AUTOMOTIVE SERVICE TECHNICIAN STANDARDS

This document was prepared by:

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

Adopted by the State Board of Education /
State Board for Career and Technical Education on
August 14, 2014

NEVADA STATE BOARD OF EDUCATION
NEVADA STATE BOARD FOR CAREER AND TECHNICAL EDUCATION

Elaine Wynn..... President
Allison Serafin .....Vice President
Dave Cook ..... Member
Alexis Gonzales-Black..... Member
Freeman Holbrook ..... Member
Tonia Holmes-Sutton..... Member
Teri Jamin ..... Member
Kevin Melcher ..... Member
Mark Newburn..... Member
Jeff Zander ..... Member
Kaylyn Taylor ..... Student Representative

NEVADA DEPARTMENT OF EDUCATION

Dale A.R. Erquiaga
Superintendent of Public Instruction

Steve Canavero, Ph.D.
Deputy Superintendent for Student Achievement

Michael J. Raponi, Director
Office of Career Readiness, Adult Learning & Education Options

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

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

The development of Nevada career and technical standards and assessments is a collaborative effort sponsored by the Office of Career Readiness, Adult Learning & Education Options at the Department of Education and the Career and Technical Education Consortium of States. The Department of Education relies on teachers and industry representatives who have the technical expertise and teaching experience to develop standards and performance indicators that truly measure student skill attainment. Most important, however, is recognition of the time, expertise and great diligence provided by the writing team members in developing the career and technical standards for Automotive Service Technician.

STANDARDS DEVELOPMENT MEMBERS

Scott Berger, Instructor
Southeast Career Technical Academy
Las Vegas

David McElwain, Coordinator
Clark County School District
Las Vegas

Marvin R. Linville, ASE Master Technician
AYES Area Manager
Western Region

Dan Sylvester, Instructor
Southeast Career Technical Academy
Las Vegas

BUSINESS AND INDUSTRY VALIDATION

All CTE standards developed through the Nevada Department of Education are validated by business and industry through one or more of the following processes: (1) the standards are developed by a team consisting of business and industry representatives; or (2) a separate review panel was coordinated with industry experts to ensure the standards include the proper content; or (3) the adoption of nationally-recognized standards endorsed by business and industry.

The Automotive Service Technician standards were validated with the adoption of the nationally recognized standards approved by NATEF (National Automotive Technicians Education Foundation). The Automotive Service Technician standards follow the NATEF Automobile Service Technology (AST) Task List.

PROJECT COORDINATOR

Alex Kyser, Education Programs Professional
Skilled and Technical Sciences
Office of Career, Technical, and Adult Education
Nevada Department of Education

INTRODUCTION

The standards in this document are designed to clearly state what the student should know and be able to do upon completion of an advanced high school Automotive Service Technician program. These standards are designed for a four-credit course sequence that prepares the student for a technical assessment directly aligned to the standards.

These exit-level standards are designed for the student to complete all standards through their completion of a program of study. These standards are intended to guide curriculum objectives for a program of study.

The standards are organized as follows:

Content Standards are general statements that identify major areas of knowledge, understanding, and the skills students are expected to learn in key subject and career areas by the end of the program.

Performance Standards follow each content standard. Performance standards identify the more specific components of each content standard and define the expected abilities of students within each content standard.

Performance Indicators are very specific criteria statements for determining whether a student meets the performance standard. Performance indicators may also be used as learning outcomes, which teachers can identify as they plan their program learning objectives.

The crosswalk and alignment section of the document shows where the performance indicators support the Nevada Academic Content Standards in Science (based on the Next Generation Science Standards) and the English Language Arts and Mathematics (based on the Common Core State Standards). Where correlation with an academic content standard exists, students in the Automotive Service Technician program perform learning activities that support, either directly or indirectly, achievement of the academic content standards that are listed.

All students are encouraged to participate in the career and technical student organization (CTSO) that relates to their program area. CTSOs are co-curricular national associations that directly enforce learning in the CTE classroom through curriculum resources, competitive events, and leadership development. CTSOs provide students the ability to apply academic and technical knowledge, develop communication and teamwork skills, and cultivate leadership skills to ensure college and career readiness.

The Employability Skills for Career Readiness identify the “soft skills” needed to be successful in all careers, and must be taught as an integrated component of all CTE course sequences. These standards are available in a separate document.

The **Standards Reference Code** is only used to identify or align performance indicators listed in the standards to daily lesson plans, curriculum documents, or national standards.

Program Name	Standards Reference Code
Automotive Service Technician	AST

Example: AST.2.3.4

Standards	Content Standard	Performance Standard	Performance Indicator
Automotive Service Technician	2	3	4

CONTENT STANDARD 1.0 : IDENTIFY AND UTILIZE SAFETY PROCEDURES AND

PERFORMANCE STANDARD 1.1 : DEMONSTRATE GENERAL LAB SAFETY RULES AND PROCEDURES

1.1.1	Describe general shop safety rules and procedures (i.e., safety test)
1.1.2	Utilize safe procedures for handling of tools and equipment
1.1.3	Identify and use proper placement of floor jacks and jack stands
1.1.4	Identify and use proper procedures for safe vehicle lift operation
1.1.5	Utilize proper ventilation procedures for working within the lab/shop area
1.1.6	Identify marked safety areas
1.1.7	Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment
1.1.8	Identify the location and use of eye wash stations
1.1.9	Identify the location of the posted evacuation routes
1.1.10	Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities
1.1.11	Identify and wear appropriate clothing for lab/shop activities
1.1.12	Secure hair and jewelry for lab/shop activities
1.1.13	Research safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits
1.1.14	Research safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignition systems, injection systems, etc.)
1.1.15	Locate and interpret safety data sheets (e.g., SDS / MSDS)

PERFORMANCE STANDARD 1.2 : IDENTIFY AND UTILIZE PROPER TOOLS

1.2.1	Identify tools and their usage in automotive applications
1.2.2	Identify standard and metric designation
1.2.3	Demonstrate safe handling and use of appropriate tools
1.2.4	Demonstrate proper cleaning, storage, and maintenance of tools and equipment
1.2.5	Demonstrate proper use of precision measuring tools (i.e., micrometer, dial-indicator, dial-caliper)

CONTENT STANDARD 2.0 : PERFORM BASIC VEHICLE SERVICE	
PERFORMANCE STANDARD 2.1 : IDENTIFY AND UTILIZE VEHICLE SERVICE INFORMATION	
2.1.1	Locate and utilize paper and/or electronic service information
2.1.2	Locate and utilize Technical Service Bulletins (TSBs)
2.1.3	Demonstrate knowledge of special service messages, quotes, service campaigns/recalls, vehicle/service warranty applications, and service interval recommendations
2.1.4	Locate Vehicle Identification Number (VIN) and production date code
2.1.5	Analyze Vehicle Identification Number (VIN) information
2.1.6	Research other vehicle information labels (such as tire, emissions, etc.)
PERFORMANCE STANDARD 2.2 : PREPARE A VEHICLE FOR SERVICE	
2.2.1	Identify information needed and the service requested on a repair order
2.2.2	Identify purpose and demonstrate proper use of fender covers, seat covers, and floor mats
2.2.3	Demonstrate use of the three C's (concern, cause, and correction)
2.2.4	Review vehicle service history
2.2.5	Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction
PERFORMANCE STANDARD 2.3 : PREPARE A VEHICLE FOR THE CUSTOMER	
2.3.1	Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.)

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

PERFORMANCE STANDARD 3.1 : PERFORM GENERAL ENGINE DIAGNOSIS

3.1.1	Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction
3.1.2	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins
3.1.3	Verify operation of the instrument panel engine warning indicators
3.1.4	Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action
3.1.5	Install engine covers using gaskets, seals and sealers as required
3.1.6	Remove and replace timing belt; verify correct camshaft timing
3.1.7	Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert
3.1.8	Inspect, remove and replace engine mounts
3.1.9	Research hybrid vehicle internal combustion engine service precautions
3.1.10	Remove and reinstall engine in an OBDII or newer vehicle; reconnect all attaching components and restore the vehicle to running condition

PERFORMANCE STANDARD 3.2 : PERFORM CYLINDER HEAD AND VALVE TRAIN DIAGNOSIS AND REPAIR

3.2.1	Remove cylinder head; inspect gasket condition; install cylinder head and gasket; tighten according to manufacturer's specifications and procedures
3.2.2	Clean and visually inspect a cylinder head for cracks; check gasket surface areas for warpage and surface finish; check passage condition
3.2.3	Inspect pushrods, rocker arms, rocker arm pivots and shafts for wear, bending, cracks, looseness, and blocked oil passages (orifices); determine necessary action
3.2.4	Adjust valves (mechanical or hydraulic lifters)
3.2.5	Inspect and replace camshaft and drive belt/chain; includes checking drive gear wear and backlash, end play, sprocket and chain wear, overhead cam drive sprocket(s), drive belt(s), belt tension, tensioners, camshaft reluctor ring/tone-wheel, and valve timing components; verify correct camshaft timing
3.2.6	Establish camshaft position sensor indexing

PERFORMANCE STANDARD 3.3 : PERFORM ENGINE BLOCK ASSEMBLY DIAGNOSIS AND REPAIR

3.3.1	Remove, inspect, or replace crankshaft vibration damper (harmonic balancer)

PERFORMANCE STANDARD 3.4 : PERFORM LUBRICATION AND COOLING SYSTEMS DIAGNOSIS AND REPAIR	
3.4.1	Perform cooling system pressure and dye tests to identify leaks; check coolant condition and level; inspect and test radiator, pressure cap, coolant recovery tank, and heater core and galley plugs; determine necessary action
3.4.2	Identify causes of engine overheating
3.4.3	Inspect, replace, and adjust drive belts, tensioners, and pulleys; check pulley and belt alignment
3.4.4	Inspect and test coolant; drain and recover coolant; flush and refill cooling system with recommended coolant; bleed air as required
3.4.5	Inspect, remove, and replace water pump
3.4.6	Remove and replace radiator
3.4.7	Remove, inspect, and replace thermostat and gasket/seal
3.4.8	Inspect and test fan(s) (electrical or mechanical), fan clutch, fan shroud, and air dams
3.4.9	Perform oil pressure tests; determine necessary action
3.4.10	Perform engine oil and filter change
3.4.11	Inspect auxiliary coolers; determine necessary action
3.4.12	Inspect, test, and replace oil temperature and pressure switches and sensors

CONTENT STANDARD 4.0 : ANALYZE AUTOMATIC TRANSMISSION/TRANSAXLE SYSTEMS (A2)	
PERFORMANCE STANDARD 4.1 : PERFORM GENERAL TRANSMISSION/TRANSAXLE DIAGNOSIS	
4.1.1	Identify and interpret transmission/transaxle concerns; differentiate between engine performance and transmission/transaxle concerns; determine necessary action
4.1.2	Research applicable vehicle and service information fluid type, vehicle service history, service precautions, and technical service bulletins
4.1.3	Diagnose fluid loss and condition concerns; determine necessary action
4.1.4	Check fluid level in a transmission or a transaxle equipped with a dipstick
4.1.5	Check fluid level in a transmission or a transaxle not equipped with a dipstick
4.1.6	Perform stall test; determine necessary action
4.1.7	Perform lock-up converter system tests; determine necessary action
4.1.8	Diagnose transmission/transaxle gear reduction/multiplication concerns using driving, driven, and held member (power flow) principles
4.1.9	Diagnose pressure concerns in a transmission using hydraulic principles (Pascal's Law)
PERFORMANCE STANDARD 4.2 : PERFORM IN-VEHICLE TRANSMISSION/TRANSAXLE MAINTENANCE AND REPAIR	
4.2.1	Inspect, adjust, and replace external manual valve shift linkage, transmission range sensor/switch, and park/neutral position switch
4.2.2	Inspect for leakage at external seals, gaskets, and bushings
4.2.3	Inspect, test, adjust, repair, or replace electrical/electronic components and circuits including computers, solenoids, sensors, relays, terminals, connectors, switches, and harnesses
4.2.4	Drain and replace fluid and filter(s)
4.2.5	Inspect powertrain mounts
PERFORMANCE STANDARD 4.3 : PERFORM OFF-VEHICLE TRANSMISSION/TRANSAXLE REPAIR	
4.3.1	Remove and reinstall transmission/transaxle and torque converter; inspect engine core plugs, rear crankshaft seal, dowel pins, dowel pin holes, and mating surfaces
4.3.2	Inspect, leak test, and flush or replace transmission/transaxle oil cooler, lines, and fittings
4.3.3	Inspect converter flex (drive) plate, converter attaching bolts, converter pilot, converter pump drive surfaces, converter end play, and crankshaft pilot bore
4.3.4	Describe the operational characteristics of a continuously variable transmission (CVT)
4.3.5	Describe the operational characteristics of a hybrid vehicle drivetrain

CONTENT STANDARD 5.0 : ANALYZE MANUAL DRIVETRAIN AND AXLE SYSTEMS (A3)	
PERFORMANCE STANDARD 5.1 : PERFORM GENERAL DRIVETRAIN DIAGNOSIS	
5.1.1	Identify and interpret drive train concerns; determine necessary action
5.1.2	Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins
5.1.3	Check fluid condition; check for leaks; determine necessary action
5.1.4	Drain and refill manual transmission/transaxle and final drive unit
PERFORMANCE STANDARD 5.2 : PERFORM CLUTCH DIAGNOSIS AND REPAIR	
5.2.1	Diagnose clutch noise, binding, slippage, pulsation, and chatter; determine necessary action
5.2.2	Inspect clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs; perform necessary action
5.2.3	Inspect and replace clutch pressure plate assembly, clutch disc, release (throw-out) bearing and linkage, and pilot bearing/bushing (as applicable)
5.2.4	Bleed clutch hydraulic system
5.2.5	Check and adjust clutch master cylinder fluid level; check for leaks
5.2.6	Inspect flywheel and ring gear for wear and cracks; determine necessary action
5.2.7	Measure flywheel runout and crankshaft end play; determine necessary action
PERFORMANCE STANDARD 5.3 : PERFORM TRANSMISSION/TRANSAXLE DIAGNOSIS AND REPAIR	
5.3.1	Inspect, adjust, and reinstall shift linkages, brackets, bushings, cables, pivots, and levers
5.3.2	Describe the operational characteristics of an electronically-controlled manual transmission/transaxle
PERFORMANCE STANDARD 5.4 : PERFORM DRIVE SHAFT AND HALF SHAFT, UNIVERSAL AND CONSTANT-VELOCITY(CV) JOINT DIAGNOSIS AND REPAIR	
5.4.1	Diagnose constant-velocity (CV) joint noise and vibration concerns; determine necessary action
5.4.2	Diagnose universal joint noise and vibration concerns; perform necessary action
5.4.3	Inspect, remove, and replace front wheel drive (FWD) bearings, hubs, and seals
5.4.4	Inspect, service, and replace shafts, yokes, boots, and universal/CV joints
5.4.5	Check shaft balance and phasing; measure shaft runout; measure and adjust driveline angles

PERFORMANCE STANDARD 5.5 : ASSESS RING AND PINION GEARS AND DIFFERENTIAL CASE ASSEMBLY	
5.5.1	Clean and inspect differential housing; check for leaks; inspect housing vent
5.5.2	Check and adjust differential housing fluid level
5.5.3	Drain and fill differential housing
5.5.4	Inspect and replace companion flange and pinion seal; measure companion flange runout
PERFORMANCE STANDARD 5.6 : PERFORM DRIVE AXLE DIAGNOSIS AND REPAIR	
5.6.1	Inspect and replace drive axle wheel studs
5.6.2	Remove and replace drive axle shafts
5.6.3	Inspect and replace drive axle shaft seals, bearings, and retainers
5.6.4	Measure drive axle flange runout and shaft end play; determine necessary action
PERFORMANCE STANDARD 5.7 : PERFORM FOUR-WHEEL DRIVE/ALL-WHEEL DRIVE COMPONENT DIAGNOSIS AND REPAIR	
5.7.1	Inspect, adjust, and repair shifting controls (mechanical, electrical, and vacuum), bushings, mounts, levers, and brackets
5.7.2	Inspect front-wheel bearings and locking hubs; perform necessary action(s)
5.7.3	Check for leaks at drive assembly seals; check vents; check lube level
5.7.4	Identify concerns related to variations in tire circumference and/or final drive ratios

CONTENT STANDARD 6.0 : ANALYZE SUSPENSION AND STEERING SYSTEMS (A4)	
PERFORMANCE STANDARD 6.1 : PREPARE VEHICLE FOR GENERAL SUSPENSION AND STEERING SYSTEMS SERVICE	
6.1.1	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins
PERFORMANCE STANDARD 6.2 : PERFORM STEERING SYSTEMS DIAGNOSIS AND REPAIR	
6.2.1	Disable and enable supplemental restraint system (SRS)
6.2.2	Remove and replace steering wheel; center time supplemental restraint system (SRS) coil (clock spring)
6.2.3	Diagnose steering column noises, looseness, and binding concerns (including tilt mechanisms); determine necessary action
6.2.4	Diagnose power steering gear (non-rack and pinion) binding, uneven turning effort, looseness, hard steering, and noise concerns; determine necessary action
6.2.5	Diagnose power steering gear (rack and pinion) binding, uneven turning effort, looseness, hard steering, and noise concerns; determine necessary action
6.2.6	Inspect steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; perform necessary action
6.2.7	Remove and replace rack and pinion steering gear; inspect mounting bushings and brackets
6.2.8	Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots; replace as needed
6.2.9	Determine proper power steering fluid type; inspect fluid level and condition
6.2.10	Flush, fill, and bleed power steering system
6.2.11	Inspect for power steering fluid leakage; determine necessary action
6.2.12	Remove, inspect, replace, and adjust power steering pump drive belt
6.2.13	Remove and reinstall power steering pump
6.2.14	Remove and reinstall press fit power steering pump pulley; check pulley and belt alignment
6.2.15	Inspect and replace power steering hoses and fittings
6.2.16	Inspect and replace pitman arm, relay (centerlink/intermediate) rod, idler arm and mountings, and steering linkage damper
6.2.17	Inspect, replace, and adjust tie rod ends (sockets), tie rod sleeves, and clamps
6.2.18	Research hybrid vehicle power steering system electrical circuits and safety precautions
6.2.19	Inspect electric power-assisted steering

PERFORMANCE STANDARD 6.3 : PERFORM SUSPENSION SYSTEMS DIAGNOSIS AND REPAIR	
6.3.1	Diagnose short and long arm suspension system noises, body sway, and uneven ride height concerns; determine necessary action
6.3.2	Diagnose strut suspension system noises, body sway, and uneven ride height concerns; determine necessary action
6.3.3	Inspect, remove, and install upper and lower control arms, bushings, shafts, and rebound bumpers
6.3.4	Inspect, remove, and install strut rods and bushings
6.3.5	Inspect, remove, and install upper and/or lower ball joints (with or witout wear indicators)
6.3.6	Inspect, remove, and install steering knuckle assemblies
6.3.7	Inspect, remove, and install short and long arm suspension system coil springs and spring insulators
6.3.8	Inspect, remove, and install torsion bars and mounts
6.3.9	Inspect, remove, and install front stabilizer bar (sway bar) bushings, brackets, and links
6.3.10	Inspect, remove, and install strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount
6.3.11	Inspect, remove, and install track bar, strut rods/radius arms, and related mounts and bushings
6.3.12	Inspect rear suspension system leaf spring(s), bushings, center pins/bolts, and mounts
PERFORMANCE STANDARD 6.4 : PERFORM RELATED SUSPENSION AND STEERING SERVICE	
6.4.1	Inspect, remove, and replace shock absorbers; inspect mounts and bushings
6.4.2	Remove, inspect, and service or replace front and rear wheel bearings
6.4.3	Describe the function of the power steering switch
PERFORMANCE STANDARD 6.5 : PERFORM WHEEL ALIGNMENT, DIAGNOSIS, ADJUSTMENT AND REPAIR	
6.5.1	Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return concerns; determine necessary action
6.5.2	Perform prealignment inspection and measure vehicle ride height; perform necessary action
6.5.3	Prepare vehicle for wheel alignment on alignment machine; perform four-wheel alignment by checking and adjusting front and rear wheel caster, camber; and toe as required; center steering wheel
6.5.4	Check toe-out on turns (turning radius); determine necessary action
6.5.5	Check SAI (steering axis inclination) and included angle; determine necessary action
6.5.6	Check rear wheel thrust angle; determine necessary action
6.5.7	Check for front wheel setback; determine necessary action
6.5.8	Check front and/or rear cradle (subframe) alignment; determine necessary action
6.5.9	Reset steering angle sensor

PERFORMANCE STANDARD 6.6 : PERFORM WHEEL AND TIRE DIAGNOSIS AND REPAIR	
6.6.1	Inspect tire condition; identify tire wear patterns; check for correct tire size and application (load and speed ratings) and adjust air pressure; determine necessary action
6.6.2	Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action
6.6.3	Rotate tires according to manufacturer's recommendations
6.6.4	Measure wheel, tire, axle flange, and hub runout; determine necessary action
6.6.5	Diagnose tire pull problems; determine necessary action
6.6.6	Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly (static and dynamic)
6.6.7	Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor
6.6.8	Inspect tire and wheel assembly for air loss; perform necessary action
6.6.9	Repair tire using internal patch
6.6.10	Identify and test tire pressure monitoring system (indirect and direct) for operation; verify operation of instrument panel lamps
6.6.11	Research the steps required to remove and replace sensors in a tire pressure monitoring system

CONTENT STANDARD 7.0 : ANALYZE BRAKE SYSTEMS (A5)

PERFORMANCE STANDARD 7.1 : PERFORM GENERAL BRAKE SYSTEMS DIAGNOSIS

7.1.1	Identify and interpret brake system concerns; determine necessary action
7.1.2	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins
7.1.3	Describe procedure for performing a road test to check brake system operation; including an anti-lock brake system (ABS)
7.1.4	Install wheel and torque lug nuts

PERFORMANCE STANDARD 7.2 : PERFORM HYDRAULIC SYSTEM DIAGNOSIS AND REPAIR

7.2.1	Diagnose pressure concerns in the brake system using hydraulic principles (Pascal's Law)
7.2.2	Measure brake pedal height, travel, and free play (as applicable); determine necessary action
7.2.3	Check master cylinder for internal/external leaks and proper operation; determine necessary action
7.2.4	Remove, bench bleed, and reinstall master cylinder
7.2.5	Diagnose poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system; determine necessary action
7.2.6	Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging, and wear; check for loose fittings and supports; determine necessary action
7.2.7	Replace brake lines, hoses, fittings, and supports
7.2.8	Fabricate brake lines using proper material and flaring procedures (double flare and ISO types)
7.2.9	Select, handle, store, and fill brake fluids to proper level
7.2.10	Inspect, test, and/or replace components of brake warning light system
7.2.11	Identify components of brake warning light system
7.2.12	Bleed and/or flush brake system
7.2.13	Test brake fluid for contamination

PERFORMANCE STANDARD 7.3 : PERFORM DRUM BRAKE DIAGNOSIS AND REPAIR

7.3.1	Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action
7.3.2	Remove, clean, inspect, and measure brake drum diameter; determine necessary action
7.3.3	Refinish brake drum and measure final drum diameter; compare with specifications
7.3.4	Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble
7.3.5	Inspect wheel cylinders for leaks and proper operation; remove and replace as needed
7.3.6	Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings; perform final checks and adjustments

PERFORMANCE STANDARD 7.4 : PERFORM DISK BRAKE DIAGNOSIS AND REPAIR	
7.4.1	Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging, or pulsation concerns; determine necessary action
7.4.2	Remove and clean caliper assembly; inspect for leaks and damage/wear to caliper housing; determine necessary action
7.4.3	Clean and inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine necessary action
7.4.4	Remove, inspect, and replace pads and retaining hardware; determine necessary action
7.4.5	Lubricate and reinstall caliper, pads, and related hardware; seat pads and inspect for leaks
7.4.6	Clean and inspect rotor; measure rotor thickness, thickness variation, and lateral runout; determine necessary action
7.4.7	Remove and reinstall rotor
7.4.8	Refinish rotor on vehicle; measure final rotor thickness and compare with specifications
7.4.9	Refinish rotor off vehicle; measure final rotor thickness and compare with specifications
7.4.10	Retract and re-adjust caliper piston on an integrated parking brake system
7.4.11	Check brake pad wear indicator; determine necessary action
7.4.12	Describe importance of operating vehicle to burnish/break-in replacement brake pads according to manufacturer's recommendations
PERFORMANCE STANDARD 7.5 : PERFORM POWER-ASSIST UNITS DIAGNOSIS AND REPAIR	
7.5.1	Check brake pedal travel with, and without, engine running to verify proper power booster operation
7.5.2	Check vacuum supply (manifold or auxiliary pump) to vacuum-type power booster
7.5.3	Inspect vacuum-type power booster unit for leaks; inspect the check-valve for proper operation; determine necessary action
7.5.4	Inspect and test hydraulically-assisted power brake system for leaks and proper operation; determine necessary action
7.5.5	Measure and adjust master cylinder pushrod length
PERFORMANCE STANDARD 7.6 : PERFORM MISCELLANEOUS DIAGNOSIS AND REPAIR (WHEEL BEARINGS, PARKING BRAKES, ELECTRICAL, ETC.)	
7.6.1	Diagnose wheel bearing noises, wheel shimmy, and vibration concerns; determine necessary action
7.6.2	Remove, clean, inspect, repack, and install wheel bearings; replace seals; install hub and adjust bearings
7.6.3	Check parking brake cables and components for wear, binding, and corrosion; clean, lubricate, adjust or replace as needed
7.6.4	Check parking brake operation and parking brake indicator light system operation; determine necessary action
7.6.5	Check operation of brake stop light system
7.6.6	Replace wheel bearing and race
7.6.7	Inspect and replace wheel studs
7.6.8	Remove and reinstall sealed wheel bearing assembly

PERFORMANCE STANDARD 7.7 : PERFORM ELECTRONIC BRAKE, TRACTION AND STABILITY CONTROL SYSTEMS DIAGNOSIS AND REPAIR	
7.7.1	Identify and inspect electronic brake control system components; determine necessary action
7.7.2	Identify traction control/vehicle stability control system components
7.7.3	Describe the operation of a regenerative braking system

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

PERFORMANCE STANDARD 8.1 : PERFORM GENERAL ELECTRONIC SYSTEMS DIAGNOSIS

8.1.1	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins
8.1.2	Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm's Law)
8.1.3	Demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow and resistance
8.1.4	Research the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits
8.1.5	Check operation of electrical circuits with a test light
8.1.6	Check operation of electrical circuits with fused jumper wires
8.1.7	Use wiring diagrams during the diagnosis (troubleshooting) of electrical/electronic circuit problems
8.1.8	Diagnose the cause(s) of excessive key-off battery drain (parasitic draw); determine necessary action
8.1.9	Inspect and test fusible links, circuit breakers, and fuses; determine necessary action
8.1.10	Inspect and test switches, connectors, relays, solenoid solid state devices, and wires of electrical/electronic circuits; determine necessary action
8.1.11	Replace electrical connectors and terminal ends
8.1.12	Repair wiring harness
8.1.13	Perform solder repair of electrical wiring

PERFORMANCE STANDARD 8.2 : PERFORM BATTERY DIAGNOSIS AND SERVICE

8.2.1	Perform battery state-of-charge test; determine necessary action
8.2.2	Confirm proper battery capacity for vehicle application; perform battery capacity test; determine necessary action
8.2.3	Maintain or restore electronic memory functions
8.2.4	Inspect and clean battery; fill battery cells; clean battery cables, connectors, clamps, and hold downs
8.2.5	Perform slow/fast battery charge according to manufacturer recommendations
8.2.6	Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply
8.2.7	Research high voltage circuits of electric or hybrid electric vehicle and related safety precautions
8.2.8	Identify electronic modules, security systems, radios, and other accessories that require reinitialization or code entry after reconnecting vehicle battery
8.2.9	Research hybrid vehicle auxiliary (12v) battery service, repair, and test procedures

PERFORMANCE STANDARD 8.3 : PERFORM STARTING SYSTEM DIAGNOSIS AND REPAIR	
8.3.1	Perform starter current draw test; determine necessary action
8.3.2	Perform starter circuit voltage drop tests; determine necessary action
8.3.3	Inspect and test starter relays and solenoids; determine necessary action
8.3.4	Remove and install starter in a vehicle
8.3.5	Inspect and test switches, connectors, and wires of starter control circuits; determine necessary action
8.3.6	Differentiate between electrical and engine mechanical problems that cause a slow-crank or a no-crank condition
PERFORMANCE STANDARD 8.4 : PERFORM CHARGING SYSTEM DIAGNOSIS AND REPAIR	
8.4.1	Perform charging system output test; determine necessary action
8.4.2	Diagnose (troubleshoot) charging system for causes of undercharge, no-charge, or overcharge conditions
8.4.3	Inspect, adjust, or replace generator (alternator) drive belts; check pulleys and tensioners for wear; check pulley and belt alignment
8.4.4	Remove, inspect, and reinstall generator (alternator)
8.4.5	Perform charging circuit voltage drop tests; determine necessary action
PERFORMANCE STANDARD 8.5 : PERFORM LIGHTING SYSTEMS DIAGNOSIS AND REPAIR	
8.5.1	Diagnose (troubleshoot) the causes of brighter-than-normal, intermittent, dim, or no light operation; determine necessary action
8.5.2	Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed
8.5.3	Aim headlights
8.5.4	Identify system voltage and safety precautions associated with high-intensity discharge headlights
PERFORMANCE STANDARD 8.6 : PERFORM GAUGES, WARNING DEVICES, AND DRIVER INFORMATION SYSTEMS DIAGNOSIS AND REPAIR	
8.6.1	Inspect and test gauges and gauge sending units for causes of abnormal gauge readings; determine necessary action
8.6.2	Diagnose (troubleshoot) the causes of incorrect operation of warning devices and other driver information systems; determine necessary action
PERFORMANCE STANDARD 8.7 : PERFORM HORN AND WIPER/WASHER DIAGNOSIS AND REPAIR	
8.7.1	Diagnose (troubleshoot) causes of incorrect horn operation; perform necessary action
8.7.2	Diagnose (troubleshoot) causes of incorrect wiper operation; diagnose wiper speed control and park problems; perform necessary action
8.7.3	Diagnose (troubleshoot) windshield washer problems; perform necessary action

PERFORMANCE STANDARD 8.8 : PERFORM ACCESSORIES DIAGNOSIS AND REPAIR	
8.8.1	Diagnose (troubleshoot) incorrect operation of motor-driven accessory circuits; determine necessary action
8.8.2	Diagnose (troubleshoot) incorrect electric lock operation (including remote keyless entry); determine necessary action
8.8.3	Diagnose (troubleshoot) incorrect operation of cruise control systems; determine necessary action
8.8.4	Diagnose (troubleshoot) supplemental restraint system (SRS) problems; determine necessary action
8.8.5	Disable and enable an airbag system for vehicle service; verify indicator lamp operation
8.8.6	Remove and reinstall door panel
8.8.7	Check for module communication errors (including CAN/BUS systems) using a scan tool
8.8.8	Describe the operation of keyless entry/remote-start systems
8.8.9	Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators
8.8.10	Verify windshield wiper and washer operation; replace wiper blades

CONTENT STANDARD 9.0 : ANALYZE HEATING AND AIR CONDITIONING SYSTEMS (A7)	
PERFORMANCE STANDARD 9.1 : PERFORM GENERAL AIR CONDITIONING SYSTEMS DIAGNOSIS	
9.1.1	Identify and interpret heating and air conditioning problems; determine necessary action
9.1.2	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins
9.1.3	Performance test A/C system; identify problems
9.1.4	Identify abnormal operating noises in the A/C system; determine necessary action
9.1.5	Identify refrigerant type; select and connect proper gauge set; record temperature and pressure readings
9.1.6	Leak test A/C system; determine necessary action
9.1.7	Inspect condition of refrigerant oil removed from A/C system; determine necessary action
9.1.8	Determine recommended oil and oil capacity for system application
9.1.9	Using a scan tool, observe and record related HVAC data and trouble codes
PERFORMANCE STANDARD 9.2 : PERFORM REFRIGERATION SYSTEM COMPONENT DIAGNOSIS AND REPAIR	
9.2.1	Inspect and replace A/C compressor drive belts, pulleys, and tensioners; determine necessary action
9.2.2	Inspect, test, service or replace A/C compressor clutch components and/or assembly; check compressor clutch air gap; adjust as needed
9.2.3	Remove, inspect, and reinstall A/C compressor and mountings; determine recommended oil quantity
9.2.4	Research hybrid vehicle A/C system electrical circuits and service/safety precautions
9.2.5	Determine need for an additional A/C system filter; perform necessary action
9.2.6	Remove and inspect A/C system mufflers, hoses, lines, fittings, O-rings, seals, and service valves; perform necessary action
9.2.7	Inspect A/C condenser for airflow restrictions; perform necessary action
9.2.8	Remove, inspect, and reinstall receiver/drier or accumulator/drier; determine recommended oil quantity
9.2.9	Remove, inspect, and install expansion valve or orifice (expansion) tube
9.2.10	Inspect evaporator housing water drain; perform necessary action
9.2.11	Determine procedure to remove and reinstall evaporator; determine required oil quantity
PERFORMANCE STANDARD 9.3 : PERFORM HEATING, VENTILATION, AND ENGINE COOLING SYSTEMS DIAGNOSIS AND REPAIR	
9.3.1	Inspect engine cooling and heater systems hoses; perform necessary action
9.3.2	Inspect and test heater control valve(s); perform necessary action
9.3.3	Determine procedure to remove, inspect, and reinstall heater core

PERFORMANCE STANDARD 9.4 :	**PERFORM OPERATING SYSTEMS AND RELATED CONTROLS DIAGNOSIS AND REPAIR**
9.4.1	Inspect and test A/C-heater blower motors, resistors, switches, relays, wiring, and protection devices; perform necessary action
9.4.2	Diagnose A/C compressor clutch control systems; determine necessary action
9.4.3	Diagnose malfunctions in the vacuum, mechanical, and electrical components and controls of the heating, ventilation, and A/C (HVAC) system; determine necessary action
9.4.4	Inspect and test A/C-heater control panel assembly; determine necessary action
9.4.5	Inspect and test A/C-heater control cables, motors, and linkages; perform necessary action
9.4.6	Inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets; perform necessary action
9.4.7	Identify the source of A/C system odors
9.4.8	Check operation of automatic or semi-automatic heating, ventilation, and air-conditioning (HVAC) control systems; determine necessary action
PERFORMANCE STANDARD 9.5 :	**PERFORM REFRIGERANT RECOVERY, RECYCLING, AND HANDLING TECHNIQUES**
9.5.1	Perform correct use and maintenance of refrigerant handling equipment according to equipment manufacturer's standards
9.5.2	Identify and recover A/C system refrigerant
9.5.3	Recycle, label, and store refrigerant
9.5.4	Evacuate and charge A/C system; add refrigerant oil as required

CONTENT STANDARD 10.0 : ANALYZE ENGINE PERFORMANCE (A8)

PERFORMANCE STANDARD 10.1 : PERFORM GENERAL ENGINE DIAGNOSIS

10.1.1	Identify and interpret engine performance concerns; determine necessary action
10.1.2	Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins
10.1.3	Diagnose abnormal engine noises or vibration concerns; determine necessary action
10.1.4	Diagnose the cause of excessive oil consumption, coolant consumption, unusual exhaust color, odor, and sound; determine necessary action
10.1.5	Perform engine absolute (vacuum/boost) manifold pressure tests; determine necessary action
10.1.6	Perform cylinder power balance test; determine necessary action
10.1.7	Perform cylinder cranking and running compression tests; determine necessary action
10.1.8	Perform cylinder leakage test; determine necessary action
10.1.9	Diagnose engine mechanical, electrical, electronic, fuel, and ignition concerns; determine necessary action
10.1.10	Verify engine operating temperature; determine necessary action
10.1.11	Verify correct camshaft timing

PERFORMANCE STANDARD 10.2 : ANALYZE COMPUTERIZED ENGINE CONTROLS

10.2.1	Retrieve and record diagnostic trouble codes, OBD monitor status, and freeze frame data; clear codes when applicable
10.2.2	Access and use service information to perform step-by-step (troubleshooting) diagnosis
10.2.3	Perform active tests of actuators using a scan tool; determine necessary action
10.2.4	Describe the importance of running all OBDII monitors for repair verification

PERFORMANCE STANDARD 10.3 : PERFORM IGNITION SYSTEM DIAGNOSIS AND REPAIR

10.3.1	Diagnose (troubleshoot) ignition system related problems such as no-starting, hard starting, engine misfire, poor drivability, spark knock, power loss, poor mileage, and emissions concerns; determine necessary action
10.3.2	Inspect and test crankshaft and camshaft position sensor(s); perform necessary action
10.3.3	Inspect, test, and/or replace ignition control module, powertrain/engine control module; reprogram as necessary
10.3.4	Remove and replace spark plugs; inspect secondary ignition components for wear and damage

PERFORMANCE STANDARD 10.4 : PERFORM FUEL, AIR INDUCTION, AND EXHAUST SYSTEMS DIAGNOSIS AND REPAIR	
10.4.1	Check fuel for contaminants; determine necessary action
10.4.2	Inspect and test fuel pumps and pump control systems for pressure, regulation, and volume; perform necessary action
10.4.3	Replace fuel filter(s)
10.4.4	Inspect, service, or replace air filters, filter housings, and intake duct work
10.4.5	Inspect throttle body, air induction system, intake manifold and gaskets for vacuum leaks and/or unmetered air
10.4.6	Inspect and test fuel injectors
10.4.7	Verify idle control operation
10.4.8	Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; perform necessary action
10.4.9	Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; repair or replace as needed
10.4.10	Perform exhaust system back-pressure test; determine necessary action
10.4.11	Check and refill diesel exhaust fluid (DEF)
PERFORMANCE STANDARD 10.5 : PERFORM EMISSIONS CONTROL SYSTEMS DIAGNOSIS AND REPAIR	
10.5.1	Diagnose oil leaks, emissions, and drivability concerns caused by the positive crankcase ventilation (PCV) system; determine necessary action
10.5.2	Inspect, test, and service positive crankcase ventilation (PCV) filter/breather cap, valve, tubes, orifices, and hoses; perform necessary action
10.5.3	Diagnose emissions and drivability concerns caused by the exhaust gas recirculation (EGR) system; determine necessary action
10.5.4	Inspect, test, service, and replace components of the EGR system including tubing, exhaust passages, vacuum/pressure controls, filters, and hoses; perform necessary action
10.5.5	Inspect and test electrical/electronically-operated components and circuits of air injection systems; perform necessary action
10.5.6	Inspect and test catalytic converter efficiency
10.5.7	Inspect and test components and hoses of the evaporative emissions control system; perform necessary action
10.5.8	Interpret diagnostic trouble codes (DTCs) and scan tool data related to the emissions control systems; determine necessary action

CONTENT STANDARD 11.0 : INVESTIGATE TRANSPORTATION SYSTEMS	
PERFORMANCE STANDARD 11.1 : ASSESS TRANSPORTATION SYSTEMS	
11.1.1	Describe the history of the automobile and the effects on society
11.1.2	Research the different career opportunities in the transportation career path
11.1.3	Investigate new and emerging technologies
11.1.4	Analyze workplace situations and use problem-solving techniques to improve the workplace environment

This Page was Intentionally Left Blank

CROSSWALKS AND ALIGNMENTS OF AUTOMOTIVE SERVICE TECHNICIAN STANDARDS AND THE NEVADA ACADEMIC CONTENT STANDARDS AND THE COMMON CAREER TECHNICAL CORE STANDARDS

CROSSWALKS (ACADEMIC STANDARDS)

The crosswalk of the Automotive Service Technician Standards shows links to the Nevada Academic Content Standards in Science (based on the Next Generation Science Standards – Disciplinary Core Ideas Arrangement) and the English Language Arts and Mathematics (based on the Common Core State Standards). The crosswalk identifies the performance indicators in which the learning objectives in the Automotive Service Technician program support academic learning. The performance indicators are grouped according to their content standard and are crosswalked to the Nevada Academic Content Standards in Science, English Language Arts, and Mathematics.

ALIGNMENTS (MATHEMATICAL PRACTICES)

In addition to correlation with the Nevada Academic Content Standards for Mathematics, many performance indicators support the Mathematical Practices. The following table illustrates the alignment of the Automotive Service Technician Standards Performance Indicators and the Mathematical Practices. This alignment identifies the performance indicators in which the learning objectives in the Automotive Service Technician program support academic learning.

CROSSWALKS (COMMON CAREER TECHNICAL CORE)

The crosswalk of the Automotive Service Technician Standards shows links to the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Automotive Service Technician program support the Common Career Technical Core. The Common Career Technical Core defines what students should know and be able to do after completing instruction in a program of study. The Automotive Service Technician Standards are crosswalked to the Transportation, Distribution & Logistics Career Cluster™ and the Facility & Mobile Equipment Maintenance Career Pathway.

This Page was Intentionally Left Blank

CROSSWALK OF AUTOMOTIVE SERVICE TECHNICIAN STANDARDS AND THE NEVADA ACADEMIC CONTENT STANDARDS

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

Performance Indicators	Nevada Academic Content Standards
1.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
1.1.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
1.1.7	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
1.1.13	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

1.1.14	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
1.1.15	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research.

CONTENT STANDARD 2.0: PERFORM BASIC VEHICLE SERVICE

Performance Indicators	Nevada Academic Content Standards
2.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
2.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

2.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
2.1.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
2.1.6	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
2.2.5	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **English Language Arts: Speaking and Listening Standards** SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

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

Performance Indicators	Nevada Academic Content Standards
3.1.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **English Language Arts: Speaking and Listening Standards** SL.11-12.1d Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
3.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
3.1.9	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

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

Performance Indicators	Nevada Academic Content Standards
4.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
4.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
4.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

4.1.8	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
4.1.9	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
4.3.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
4.3.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

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

Performance Indicators	Nevada Academic Content Standards
5.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
5.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
5.2.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
5.3.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

5.4.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
5.4.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

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

Performance Indicators	Nevada Academic Content Standards
6.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
6.2.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
6.2.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

6.2.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
6.2.18	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
6.3.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

6.3.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
6.4.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
6.5.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

6.6.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
6.6.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
6.6.11	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

CONTENT STANDARD 7.0: ANALYZE BRAKE SYSTEMS (A5)

Performance Indicators	Nevada Academic Content Standards
7.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
7.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
7.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
7.2.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

7.2.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
7.3.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
7.4.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

7.4.12	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
7.6.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
7.7.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

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

Performance Indicators	Nevada Academic Content Standards
8.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.1.2	**Math: Algebra – Creating Equations** A-CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. **Math: Algebra – Reasoning with Equations and Inequalities** A-REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. **Math: Functions – Linear, Quadratic, and Exponential Models** F-LE.5 Interpret the parameters in a linear or exponential function in terms of a context.
8.1.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.1.7	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

8.1.8	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.2.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
8.2.7	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.2.9	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

8.3.6	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.4.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.5.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

8.6.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.7.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.7.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

8.7.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.8.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.8.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

8.8.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.8.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
8.8.8	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

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

Performance Indicators	Nevada Academic Content Standards
9.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
9.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9.1.9	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
9.2.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

9.4.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9.4.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

CONTENT STANDARD 10.0: ANALYZE ENGINE PERFORMANCE (A8)

Performance Indicators	Nevada Academic Content Standards
10.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
10.1.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
10.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
10.1.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

10.1.9	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
10.2.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
10.2.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
10.2.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
10.3.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

10.5.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
10.5.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
10.5.8	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

CONTENT STANDARD 11.0: INVESTIGATE TRANSPORTATION SYSTEMS

Performance Indicators	Nevada Academic Content Standards
11.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
11.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
11.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

ALIGNMENT OF AUTOMOTIVE SERVICE TECHNICIAN STANDARDS AND THE MATHEMATICAL PRACTICES

Mathematical Practices	Automotive Service Technician Performance Indicators
1. Make sense of problems and persevere in solving them.	4.1.9
2. Reason abstractly and quantitatively.	
3. Construct viable arguments and critique the reasoning of others.	
4. Model with mathematics.	8.1.2
5. Use appropriate tools strategically.	1.2.2, 1.2.3, 1.2.5 3.1.6, 3.1.7; 3.2.4; 3.4.1, 3.4.3, 3.4.4, 3.4.8, 3.4.10, 3.4.12 4.1.4, 4.1.5; 4.2.4 5.1.4; 5.2.5; 5.3.1; 5.4.3; 5.5.2, 5.5.3; 5.6.1, 5.6.4 6.2.9, 6.2.10; 6.3.5; 6.5.2, 6.5.3; 6.6.1, 6.6.4, 6.6.6, 6.6.10 7.1.4; 7.2.2, 7.2.9; 7.3.2, 7.3.3, 7.3.6; 7.4.6, 7.4.8, 7.4.9; 7.5.5 8.1.3, 8.1.10; 8.2.1; 8.3.1, 8.3.2; 8.4.1, 8.4.5; 8.6.1 9.4.1, 9.4.4, 9.4.5; 9.5.4 10.1.6, 10.1.7, 10.1.8, 10.1.11; 10.3.3; 10.4.2
6. Attend to precision.	1.2.2, 1.2.3, 1.2.5 3.1.6, 3.1.7; 3.2.4; 3.4.1, 3.4.3, 3.4.4, 3.4.8, 3.4.10, 3.4.12 4.1.4, 4.1.5; 4.2.4 5.1.4; 5.2.5; 5.3.1; 5.4.3; 5.5.2, 5.5.3; 5.6.1, 5.6.4 6.2.9, 6.2.10; 6.3.5; 6.5.2, 6.5.3; 6.6.1, 6.6.4, 6.6.6, 6.6.10 7.1.4; 7.2.2, 7.2.9; 7.3.2, 7.3.3, 7.3.6; 7.4.6, 7.4.8, 7.4.9; 7.5.5 8.1.3, 8.1.10; 8.2.1; 8.3.1, 8.3.2; 8.4.1, 8.4.5; 8.6.1 9.4.1, 9.4.4, 9.4.5; 9.5.4 10.1.6, 10.1.7, 10.1.8, 10.1.11; 10.3.3; 10.4.2
7. Look for and make use of structure.	
8. Look for and express regularity in repeated reasoning.	

CROSSWALKS OF AUTOMOTIVE SERVICE TECHNICIAN STANDARDS AND THE COMMON CAREER TECHNICAL CORE

Transportation, Distribution & Logistics Career Cluster™ (TD)	Performance Indicators
1. Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster™ and the role of transportation, distribution and logistics in society and the economy.	11.1.1
2. Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.	11.1.3
3. Describe the key operational activities required of successful transportation, distribution and logistics facilities.	11.1.4
4. Identify governmental policies and procedures for transportation, distribution and logistics facilities.	11.1.4
5. Describe transportation, distribution and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health.	1.1.1, 1.1.15; 11.1.4
6. Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.	11.1.2

Facility & Mobile Equipment Maintenance Career Pathway (TD-MTN)	Performance Indicators
1. Develop preventative maintenance plans and systems to keep facility and mobile equipment inventory in operation.	1.2.4; 11.1.4
2. Design ways to improve facility and equipment system performance.	11.1.4