0: INTEGRATE CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOS)**

Performance Standard 1.1: Explore the History and Organization of CTSOs

Performance Indicators: 1.1.1-1.1.3

Performance Standard 1.2: Develop Leadership Skills

Performance Indicators: 1.2.1-1.2.6

Performance Standard 1.3: Participate in Community Service

Performance Indicators: 1.3.1-1.3.3

Performance Standard 1.4: Develop Professional and Career Skills

Performance Indicators: 1.4.1-1.4.5

Performance Standard 1.5: Understand the Relevance of Career and Technical Education (CTE)

Performance Indicators: 1.5.1-1.5.3

CONTENT STANDARD 4.0: APPLY CONCEPTS OF ENGINE REPAIR (A1)

Performance Standard 4.1: Demonstrate General Engine Service Techniques

Performance Indicators: 4.1.6-4.1.7

Performance Standard 4.2: Perform Cylinder Head and Valve Train Service and Repair

Performance Indicators: 4.2.1

Performance Standard 4.3: Perform Lubrication and Cooling Systems Service and Repair

Performance Indicators: 4.3.3-4.3.5

CONTENT STANDARD 5.0: ANALYZE AUTOMATIC TRANSMISSION/TRANSAXLE FOR SERVICE (A2)

Performance Standard 5.1: Perform General Transmission/Transaxle Service

Performance Indicators: 5.1.5

Performance Standard 5.2: Perform In-Vehicle Transmission/Transaxle Service and Repair

Performance Indicators: 5.2.3

Performance Standard 5.3: Investigate Characteristics of Off-Vehicle Transmission/Transaxle Service and Repair

Performance Indicators: 5.3.1-5.3.2

CONTENT STANDARD 6.0: ANALYZE MANUAL DRIVETRAIN AND AXLES FOR SERVICE (A3)

Performance Standard 6.1: Perform General Drivetrain Service

Performance Indicators: 6.1.4

Performance Standard 6.3: Analyze the Transmission/Transaxle Components

Performance Indicators: 6.3.1

Performance Standard 6.4: Assess Differential Case Assembly for Service

Performance Indicators: 6.4.3

Performance Standard 6.5: Assess Four-wheel Drive/All-wheel Drive Component for Service and Repair

Performance Indicators: 6.5.2

CONTENT STANDARD 7.0: PERFORM SUSPENSION AND STEERING SERVICE AND REPAIR (A4)

Performance Standard 7.1: Prepare Vehicle for General Suspension and Steering Systems Service

Performance Indicators: 7.1.3

Performance Standard 7.2: Perform Steering Systems Service and Repair

Performance Indicators: 7.2.3-7.2.22

Performance Standard 7.3: Investigate Wheel Alignment Conditions

Performance Indicators: 7.3.1-7.3.2

CONTENT STANDARD 8.0: ANALYZE BRAKE SYSTEMS FOR SERVICE AND REPAIR (A5)

Performance Standard 8.2: Perform Hydraulic System Service and Repair

Performance Indicators: 8.2.5-8.2.6

Performance Standard 8.3: Perform Drum Brake Service and Repair

Performance Indicators: 8.3.3-8.3.6

Performance Standard 8.4: Perform Disc Brake Service and Repair

Performance Indicators: 8.4.1-8.4.10

Performance Standard 8.5: Analyze Power Assist Units

Performance Indicators: 8.5.1

Performance Standard 8.6: Perform Miscellaneous Service and Repair (Wheel Bearings, Parking Brakes, Electrical, etc.)

Performance Indicators: 8.6.2-8.6.5

Performance Standard 8.7: Assess Electronic Brake, Traction and Stability Control Systems

Performance Indicators: 8.7.1

CONTENT STANDARD 9.0: ANALYZE ELECTRICAL / ELECTRONIC SYSTEMS (A6)

Performance Standard 9.1: Perform General Electronic Systems Diagnostics and Service

Performance Indicators: 9.1.3-9.1.11

Performance Standard 9.2: Perform Battery Service

Performance Indicators: 9.2.4-9.2.7

Performance Standard 9.3: Perform Starting System Diagnosis, Service and Repair

Performance Indicators: 9.3.1-9.3.5

Performance Standard 9.4: Perform Charging System Diagnosis, Service and Repair

Performance Indicators: 9.4.1-9.4.4

Performance Standard 9.5: : Perform Light System and Accessories Service and Repair

Performance Indicators: 9.5.3-9.5.4

CONTENT STANDARD 11.0: ANALYZE ENGINE PERFORMANCE (A8)

Performance Standard 11.1: Perform General Engine Service

Performance Indicators: 11.1.2-11.1.7

Performance Standard 11.2: Explore Computerized Controls

Performance Indicators: 11.2.1-11.2.2

Performance Standard 11.3: Assess Fuel, Air Induction, and Exhaust Systems Service and Repair

Performance Indicators: 11.3.1-11.3.4

Performance Standard 11.4: Perform Emissions Control Systems Service and Repair

Performance Indicators: 11.4.1

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
Numbers and Quantity

Science: Physical Science

*Refer to the Automotive Technology Standards for alignment by performance indicator.

COMPLEMENTARY COURSES**RECOMMENDED STUDENT PERFORMANCE STANDARDS**

Programs that utilize the complementary courses can include the following:

- Continuation course(s)
- Advanced Studies course
- Lab course(s)
- CTE Work Experience courses

COURSE INFORMATION

Course Title: Intermediate Automotive Technology

Abbreviated Name: INT AUTO TECH

Credits: 1

Prerequisite: Automotive Technology II

CTSO: SkillsUSA

COURSE DESCRIPTION

This course is a continuation of Automotive Technology II. This course provides advanced automotive technology students with in-depth study and skill development in the repair of automotive engines, engine performance, machine operations, steering and suspension service, drive train service, and air conditioning system service by providing additional instruction in the ASE standard areas. The appropriate use of technology and industry-standard equipment is an integral part of this course. Upon successful completion of this course students will have received advanced level skills to move into employment or continue in postsecondary education.

TECHNICAL STANDARDS:

Students have achieved all program content standards and will pursue continued study through investigation and in-depth research.

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS:

Students have achieved all program content standards and will pursue continued study on intermediate level topics.

COMPLEMENTARY COURSE STANDARDS

The following standards will be continued from the Automotive Technology Standards.

CONTENT STANDARD 5.0: ANALYZE AUTOMATIC TRANSMISSION/TRANSAXLE FOR SERVICE (A2*)

Performance Standard 5.2: Perform In-Vehicle Transmission/Transaxle Service and Repair

Performance Indicator: 5.2.4 Inspect for leakage at external seals, gaskets, and bushings

CONTENT STANDARD 6.0: ANALYZE MANUAL DRIVETRAIN AND AXLES FOR SERVICE (A3*)

Performance Standard 6.6: Perform Drive Shaft and Half Shaft, Universal and Constant Velocity (CV) Joint Service and Repair

Performance Indicator: 6.6.1 Inspect, remove, and/or replace front wheel drive (FWD) bearings, hubs, and seals

Performance Indicator: 6.6.2 Inspect, service, and/or replace shafts, yokes, boots, and universal/CV joints

Performance Standard 6.7: Perform Drive Axle Service and Repair

Performance Indicator: 6.7.1 Inspect and replace drive axles wheel studs

CONTENT STANDARD 8.0: ANALYZE BRAKE SYSTEMS FOR SERVICE AND REPAIR (A5*)

Performance Standard 8.2: Perform Hydraulic System Service

Performance Indicator: 8.2.7 Measure brake pedal height, travel, and free play (as applicable)

Performance Standard 8.4: Perform Disc Brake Service and Repair

Performance Indicator: 8.4.11 Refinish rotor on vehicle; measure final rotor thickness and compare with manufacturer specifications

Performance Standard 8.5: Analyze Power Assist Units

Performance Indicator: 8.5.2 Check brake pedal free travel with, and without, engine running to verify proper power booster operation

Performance Standard 8.7: Assess Electronic Brake, Traction and Stability Control Systems

Performance Indicator: 8.7.2 Identify traction control/vehicle stability control system components

Performance Indicator: 8.7.3 Describe the operation of a regenerative braking system

CONTENT STANDARD 9.0: ANALYZE ELECTRICAL/ELECTRONIC SYSTEMS (A6*)

Performance Standard 9.2: Perform Battery Service

Performance Indicator: 9.2.8 Identify safety precautions for high voltage systems of electric or hybrid electric vehicle and diesel vehicles

Performance Indicator: 9.2.9 Identify electrical/electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery

Performance Indicator: 9.2.10 Identify hybrid vehicle auxiliary (12v) battery service, repair, and test procedures.

Performance Standard 9.3: Perform Starting System Diagnosis, Service and Repair

Performance Indicator: 9.3.6 Demonstrate knowledge of automatic idle-stop/start-stop system

Performance Standard 9.5: Perform Light System and Accessories Service and Repair

Performance Indicator: 9.5.5 Aim headlights

Performance Indicator: 9.5.6 Identify system voltage and safety precautions associated with high intensity discharge headlights

Performance Indicator: 9.5.7 Disable and enable the supplemental restraint system (SRS); verify indicator lamp operation

Performance Indicator: 9.5.8 Remove and reinstall door panel

CONTENT STANDARD 10.0: HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

Performance Standard 10.3: Inspect Refrigeration System Components

Performance Indicator: 10.3.1 Inspect and replace A/C compressor drive belts, pulleys, and tensioners; visually inspect A/C components for signs of leaks; determine necessary action

Performance Indicator: 10.3.2 Identify hybrid vehicle A/C system electrical circuits and the service/safety precautions

Performance Indicator: 10.3.3 Inspect A/C condenser for airflow restrictions; determine necessary action

Performance Standard 10.4: Inspect Operating Systems and Related Controls

Performance Indicator: 10.4.1 Inspect A/C – heater ducts, doors, hoses, cabin filters, and outlets; determine necessary action

Performance Indicator: 10.4.2 Identify the source of A/C systems odors

CONTENT STANDARD 11.0: ENGINE PERFORMANCE

Performance Standard 11.3: Assess Fuel, Air Induction, and Exhaust Systems Service and Repair

Performance Indicator: 11.3.5 Check and refill diesel exhaust fluid (DEF)

COMPLEMENTARY COURSES**RECOMMENDED STUDENT PERFORMANCE STANDARDS****COURSE INFORMATION**

Course Title: Automotive Technology Advanced Studies

Abbreviated Name: AUTO TECH AS

Credits: 1

Prerequisite: Automotive Technology II

CTSO: SkillsUSA

COURSE DESCRIPTION

This course is offered to students who have achieved all content standards in a program and desire to pursue advanced study through investigation and in-depth research. Students are expected to work independently or in a team and consult with their supervising teacher for guidance. The supervising teacher will give directions, monitor, and evaluate the students' topic of study. Coursework may include various work-based learning experiences such as internships and job shadowing, involvement in a school-based enterprise, completion of a capstone project, and/or portfolio development. This course may be repeated for additional instruction and credit.

TECHNICAL STANDARDS

Students have achieved all program content standards and will pursue advanced study through investigation and in-depth research.

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS

Students have achieved all program content standards and will pursue advanced study through investigation and in-depth research.

SAMPLE TOPICS:

- Participate in individual/team competitions
- Investigate and utilize shop management techniques and procedures
- Participation in an internship or job shadow opportunities
- Explore college and career opportunities

COURSE INFORMATION**Course Title: Automotive Technology II LAB****Abbreviated Name: AUTO TECH II L****Credits: 1****Prerequisite: Concurrent enrollment in Automotive Technology 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 INFORMATION**Course Title: Intermediate Automotive Technology LAB****Abbreviated Name: INT AUTO TECH L****Credits: 1****Prerequisite: Concurrent enrollment in Intermediate Automotive Technology****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 INFORMATION

Course Title: CTE Work Experience – Transportation, Distribution, and Logistics

Abbreviated Name: WORK EXPER TRANS

Credits: 1

Prerequisite: Level 1 course and concurrently enrolled in the Level 2 or higher course

CTSO: SkillsUSA

COURSE DESCRIPTION

This course is designed to expand the students' opportunities for applied learning. This course provides an in-depth CTE work experience that applies the processes, concepts, and principles as described in the classroom instruction. This course will encourage students to explore and develop advanced skills through work-based learning directly related to the program of study. The course must follow NAC 389.562, 389.564, 389.566 regulations.