Regional Occupational Program

Auto Technology 3 A-G 2026-2027

COURSE DESCRIPTION

This course provides instruction and training for students interested in automotive service and maintenance by focusing on automotive system components. Instruction will cover the basic system components such as electronics, fuel systems, power and drive train, lubricating, climate control engine tune-up, repair, and emissions. Students will experience proper use of hand tools, power tools, testing and troubleshooting equipment, as well as service manuals. Students that achieve competency in this course will obtain entry-level skills necessary for employment as an automotive service person. These skills will provide students with a solid foundation for continued training in this field.

Course Information:

Course Length:	1 Year
Prerequisite:	Auto Tech 2
Course Level:	Capstone
UC:	Yes G - Elective
Articulated:	No
Industry Cert.:	No
Industry Sector:	Transportation
Pathway:	Systems Diagnostics, Service and Repair
CALPADS:	8532

O*Net SOC Codes:

49-3023	Automotive Service Technicians and Mechanics
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists
49-1011	First Line Supervisors of Mechanics, Installers, and Repairers

Legend:

CTE - PS	CTE Pathway Standards
CRP	Career Ready Practices
CTE - AS	CTE Anchor Standards
CCSS	Common Core State Standards
ISTE	International Society for Technology in Education

Includes updates from 25/26 Transportation Advisory
Advisory Minutes

Auto Technology 3

Course Orientation

a. Discuss objectives for this course, including competencies, teacher expectations, classroom policies, and procedures.
b. Identify and discuss the acquisition of transferable skills (communication, collaboration, creativity, and critical thinking) and their importance to being college and career ready and for future personal and professional success.
c. Review objectives, competencies, and course syllabus.
d. Discuss student and teacher expectations including behavior, class rules, appropriate dress, pre-course knowledge, and grading policies, including enrollment and attendance requirements and procedures, and classroom/school safety and disaster procedures.
e. Discuss next steps in course sequence related to the career pathway, the need for reinforcement of basic skills, transferrable skills, and post-secondary and career options.
f. Discuss the Big Six: Career Ready Essentials and the Standards for Career Ready Practice as they relate to this course, all aspects of the industry sector, and being college and career ready.

Big Six: Career Ready Essentials

1. Effective Communication	CTE – PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate effective verbal communication and conflict resolution skills. **b. Use the writing process to develop written communication with the appropriate tone, organization, and format for the identified audience.** c. Explain the effect of interpersonal skills on one's ability to communicate effectively and develop relationships. d. Describe the impact of ineffective communication on business relationships. e. Analyze the impact of vocabulary, body language, and tone on verbal communication. f. Demonstrate active listening skills. g. Accurately interpret industry-specific written communication. h. Model responsible and effective use of various communication technologies. i. Identify valid and reliable digital reference and resource materials. j. Gather information from multiple digital sources to compare and contrast, synthesize, and summarize. k. Identify and use appropriate communication and collaboration technologies. l. Utilize technology to problem solve, accomplish tasks, and to produce or publish products.		2 4 11	2 5 10	**LS** 9-10 11-12.6 **SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.7 11-12.6	1b,c 2c 3b,c 5c 6b,c,d

2. Collaboration, Creativity, and Critical Thinking	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate critical thinking skills for a variety of purposes and in different settings. **b. Collaborate to reach consensus on an identical objective through the sharing of knowledge, tasks, and learning.** c. Discuss the importance of the critical thinking process to real-world applications. d. Evaluate the impact of creative thinking on problem solving and innovation in real-world applications.		5 9 10	5	**LS** 9-10 11- 12.6 **SLS** 9-10	1c 3c,d 4a-d 5c,d 6c 7b,c,d

e. Compile work that demonstrates the process used to (elaborate, refine, analyze) evaluate original ideas and maximize creative efforts. f. Apply divergent and convergent thinking to the development of an original idea or solution. g. Examine real-world limits to adopting ideas. h. Demonstrate creative thinking (preparation, insight, evaluation, elaboration, and communication) to create a new idea or concept. i. Assume shared responsibility for collaborative work, and value the individual contributions made by each team member. j. Evaluate evidence, arguments, claims, and beliefs to identify connections. k. Identify bias, prejudice, propaganda, self-deception, distortion, and misinformation. l. Produce intellectual, informational, or material products that serve an authentic purpose. m. Work effectively and respectfully with those from diverse backgrounds or cultures. n. Demonstrate respect, trust, commitment, and the ability to compromise in collaborative projects.				11-12.1 11-12.1d 11-12.2 **WS** 11-12.7 11-12.6	
3. Leaders and Teams: Roles and Responsibilities	**CTE – PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Determine the individual and team members' roles and responsibilities. **b. Demonstrate leadership skills and qualities (i.e., reliability, negotiation skills, initiative, positive reinforcement, recognition of others' efforts, problem-solving skills, conflict resolution, and delegation).** c. Explain the importance of technical, social, and communication skills to team success. d. Compare and contrast leadership styles and their effectiveness in various situations. e. Organize and delegate responsibilities in a team setting to encourage ideas, perspectives, and contributions from all team members. f. Develop a strong sense of team identity by brainstorming solutions, volunteering, assisting others, practicing respect and courtesy, and taking initiative. g. Examine situations in which a follower becomes the leader. h. Describe twenty-first-century skills required across all occupations. i. Identify and discuss the characteristics of a successful team (i.e., leadership, cooperation, and effective decision-making). j. Leverage social and cultural differences to increase innovation and quality of work.		7 9 10 12	5 7 9	**SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.6	7a,c
4. Legal, Ethical, and Environmental Considerations	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate industry specific ethical and legal practices. **b. Identify eco-friendly industry specific practices and resources.** c. Identify local, state, and federal regulatory agencies, entities, laws, and regulations. d. Identify discrimination based on race, nationality, religion, gender, age, disability, or sexual orientation. e. Summarize the ethical and legal implications of workplace discrimination and harassment.		7 8 9 12	4 8	**WS** 11-12.6 11-12.7 **SLS** 9-10	2a,b 3a,b 5c 6c

f. Explain the concept of corporate citizenship. g. Examine an employer's role in protecting the health and welfare of employees, the community, and the environment. h. Analyze current environmental laws and regulations and their impact on industry. i. Compare and contrast both society's and industry's impact on the environment.				11-12.1 11-12.1d 11-12.2	
5. Personal Growth and Career Planning	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate continued personal development and growth. **b. Develop and manage a personal growth and career plan.** c. Explain the relationship between sound financial habits and financial security. d. Create and manage a personal financial plan. e. Demonstrate initiative in achieving personal and professional goals. f. Apply time management strategies to meet deadlines. g. Demonstrate a growth mindset through flexibility and a positive attitude. h. Select and demonstrate appropriate job-search and retention techniques. i. Demonstrate strategies to prepare for employment. j. Demonstrate interpersonal skills appropriate for the workplace. k. Elaborate on the importance of perseverance to personal and professional success. l. Discover personal career interests, aptitudes, and skills.		3	3	**LS** 9-10 11-12.6 **SLS** 9-10 11-12.1 11-12.1d 11-12.2 **WS** 11-12.6	1a 3a,c 4d 6a,d 7b
6. Workplace Safety and Personal Wellness	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate proper industry specific safe work practices to prevent injury or illness. **b. Assess the potential impact of goal setting on personal and professional success.** c. Describe the role of security and emergency procedures in workplace safety. d. Describe the effect of preventative measures on emergencies in the workplace. e. Identify and describe the causes, prevention, and treatment of common accidents. f. Identify local, state, and federal agencies that regulate workplace safety. g. Explain the role of the California Occupational Safety and Health Administration (Cal-OSHA) and the Environmental Protection Agency (EPA). h. Discuss the basics of system operations. i. Demonstrate the proper use of personal protective equipment (PPE). j. Explain the purpose of and accurately interpret a Safety Data Sheet (SDS). k. Identify hazardous materials and chemicals. l. Demonstrate proper procedures to respond to work-related accidents and injuries. m. Describe how ergonomics, housekeeping, and maintenance are related to accidents and injuries. n. Demonstrate cyber ethics, cyber safety, and cybersecurity. o. Assess the potential impact of preventative physical and mental health measures on workplace safety.		6 12	4 6 9	**LS** 9-10 11-12.6 **WS** 11-12.7 11-12.6 **SLS** 9-10 11-12.1 11-12.1d	1a,d 2a-d 5b

Automotive Technology 3 Units of Instruction

7. Safety	CTE-PS	CRP	CTE- AS	CCSS	ISTE
a. Demonstrate the practice of personal and occupational safety and protecting the environment by using materials and processes in accordance with manufacturer and industry standards. **b. Describe and demonstrate proper general safety, personal safety, and tool and machine safety techniques and procedures.** c. Demonstrate and discuss safety procedures used in automotive service. d. Describe common environmental conservation practices and their applications. e. Identify and demonstrate the safe and proper use of common hand tools and power equipment. f. Demonstrate the correct procedures for handling, storing, and disposing of hazardous or flammable materials. g. Explain and demonstrate safety rules for personal and general shop safety including PPEs- eye, ear, feet, and body protection. h. Utilize and define safety-color codes used throughout the transportation industry. i. Apply general safety rules associated with working on various vehicle systems, including hybrid, plug-in hybrid, electric, and other xEV/high-voltage vehicle systems. j. Apply rules and procedures associated with fire safety including procedures for using firefighting devices. k. Describe the way in which gases, emissions, and other environmentally destructive substances are generated and the effects of these substances on the environment. l. Demonstrate the safe handling and storage of chemicals and hazardous waste in accordance with Safety Data Sheets (SDS) and the requirements of local, state, and federal regulatory agencies. m. Describe methods for reducing hazardous waste. n. Describe first aid procedures for an accident involving hazardous materials. o. Demonstrate awareness of the safety aspects of high-voltage circuits and vehicle systems, including high intensity discharge (HID) lamps, ignition systems, injection systems, and electrified vehicle high-voltage components.	C1.0 C1.2 C1.4 C5.2	1 2 5 6	1 2 5 6 11	**LS** 9-10 11-12.6 **WS** 11-12.7 **RSTS** 9-10 11-12.4	

8. Safety Systems, Security, and Navigation Systems	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate knowledge and basic skills in the operation, functionality, diagnosis, and repair of automotive safety, security, and navigation systems. b. Explain how to inspect and service seat belts. c. Summarize the operation of restraint system sensors, inflator modules, and electronic control modules. d. Describe safety procedures for air bag diagnosis, repair, and replacement.	C3.7	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	

e. Describe testing, inspection, and manufacturer-required recalibration precautions for passive restraint and ADAS-related systems. f. Disable and enable supplemental restraint systems according to manufacturer's specifications. g. Describe how to service an air bag controller. h. Explain the operation of vehicle security systems. i. Explain the operation of vehicle navigation, camera, and ADAS systems. j. Describe how to install a security system. k. Diagnose and repair security system problems.					
9. Tools and Equipment	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate the use and safe handling practices of tools, equipment, and work process standards within the Automotive Industry. b. Identify and demonstrate the proper use of the appropriate tools and equipment used to diagnose, service, repair, and maintain systems and components. c. Identify and demonstrate the proper and safe use of tools, equipment, and machines to measure, test, diagnose circuits such as alternating and direct current applications, fluid/hydraulic and air/pneumatic systems. d. Identify and demonstrate the safe and proper use of common hand tools, lifting, and hoisting equipment.	C2.0 C2.2 C2.3	1 2 6	1 2 6 11	**LS** 9-10 11-12.6 **RSTS** 9-10 11-12.4	
10. Automotive Math and Precision Measurement	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge of the appropriate use of mathematical functions and measurement techniques commonly used in the automotive industry. b. Explain the importance of the calibration processes, systems, and techniques using various measurement and testing devices. c. Select and use the appropriate measurement devices and use appropriate mathematical functions to perform required fabrication, maintenance, and operation procedures. d. Identify and describe the standard and metric measuring systems. e. Demonstrate mathematical computations and apply the results to a given project. f. Demonstrate the safe and proper use and interpretation of precision measurement tools, scales, devices, and systems, such as dial indicators, and micrometers used to design, fabricate, diagnose, maintain, and repair vehicles following recommended industry standards.	C2.4 C2.7	1 2 4 5	1 2 4 5 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
11. Cooling and Lubrication	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge and basic skill in maintaining, diagnosing, and repairing lubrication and cooling systems. b. List common cooling system problems and describe symptoms.	C3.7 C6.2	1 2 5	1 2 5	**LS** 9-10 11-12.6	

c. Identify the major components of an automotive lubrication system and describe their function. d. Describe and diagnose common symptoms of high and low temperature cooling system problems. e. Explain the purpose and function of the radiator pressure cap and water pump. f. Describe the operation and service of the water pump. g. Practice safe working strategies when testing, maintaining, or repairing cooling and lubrication systems. h. Demonstrate proper diagnostic techniques and utilization of test equipment for lubricating systems. i. Demonstrate the proper maintenance procedures for cooling and lubrication systems. j. Describe the various types of antifreeze and how to safely recycle and discard used coolant. k. Describe how oil pumps and engine lubrication work. l. Explain how to inspect an oil pump for wear. m. Describe the lubrication systems, their components, and proper maintenance of oil and water pumps, filters etc.			11	**WS** 11-12.7	
12. Basic Automotive Electrical Systems (from Auto Systems)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge and basic skills in the function, principles, and operation of electrical and electronic systems using manufacturer and industry standards. b. Describe and demonstrate maintenance, diagnosis, and repair of electrical systems. c. Describe the safety practices that should be followed when working with electrical systems. d. Describe and demonstrate the maintenance, diagnosis, service, and repair of starting and charging systems. e. Describe the flow of electricity in a simple circuit including voltage, amperage, and resistance. f. Utilize electrical test instruments to measure voltage, amperage, and resistance. g. Interpret wiring diagrams for a given vehicle and identify the electrical symbols. h. Explain how to construct a simple DC circuit and test for power and continuity. i. Identify charging and starting system components and summarize their operation. j. Describe basic charging and starting system tests. k. Describe how to start a vehicle using jumper cables or an auxiliary power supply. l. Clean and service a battery including the case, cables, connections, and check electrolytes. m. Demonstrate the necessary skills to perform battery capacity testing. n. Identify and describe conventional and electronic ignition system components. o. Compare the operating principles of a distributor system to an electronic ignition system. p. Describe horn and turn signal circuit operation. q. Demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits and check electrolytes.	C2.3 C3.5 C7.0 C7.1 C7.2 C7.3 C7.4 C7.6 C7.7	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	

r. Compare the operating principles of a distributor system to an electronic ignition system. s. Describe and demonstrate the diagnosis, service, and repair of ancillary automotive systems, i.e., lighting, washers, heating/cooling systems and their components, horns, and other automotive accessories.					
13. Engine Performance and Tune Up	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge and basic skill in general engine maintenance, diagnosis, service, and repair in accordance with portable national industry standards. **b. Demonstrate knowledge of the major engine components and explain the engine combustion process.** c. Describe the principles of the internal and/or external combustion engine. d. Identify the visual checks to determine engine condition. e. Identify internal combustion engine parts by name. f. Describe the function of specific engine parts. g. Describe and demonstrate the operation, maintenance, and diagnosis of engines, but not limited to two- or four-stroke and supporting subsystems. h. Communicate common engine performance problems and their corrections. i. Verify operation of the instrument panel engine warning indicators. j. Identify and describe common symptoms of mechanical problems in an engine. k. Describe how to perform a dry and wet compression test. l. Explain how to perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert. m. Demonstrate proper repair techniques using appropriate tools and equipment.	C3.1 C3.7 C6.0 C6.1	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
14. Computer Systems	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge in the purpose, components, function, diagnosis, and repair of onboard computer systems. b. Identify the various parts of an automotive computer. c. Describe how hardware, software, and on-line systems access, organize, and maintain information on diagnostic procedures of common computers. d. Identify input sensors and output device controlled by the computer. e. Discuss the operation and use of scanning tools in communicating with automotive computers and related driver assistance systems. f. Explain how to download files from a remote computer using a communications program to reprogram an automotive computer. g. Diagnose an electronic system circuit problem using a scan tool to determine necessary action. h. Check modular communication errors using a scan tool. i. Describe how to maintain, diagnose, and repair computerized engine control systems.	C6.3 C6.4	1 2 4 5	1 2 4 5 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	

15. Fuel System Fundamentals	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge and basic skill of fuel system principles, operation, functionality, maintenance, diagnosis, and repair. b. Describe the role of fuel tanks, lines, and pumps in the fuel delivery system. c. Identify fuel injection system components. d. Compare and contrast throttle-body design and port fuel-injection design fuel injection systems. e. Identify and describe common fuel system problems and appropriate repair procedures. f. Demonstrate use of appropriate diagnostic and maintenance techniques for fuel systems. g. Identify and describe fuel systems operation. h. Describe fuel system and carburetor operation. i. Compare the operating principles of a carburetor system to a fuel injection system. j. Identify and describe types of fuel such as propane, diesel, natural gas, and gasoline.	C6.4	1 2 4 5 11	1 2 4 5 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
16. Emissions	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge and basic skill in the diagnose and repair common emission system problems. b. Understand how emissions and environmentally destructive substances affect the environment. c. Describe the purpose and function of the exhaust gas recirculation system. d. Demonstrate proper diagnostic procedures of the emission system. e. Summarize and demonstrate the use of various emission control test equipment. f. Utilize appropriate repair techniques. g. Explain how waste gases, emissions, and other environmentally destructive substances are generated and the effects of these substances on the environment.	C1.3	1 2 5 11 12	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	
17. Drive Trains Systems (from Auto Systems)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge and basic skill of drive train systems, components, functionality, diagnosis, and repair. b. Explain how to perform a basic driveline diagnostic check. c. Evaluate, diagnose, and replace universal joints. d. Identify differential problems and appropriate repair services. e. Demonstrate how to correctly measure differential backlash using a dial indicator. f. Evaluate and diagnose constant-velocity (CV) joint noise and vibration problems. g. Describe how to remove and replace a CV-axle assembly. h. Diagnose and repair axles, axle bearings, and seals.	C8.0 C8.2 C8.6	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	

i. Demonstrate and evaluate how to remove, repair, and reassemble a clutch assembly including the flywheel, pressure plate, disc, and release assembly. j. Explain how to adjust clutch linkage for free travel. k. Demonstrate skills to correctly perform a basic automatic transmission service. l. Compare the operation of a conventional transmission to the operation of an electronic transmission, including precautions to be followed in the routine service of an electronic transmission. m. Demonstrate how to perform a service on a transmission that includes changing fluid and filters. n. Visually evaluate a transmission, check for leaks, and examining the condition of fluid. o. Explain how to remove and replace a transaxle. p. Identify and explain common transaxle and drive axle problems.					
18. Heating and Air Conditioning (from Auto Systems)	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge and basic skill of heating and cooling systems, including components, functionality, maintenance, diagnosis, and repair. b. Explain the principles of refrigeration. c. Identify safety precautions and refrigerant handling requirements, including Section 609 certification awareness, when working on heating and air conditioning systems. d. Describe the basic operation and function of air conditioning and heater system components. e. Diagnose common heating and air conditioning problems and determine if repairs are needed. f. Diagnose automatic temperature control problems on a heater/air conditioning system. g. Describe the basic operation and function of air conditioning system components. h. Explain how to replace major air conditioning and heating components. i. Test the operation of the air conditioning system and measure the system operating pressures. j. Describe the general procedures for evacuating and charging an air conditioning system using approved refrigerant-handling equipment and manufacturer procedures. k. Check the system for leaks, determine necessary repairs, and follow refrigerant handling requirements.	C3.2 C7.5	1 2 5 11	1 2 5 11	**LS** 9-10 11-12.6 **WS** 11-12.7	

A-G Approved Key Assignments	
1.	Students will efficiently use SDS to identify the ingredients (active and inactive), the toxicity, types of contamination, and the procedures for spills and poisonings for a variety of chemicals and supplies used in the automotive field. *Unit(s) 7*
2.	Use electronic resources, printed reference materials, technical bulletins, and databases to determine the manufacturer specifications for disabling and enabling the supplemental restraint system of a given vehicle. Once information is determined to be accurate students will demonstrate how to disable and enable the supplemental restraint system. *Unit(s) 8*
3.	Demonstrate the proper use and safe handling of tools, equipment, and work process standards within the Automotive Industry. *Unit(s) 9*
4.	Select and use the appropriate measurement devices and mathematical functions to perform assigned fabrication, maintenance, and operation procedures. *Unit(s) 10*
5.	Perform maintenance on lubrication and cooling systems. Diagnose and repair issues with lubrication and cooling systems. *Unit(s) 11*
6.	Demonstrate the diagnosis, service, and repair of ancillary automotive systems, i.e., lighting, washers, heating/cooling systems and their components, horns, and other automotive accessories. *Unit(s) 12*
7.	Research common mechanical problems of engines, their symptoms, causes, and possible repairs. Use the researched information to create a table of at least three engine problems include their symptoms, causes, and possible repair. The table should be neat and easy to read and contain accurate information. *Unit(s) 13*
8.	Properly use scanning tools to check for errors, diagnose problems, and determine the necessary action. *Unit(s) 14*
9.	Demonstrate use of appropriate diagnostic and maintenance techniques for fuel systems. *Unit(s) 15*
10.	Research waste gases, emissions, and other environmentally destructive substances that gas powered vehicles generate and the effects of these substances on the environment. Write a 2-3 page paper summarizing the research. *Unit(s) 16*
11.	Visually evaluate a transmission, check for leaks, examine the condition of fluid, and service the transmission (change fluid and filters). U*nit(s) 17*
12.	Pass a written exam that includes principles of refrigeration, components of heating and cooling systems, diagnoses of common issues, and common repairs. *Unit(s) 18*

Standards Alignment

The curricula have been aligned with the CTE Model Curriculum Standards released in 2013. Each industry sector was updated to meet the increased rigor and relevancy requirements of the Common Core State Standards. The curriculum also includes the new Standards for Career Ready Practices.

Standards for Career Ready Practice

1. *Apply appropriate technical skills and academic knowledge.*
2. *Communicate clearly, effectively, and with reason.*
3. *Develop an education and career plan aligned with personal goals.*
4. *Apply technology to enhance productivity.*
5. *Utilize critical thinking to make sense of problems and persevere in solving them.*
6. *Practice personal health and understand financial literacy.*
7. *Act as a responsible citizen in the workplace and the community.*
8. *Model integrity, ethical leadership, and effective management.*
9. *Work productively in teams while integrating cultural and global competence.*
10. *Demonstrate creativity and innovation.*
11. *Employ valid and reliable research strategies.*
12. *Understand the environmental, social, and economic impacts of decisions.*

CTE Anchor Standards—Common Core English Language Arts Alignment

Anchor Standard 2: Communications

Language Standard: Acquire and accurately use general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the (career and college) readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. LS 9-10, 11-12.6

Anchor Standard 3: Career Planning and Management

Speaking and Listening Standard: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. SLS 11-12.2

Anchor Standard 4: Technology

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments and information.

Anchor Standard 5: Problem Solving and Critical Thinking

Writing Standard: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem, narrow, or broaden the inquiry when appropriate, and synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WS 11-12.7

Anchor Standard 6: Health and Safety

Reading Standards for Science and Technical Subjects: Determine the meaning of symbols, key words, and other domain-specific words and phrases as they are used in a specific scientific or technical context. RSTS 9-10, 11-12.4

Anchor Standard 7: Responsibility and Flexibility

Speaking and Listening Standard: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly and persuasively. SLS 9-10, 11-12.1

Anchor Standard 8: Ethics and Legal Responsibilities

Speaking and Listening Standard: 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 work. SLS 11-2.1d

Anchor Standard 9: Leadership and Teamwork

Speaking and Listening Standard: Work with peers to promote civil, democratic discussions and decision making; set clear goals and deadlines; and establish individual roles as needed. SLS 11-12.1b

Anchor Standard 10: Technical Knowledge and Skills

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. WS 11-12.6

Anchor Standard 11: Demonstration and Application

Demonstrate and apply the knowledge and skills contained in the industry-sector anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and the career technical student organization. Note: no alignment evident for this standard. WS 11-12.6

Transportation

C. Systems Diagnostics, Service, and Repair Pathway

C1.0 Demonstrate the practice of personal and occupational safety and protecting the environment by using materials and processes in accordance with manufacturer and industry standards.

C1.1 Know and understand common environmental conservation practices and their applications.

C1.2 Practice the safe handling and storage of chemicals and hazardous wastes in accordance with Material Safety Data Sheets (MSDS) and the requirements of local, state, and federal regulatory agencies.

C1.4 Use appropriate personal protective equipment and safety practices.

C1.5 Evaluate the advantages and disadvantages of existing, new, and emerging systems and the effects of those systems on the environment.

C2.0 Practice the safe and appropriate use of tools, equipment, and work processes.

C2.1 Recognize the importance of calibration processes, systems, and techniques using various measurement and testing devices.

C2.3 Use tools, equipment, and machines to safely measure, test, diagnose, and analyze components and systems (e.g., electrical, and electronic circuits, alternating- and direct-current applications, fluid/hydraulic and air/pneumatic systems).

C2.5 Use measurement scales, devices, and systems, such as dial indicators and micrometers, to design, fabricate, diagnose, maintain, and repair vehicles and components following recommended industry standards.

C3.1 Describe the operating principles of internal and/or external combustion engines.

C3.2 Describe the function and principles of air-conditioning and heating systems.

C3.5 Practice the basic principles of electricity, electronics and electrical power generation, and distribution systems.

C3.7 Perform necessary procedures to maintain, diagnose, service, and repair vehicle systems and malfunctions.

C4.0 Perform and document maintenance procedures in accordance with the recommendations of the manufacturer.

C4.1 Communicate the procedures and practices of various manufacturers regarding service, repair, and maintenance schedules.

C4.2 Demonstrate how to properly document maintenance and repair procedures in accordance with applicable rules, laws, and regulations (e.g., Bureau of Auto Repair [BAR], Occupational Safety and Health Administration [OSHA], and the California Air Resources Board [ARB]).

C4.3 Use reference books, technical service bulletins, and other documents and materials related to the service industry available in print and through electronic retrieval systems to accurately diagnose and repair systems, equipment, and vehicles.

C6.0 Demonstrate the application, operation, maintenance, and diagnosis of engines, including but not limited to two- and four-stroke and supporting subsystems.

C6.1 Perform general engine maintenance, diagnosis, service, and repair in accordance with portable national industry standards, such as the National Automotive Technicians Education Foundation and the Equipment and Engine Training Council.

C6.2 Maintain, diagnose, service, and repair lubrication and cooling systems.

C6.4 Maintain, diagnose, service, and repair ignition, electronic, and computerized engine controls, and fuel management systems.

C7.0 Demonstrate the function, principles, and operation of electrical and electronic systems using manufacturer and industry standards.

C7.1 Practice maintenance, diagnosis, and repair of electrical systems.

C7.2 Maintain, diagnose, repair, and service batteries.

C7.5 Diagnose, service, and repair heating and air-conditioning systems and components.

C8.0 Demonstrate the function and principles of automotive drivetrain, steering and suspension, brake, and tire and wheel components and systems in accordance with national industry standards.

C8.2 Describe the function and operation of automatic and manual transmissions and transaxles.

C8.3 Diagnose, service, and repair disc brakes, drum brakes, antilock brakes, and other brake systems as developed.

C8.4 Diagnose, service, and repair steering and suspension systems.

C8.5 Interpret tire and rim sizing to select appropriate wheels and tires for vehicles.

C8.6 Maintain, diagnose, service, and repair under-vehicle systems and malfunctions.

ISTE Standards for Students

1. Empowered Learner- Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

a) Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

b) Students build networks and customize their learning environments in ways that support the learning process.

c) Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways

d) Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

2. Digital Citizen- Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world, and they act and model in ways that are safe, legal, and ethical.

a) Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

b) Students engage in positive, safe, legal, and ethical behavior when using technology, including social interactions online or when using networked devices.

c) Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

d) Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

3.Knowledge Constructor- Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

a) Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

b) Students evaluate the accuracy, perspective, credibility and relevance of information, media, data, or other resources.

c) Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

d Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories, and pursuing answers and solutions.

4. Innovative Designer- Students use a variety of technologies within a design process to identify and solve problems creating new, useful, or imaginative solutions.

a) Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts, or solving authentic problems.

b) Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

c) Students develop, test, and refine prototypes as part of a cyclical design process.

d) Students exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.

5. Computational Thinker- Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

a) Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models, and algorithmic thinking in exploring and finding solutions.

b) Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

c) Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

d) Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

6. Creative Communicator- Students communicate clearly and express themselves creatively for a variety of purposes using platforms, tools, styles, formats, and digital media appropriate for their goals.

a) Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

b) Students create original works or responsibly repurpose or remix digital resources into new creations.

c) Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.

d) Students publish or present content that customizes the message and medium for their intended audiences.

7. Global Collaborator- Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

a) Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

b) Students use collaborative technologies to work with others, including peers, experts, or community members, to examine issues and problems from multiple viewpoints.

c) Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

d) Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.