Marking Period	Unit Title	Recommended Instructional Days
1	Shop and Machine Safety Review	40

9.1 Personal Financial Literacy
Disciplinary Concept:

Core Ideas and Performance Expectation:

9.2 Career Awareness, Exploration, Preparation, & Training
Disciplinary Concept:
Career Awareness and Planning

Core Ideas and Performance Expectation:

Career Awareness and Planning
There are strategies to improve one's professional value and marketability.
9.2.12.CAP.2: Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
9.2.12.CAP.3: Investigate how welding skills apply to different career pathways.

Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.5: Develop a plan for obtaining welding certifications and technical training.

9.3 CTE
Disciplinary Concept:
Architecture & Construction
Construction
Manufacturing

Core Ideas and Performance Expectation:

Architecture & Construction
9.3.12.AC.2: Use architecture and construction skills to create and manage a project.

Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit

Essential Question/s:
What hazards are associated with each machine found in the shop? • What preventative measures do we take to prevent injury? • Where is the safety equipment located in the shop and how do we operate it?

Activity Description:

Activity 1: Hazard Identification Scavenger Hunt

Objective: Identify hazards associated with each machine in the shop.

1. Setup: Create a checklist of potential hazards (e.g., entanglement, sharp edges, chemical exposure).
2. Activity: Students work in small groups to inspect the shop and identify hazards for each machine or tool. They document their findings on the checklist.
3. Discussion: Groups present their findings, and the instructor explains how these hazards relate to historical industrial accidents, highlighting how safety practices have evolved.
4. Amistad/History Connection: Discuss contributions of African Americans to industrial safety advancements, such as Garrett Morgan's invention of safety equipment like gas masks.

Activity 2: Safety Protocol Role-Play

Construction
9.3.12.AC-CST.5: Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.6: Manage relationships with internal and external parties to successfully complete construction projects.

Manufacturing
9.3.12.MN.3: Comply with federal, state and local regulations to ensure worker safety and health and environmental work practices.

9.4 Life Literacy & Key Skills
Disciplinary Concept:
Creativity & Innovation
Critical Thinking & Problem Solving
Information & Media Literacy
Technology Literacy

Core Ideas and Performance Expectation:

Creativity and Innovation
With a growth mindset, failure is an important part of success.
9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

Innovative ideas or innovation can lead to career opportunities.
9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition.

Critical Thinking and Problem Solving
Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

Information and Media Literacy

Objective: Learn preventative measures to avoid injury.

1. Setup: Assign each group a specific machine or tool.
2. Activity: Groups create and perform a short role-play demonstrating proper safety protocols for operating their assigned equipment, including PPE use and emergency procedures.
3. Reflection: Students discuss how these protocols prevent injuries.
4. Holocaust/History Connection: Reflect on how forced labor during the Holocaust often lacked safety measures, leading to injuries and fatalities, emphasizing the importance of modern workplace safety.

Activity 3: Safety Equipment Exploration

Objective: Locate and understand the operation of shop safety equipment.

1. Setup: Provide a map of the shop with key areas marked (e.g., fire extinguishers, eyewash stations).
2. Activity: Students work in pairs to locate each piece of safety equipment and practice using it under supervision (e.g., simulate using a fire extinguisher or eyewash station).
3. Quiz/Worksheet: Afterward, students complete a worksheet identifying the location and purpose of each item.
4. Historical Tie-In: Discuss how advancements in workplace safety equipment have reduced injuries over time, connecting this to broader labor movements.

Activity 4: Machine Operation Safety Stations

Objective: Learn safe operation of machines, hand tools, power tools, air tools, and chemical handling.

1. Setup: Create stations for different tools/machines (e.g., drill press, lathe, air compressor) with instructions for safe operation.
2. Activity: Students rotate through stations where they practice operating each tool safely under supervision.
3. Reflection: After completing all stations, students write a brief summary of what they learned about preventing injuries while using these tools.

Digital tools such as artificial intelligence, image enhancement and analysis, and sophisticated computer modeling and simulation create new types of information that may have profound effects on society. These new types of information must be evaluated carefully.
9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.
9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.

Technology Literacy
Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

Career Ready Practices

Act as a responsible and contributing community members and employee.
Demonstrate creativity and innovation.
Utilize critical thinking to make sense of problems and persevere in solving them.
Model integrity, ethical leadership and effective management.
Plan education and career paths aligned to personal goals.
Use technology to enhance productivity increase collaboration and communicate effectively.

Social and Emotional Learning:

Competencies and Sub-Competencies

Self-Awareness
• Recognize one's feelings and thoughts
• Recognize the impact of one's feelings and thoughts on one's own behavior
• Recognize one's personal traits, strengths, and limitations
• Recognize the importance of self-confidence in handling daily tasks and challenges

Self-Management

4. Amistad/History Connection: Highlight contributions of African Americans in manufacturing industries and their role in improving workplace conditions.

Activity 5: Fire Suppression Drill

Objective: Properly use fire suppression equipment.

1. Setup: Provide a demonstration on using fire extinguishers and other suppression tools.
2. Activity: Students practice using fire extinguishers on simulated fires (with instructor guidance). Discuss fire prevention strategies in the shop.
3. Holocaust/History Connection: Discuss how unsafe working conditions during historical events led to catastrophic fires (e.g., Triangle Shirtwaist Factory Fire) and how these events influenced modern fire safety laws.

Activity 6: Hazard Mapping Project

Objective: Identify hazards in the shop and propose solutions.

1. Setup: Provide students with a blank map of the shop.
2. Activity:
    - Students work in groups to mark potential hazards on the map (e.g., pinch points, chemical storage areas).
    - Each group proposes solutions for mitigating these risks (e.g., adding guards or signage).
3. Presentation: Groups present their hazard maps and solutions to the class.
4. Historical Tie-In: Discuss how unsafe working conditions historically led to labor reforms that improved workplace safety standards.

Activity 7: Interactive Safety Timeline

Objective: Understand the evolution of workplace safety.

• Understand and practice strategies for managing one's own emotions, thoughts, and behaviors • Recognize the skills needed to establish and achieve personal and educational goals • Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals **Social Awareness** • Recognize and identify the thoughts, feelings, and perspectives of others • Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds • Demonstrate an understanding of the need for mutual respect when viewpoints differ • Demonstrate an awareness of the expectations for social interactions in a variety of settings. **Responsible Decision-Making** • Develop, implement, and model effective problem-solving and critical thinking skills • Identify the consequences associated with one's actions in order to make constructive choices • Evaluate personal, ethical, safety, and civic impact of decisions **Relationship Skills** • Establish and maintain healthy relationships • Utilize positive communication and social skills to interact effectively with others	1. Setup: Provide a timeline template with key dates related to workplace safety laws and innovations. 2. Activity: ● Students research milestones in workplace safety (e.g., OSHA creation, PPE advancements) and add them to the timeline. ● Include discussions on historical events like forced labor during slavery or unsafe factory conditions during WWII. 3. Amistad/Holocaust Connection: ● Highlight how marginalized groups were often subjected to unsafe working conditions historically and how modern laws aim to ensure equity in workplace safety. **Interdisciplinary Connections:** NJSLSA.R7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. RST.9-10.7: Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. WHST.9-12.1: Write arguments focused on discipline-specific content. HS-ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
Formative Assessments: Teacher Observation Do Now Homework	**Benchmarks:** Quiz Exam Students will be able to safely use/operate tools and equipment

Class Participation Portfolio Discussions Quiz Journal writing Group Assessment Group Interaction/Discussion/Computer Research Self and Peer Evaluations Shop and classroom etiquette Housekeeping critique	With little to no instruction. Students will be able to verbally explain a process when asked. Students will be periodically add to their portfolios **<u>Summative Assessments:</u>** Pre-Test Oral Presentations Projects Rubric Teacher observation Written Assessments Reflective Paper Group Presentations Teacher administered a general shop safety test on the topic discussed during that unit. Hands on Demonstration Completed project Performance test on equipment or tool.

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
Tiered Content Materials: Textbooks at different reading levels (below, at, and above grade level) Simplified versions of texts with key concepts highlighted Advanced supplementary readings for accelerated learners	Tiered Content Materials: Simplified versions of texts with key concepts highlighted Audio versions of texts for auditory learners or struggling readers Leveled or topical readers at different reading levels Books on tape	Keep material concept-focused and principle-driven. Allow the use of digital translation or grouping students together. Provide multiple means of action and expression.	Advanced Learning Resources: ASE Certification Prep – Encourage study for industry-recognized certifications. OEM Service Manuals – Provide access to detailed manufacturer repair guides.

Audio versions of texts for auditory learners or struggling readers Multimedia Resources: Educational videos and documentaries Interactive online modules and simulations Podcasts and audio recordings Infographics and visual aids Hands-On Materials: Physical manipulatives and models Lab equipment and supplies for experiments Art supplies for creative projects Building materials for engineering challenges	Highlighted text Collaborative Learning Tools: Opportunity to work alone, in pairs, or small groups Structured group roles for small group work Peer tutoring and mentoring programs Individualized Options: Independent study options Compacting the curriculum for advanced learners Varied timelines or check-in points Choice of review activities ESL-Specific Resources: Bilingual dictionaries or glossaries Sentence frames and language scaffolds Visual supports for key vocabulary		Automotive Engineering Textbooks – Explore advanced concepts like hybrid systems and aerodynamics. Online Training & Webinars – Use resources from ASE, Snap-On, and major manufacturers. 3D Modeling & Diagnostic Simulations – Utilize software for digital learning. Hands-On Activities: Advanced Diagnostics & Troubleshooting – Solve complex real-world car issues. Engine Teardown & Rebuild – Fully disassemble and reassemble an engine. Performance Tuning & Fabrication – Work with ECU tuning and custom modifications. Internship/Job Shadowing – Partner with local shops for real-world experience. Competitive Automotive Events – Participate in SkillsUSA or vehicle design competitions. Enrichment & Leadership:

			Student-Led Research & Presentations – Explore future automotive trends. Technical Writing & Blogging – Create repair guides or tutorial videos. Peer Mentorship & Teaching – Lead small group lessons or assist classmates. Cross-Disciplinary Projects – Collaborate with engineering or robotics students. Self-Paced Online Learning – Use CDX Learning or Electude for independent study.

Supplemental Resources

Technology:

- Laptop
- Chromebook
- SmartBoard
- Internet Access
- Projector

Other

<u>Technical Skill Assessments:</u> ***License/Certification/CTE Assessment/ Industry Valued Credential / Stackable Credential***	**<u>Name of Assessment(s):</u>** **<u>Type of Assessment(s):</u>**

Differentiated Student Access to Content: **Recommended *Strategies & Techniques***	

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
Content Differentiation: Tiered content at different complexity levels Variety of textbooks at different reading levels Supplemental materials like videos, podcasts, and interactive modules Compacting curriculum for advanced learners Choice boards allowing students to select learning activities Varied resources/texts on the same topic Process Differentiation: Flexible grouping (whole group, small group, individual) Learning contracts tailored to student needs Interest centers focused on different aspects of a topic	Content Differentiation: Simplified versions of texts with key concepts highlighted Audio versions of texts for auditory learners or struggling readers Leveled readers at different reading levels Bilingual materials for ESL students Visual aids, infographics, and multimedia resources Process Differentiation: Flexible grouping based on readiness levels Scaffolded support like graphic organizers and writing frames Extended time for task completion One-on-one or small group instruction	Content Differentiation: Simplified versions of texts with key concepts highlighted Audio versions of texts for auditory learners Leveled readers at different reading levels Bilingual materials and resources1 Visual aids, infographics, and multimedia resources Modified texts with rewording, reduced extraneous information, and added visuals Process Differentiation: Flexible grouping based on language proficiency levels Scaffolded support like graphic organizers and writing frames Extended time for task completion One-on-one or small group instruction	Content Differentiation: Advanced, above-grade level textbooks and materials Supplementary resources on complex or specialized topics Interdisciplinary curriculum connecting multiple subject areas Primary source documents and advanced readings Access to college-level coursework or materials Process Differentiation: Accelerated pacing of instruction Independent study options on topics of interest Problem-based and project-based learning opportunities Socratic seminars and philosophical discussions

Varied instructional strategies (visual, auditory, kinesthetic) Scaffolded support like graphic organizers and writing frames Technology-enabled instruction (synchronous or asynchronous options) Product Differentiation: Multiple options for demonstrating learning (reports, presentations, models, etc.) Varied assessment methods based on student learning preferences Adjusting product expectations based on student readiness Learning Environment Differentiation: Flexible seating arrangements Options for individual, paired, or group work Varied time allocations for task completion Use of technology to support different learning needs	Use of assistive technology (text-to-speech, speech-to-text tools) Product Differentiation: Multiple options for demonstrating learning (oral presentations, projects, etc.) Adjusted expectations based on IEP/504 goals Alternative assessments aligned with student abilities Use of portfolios to showcase progress over time Learning Environment Differentiation: Flexible seating arrangements Quiet spaces for individual work Sensory tools or fidgets as needed Visual schedules and routines Specialized Supports Implementation of IEP accommodations and modifications ESL supports like sentence frames and vocabulary guides Interventions for at-risk students (e.g. reading interventions)	Use of gestures and total physical response to support verbal instruction Incorporation of students' native language or culture when possible Product Differentiation: Multiple options for demonstrating learning (oral presentations, projects, etc.) Adjusted expectations based on English proficiency levels Alternative assessments aligned with student abilities Use of portfolios to showcase progress over time Learning Environment Differentiation: Flexible seating arrangements Use of learning centers or stations focused on different aspects of a topic Visual schedules and routines Incorporation of culturally relevant materials and examples Specialized Supports: ESL supports like sentence frames and vocabulary guides Use of students' native language for clarification when needed	Mentorship programs with experts in fields of interest Product Differentiation: Open-ended, creative project options Real-world application of learning through authentic tasks Opportunities for original research and experimentation Multimedia presentations and publications Portfolio development to showcase depth of learning Learning Environment Differentiation: Flexible grouping with intellectual peers Access to advanced technology and lab equipment Field trips and off-campus learning experiences Online courses and virtual learning options Competitions and academic challenges Specialized Supports:

	Social-emotional learning supports Ongoing Assessment Frequent formative assessments to monitor progress Data-driven adjustments to instruction Progress monitoring aligned with IEP goals	Frequent opportunities for speaking and listening practice Integration of all four language skills (listening, speaking, reading, writing) Instructional Strategies: Slowing down speech and using clear enunciation Rephrasing and clarifying instructions Using visuals to support verbal instruction Providing content in multiple formats (visual, auditory, kinesthetic) Connecting content to students' interests and cultural backgrounds Utilizing music, melodies, or songs to enhance learning Ongoing Assessment: Frequent formative assessments to monitor progress Data-driven adjustments to instruction Accommodated assessments (e.g., simplified language, added visuals)	Critical and creative thinking skill development Training in research methods and academic writing Guidance on social-emotional needs of gifted learners College and career planning tailored to advanced learners Opportunities to explore passions and develop talents Instructional Strategies: Inquiry-based and discovery learning approaches Higher-order questioning techniques Abstract and complex problem-solving tasks Emphasis on depth and complexity of content Integration of multiple disciplines and perspectives Assessment Options: Pre-assessments to determine readiness levels Performance-based and authentic assessments Self-assessment and reflection opportunities

			Above-grade level standardized testing Credit by examination options

Work-Based Learning Experiences (WBL)- *Previously called Structured Learning Experience (SLE) ***Each course within a CTE program is now required to include at least one WBL each year.*** **Work-Based Learning: Sustained, meaningful interactions with industry or community professionals that foster in-depth, firsthand engagement with the tasks required in a given career field. Experiences may be delivered in workplaces, in the community, at educational institutions, and/or virtually. WBL is aligned with national, state, and/or local standards. WBL develops and reinforces relevant technical, academic, and employability knowledge and skills.**		
WBL Integration/Activity:	**Duration:**	**Brief description of activities:**
Career Fair	1-3 day Event	• Annual School wide Career Fairs with various presentation in the Architecture and Constructions fields
Guest Speakers	1-2 hour a couple times throughout the year	• Guest Speakers
Career Related Competitions	Marking Period long	• Service Learning & Career Related Competitions such as SkillsUSA
Internships (Paid or non-paid)	Summer Internships	• Internship Opportunities
Informational Interviews /Guest Speakers	1-3 day Event	• Annual STEAM Day
Pre- Apprenticeship	Summer long	• Apprenticeship programs
Career Related Competitions	1-3 day Event	• SkillsUSA Competitions

Interactive/Hands-on Demonstrations with industry Professionals (online, in-person)	30-1hr per student throughout the year or one day	• (Online or in-person) Portfolio Critiques, Project Critiques with Industry professionals
Simulated Workbased Experience	Afterschool year long	Simulated Workbased Experience
WBL Partners:		
Career and Technical Student Organization- *Every CTE program must incorporate a Career and Technical Student Organization (CTSO).		
CTSO:	**CTSO Advisor:**	

Freshman Level: Approximately 10 hours	**Sophomore Level: Approximately 20 hours**	**Junior Level: Approximately 50 hours**	**Senior Level: Approximately 75 hours**
Career Awareness- brief exposure to a variety of work settings needs.	Career Exploration- understand the nature of work through first-hand exposure to the workplace.	Career Preparation - builds basic workplace competence	Work-Related Training - a period of work experience for the purpose of training job skills and job-related skills. work experience Students may or may not be paid.

Career fair Guest Speakers Online Career Navigation, Assessments, Videos Informational Interviews Workplace Tours/Field Trips	Informational interviews Job shadowing Workplace tours/worksite visits Simulated Workplace Experience Mock Interviews	Service-learning Interactive/Hands-on demonstrations with industry prof. (online, in person, simulated) Career Cluster Employer Panel Presentations Structured Assignments after a workplace tour, presentation, shadowing Career Related Competitions School-based enterprises Simulated Workplace Experience Non-Paid Work Experience Service Learning/Volunteering	Internships (Paid or Non-Paid) Service Learning Student-led Enterprises Volunteering Work Experience (Paid or Non-Paid) Pre-Apprenticeships Apprenticeship

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)											
X	Amistad Law: *N.J.S.A. 18A 52:16A-88*	X	Holocaust Law: *N.J.S.A. 18A:35-28*		LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*		Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*		Erin's Law: *A-769/S-1130*

Marking Period	Unit Title	Recommended Instructional Days
2	Vehicle Maintenance Review	45

9.1 Personal Financial Literacy

Core Ideas and Performance Expectation:

9.2 Career Awareness, Exploration, Preparation, & Training
Disciplinary Concept:
Career Awareness and Planning

Core Ideas and Performance Expectation:

Career Awareness and Planning
There are strategies to improve one's professional value and marketability.
9.2.12.CAP.2: Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
9.2.12.CAP.3: Investigate how welding skills apply to different career pathways.

Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.5: Develop a plan for obtaining welding certifications and technical training.

9.3 CTE
Disciplinary Concept:
Architecture & Construction
Construction
Manufacturing
Manufacturing Production Process Development

Core Ideas and Performance Expectation:

Architecture & Construction
9.3.12.AC.2: Use architecture and construction skills to create and manage a project.

Construction

Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit

Essential Question/s:
What is the difference between normal service and severe service?
What is preventative maintenance?

Activity Description:

Activity 1: Comparing Normal and Severe Service

Objective: Help students understand the difference between normal and severe service conditions.

1. Group Discussion and Brainstorming:
   - Begin with a brief instructor-led explanation of normal vs. severe service conditions (e.g., short trips, extreme weather, towing).
   - Students brainstorm examples of driving scenarios that fit into each category.
   - Use real-world examples to make connections to diverse lifestyles (e.g., urban vs. rural driving, delivery drivers, or law enforcement vehicles).
2. Interactive Sorting Activity:
   - Provide students with cards describing various driving scenarios (e.g., "Driving less than 5 miles in freezing temperatures" or "Highway commuting for 20 miles daily").

9.3.12.AC-CST.5: Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.6: Manage relationships with internal and external parties to successfully complete construction projects.

Manufacturing
9.3.12.MN.3: Comply with federal, state and local regulations to ensure worker safety and health and environmental work practices.

Manufacturing Production Process Development
9.3.12.MN-PPD.2: Research, design and implement alternative manufacturing processes to manage production of new and/or improved products.

9.4 Life Literacy & Key Skills
Disciplinary Concept:
Creativity & Innovation
Critical Thinking & Problem Solving
Information & Media Literacy
Technology Literacy

Core Ideas and Performance Expectation:

Creativity and Innovation
With a growth mindset, failure is an important part of success.
9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

Innovative ideas or innovation can lead to career opportunities.
9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition.

Critical Thinking and Problem Solving
Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

- Students work in pairs to sort the cards into "Normal Service" or "Severe Service" categories.

3. Reflection:
   - Students write a short paragraph explaining why understanding these differences is important for vehicle maintenance.

Activity 2: Preventive Maintenance Checklist

Objective: Teach students the importance of preventive maintenance and how it prevents costly repairs.

1. Hands-On Inspection:
   - In small groups, students inspect a vehicle's key components (e.g., belts, hoses, oil levels, air filters) using a checklist.
   - Include a discussion on how preventive maintenance extends vehicle life and reduces environmental impact (e.g., fewer emissions from well-maintained engines).
2. Scenario-Based Role Play:
   - Assign students roles (e.g., vehicle owner, technician).
   - The "technician" explains the benefits of preventive maintenance to the "owner," using specific examples like replacing spark plugs or checking coolant levels.
3. Worksheet Activity:
   - Students complete a worksheet identifying common preventive maintenance tasks for ignition components, fuel systems, intake systems, and more.
   - Include questions about how these tasks align with climate change goals (e.g., reducing emissions by maintaining fuel efficiency).

Activity 3: Ignition Components and Spark Plug Replacement

Objective: Teach students how to remove, inspect, and replace spark plugs.

1. Interactive Demonstration:

Information and Media Literacy
Digital tools such as artificial intelligence, image enhancement and analysis, and sophisticated computer modeling and simulation create new types of information that may have profound effects on society. These new types of information must be evaluated carefully.
9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.
9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.

Technology Literacy
Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

Career Ready Practices

Act as a responsible and contributing community members and employee.
Demonstrate creativity and innovation.
Utilize critical thinking to make sense of problems and persevere in solving them.
Model integrity, ethical leadership and effective management.
Plan education and career paths aligned to personal goals.
Use technology to enhance productivity increase collaboration and communicate effectively.

Social and Emotional Learning:

Competencies and Sub-Competencies

Self-Awareness
• Recognize one's feelings and thoughts
• Recognize the impact of one's feelings and thoughts on one's own behavior
• Recognize one's personal traits, strengths, and limitations
• Recognize the importance of self-confidence in handling daily tasks and challenges

- Instructor demonstrates proper spark plug removal and inspection techniques.
- Highlight how worn spark plugs can reduce fuel efficiency and increase emissions.

2. Hands-On Practice:
   - Students work in pairs to remove and inspect spark plugs on a practice engine.
   - Discuss how preventive maintenance of ignition components contributes to sustainability by improving engine performance.
3. Diversity & Inclusion Tie-In:
   - Discuss how automotive careers are inclusive of all individuals, including those with disabilities or from LGBTQ+ communities.
   - Highlight adaptive tools or technologies that make automotive work accessible to everyone.

Activity 4: Oil Viscosities Lab

Objective: Help students understand oil viscosities and their importance in different operating conditions.

1. Viscosity Experiment:
   - Provide samples of different oils (e.g., 5W-30, 10W-40).
   - Students observe how oil flows at different temperatures using a simulated environment (e.g., warm water bath vs. ice bath).
2. Discussion:
   - Relate oil viscosity choices to normal vs. severe service conditions.
   - Discuss how proper oil selection reduces wear on engine components and improves fuel efficiency.

Activity 5: Tires – Reading Information and Maintenance

Objective: Teach students to read tire information and understand tire maintenance.

Self-Management
• Understand and practice strategies for managing one's own emotions, thoughts, and behaviors
• Recognize the skills needed to establish and achieve personal and educational goals
• Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals

Social Awareness
• Recognize and identify the thoughts, feelings, and perspectives of others
• Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds
• Demonstrate an understanding of the need for mutual respect when viewpoints differ
• Demonstrate an awareness of the expectations for social interactions in a variety of settings.

Responsible Decision-Making
• Develop, implement, and model effective problem-solving and critical thinking skills
• Identify the consequences associated with one's actions in order to make constructive choices
• Evaluate personal, ethical, safety, and civic impact of decisions

Relationship Skills
• Establish and maintain healthy relationships
• Utilize positive communication and social skills to interact effectively with others

1. Tire Analysis Activity:
    - Provide tires or photos showing wear patterns.
    - Students identify issues like underinflation or misalignment based on tread patterns.
2. Tire Label Reading Challenge:
    - Students locate information such as tire size, load index, and speed rating on sample tires.
    - Discuss how proper tire maintenance improves safety and reduces fuel consumption.
3. Inclusion Activity:
    - Highlight advancements in tire technology that improve accessibility for drivers with disabilities (e.g., run-flat tires).

Activity 6: Belts & Hoses Inspection Lab

Objective: Teach students to inspect, remove, and replace worn belts and hoses.

1. Hands-On Workshop:
    - Students practice inspecting belts for cracks or fraying and hoses for leaks or soft spots.
2. Real-Life Scenario Discussion:
    - Discuss what happens when belts or hoses fail during severe service conditions (e.g., towing in hot weather).
3. Reflection Activity:
    - Students write about the importance of proactive inspections in preventing breakdowns during challenging driving conditions.

Integration of NJ Diversity & Inclusion Laws:

- Emphasize inclusive practices in automotive education by discussing how the industry welcomes people from all backgrounds, including LGBTQ+ individuals and those with disabilities.
- Highlight adaptive tools that make automotive work accessible for people with physical limitations.

	● Use diverse examples in activities to reflect various lifestyles (e.g., urban commuters vs. rural drivers) to ensure relevance for all students. **Interdisciplinary Connections:** NJSLSA.R7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. RST.9-10.7: Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. WHST.9-12.1: Write arguments focused on discipline-specific content. HS-ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts. .
Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
Formative Assessments: Teacher Observation Do Now Homework Class Participation Portfolio Discussions Quiz Journal writing Group Assessment Group Interaction/Discussion/Computer Research Self and Peer Evaluations Shop and classroom etiquette Housekeeping critique	**Benchmarks:** Quiz Exam Apply an Engineering Design Process Develop and Test a Solution Improve a Design through Iteration Develop Skills in Graphically Representing Ideas **Summative Assessments:** Pre-Test Oral Presentations Projects Rubric

Completion of safety assignments Examine handouts in notebook for completeness and accuracy of information Project critique and evaluation at completion Observe proper care and use of tools, equipment, and materials Hands on Demonstrations	Teacher observation Written Assessments Reflective Paper Group Presentations Maintain Anecdotal Records/Notetaking Teacher administered a general shop safety test on the topic discussed during that unit. Completed project Performance test on equipment or tool.

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
Tiered Content Materials: Textbooks at different reading levels (below, at, and above grade level) Simplified versions of texts with key concepts highlighted Advanced supplementary readings for accelerated learners Audio versions of texts for auditory learners or struggling readers Multimedia Resources: Educational videos and documentaries Interactive online modules and	Tiered Content Materials: Simplified versions of texts with key concepts highlighted Audio versions of texts for auditory learners or struggling readers Leveled or topical readers at different reading levels Books on tape Highlighted text Collaborative Learning Tools: Opportunity to work alone, in pairs, or small groups Structured group roles for small	Keep material concept-focused and principle-driven. Allow the use of digital translation or grouping students together. Provide multiple means of action and expression.	Advanced Learning Resources: ASE Certification Prep – Encourage study for industry-recognized certifications. OEM Service Manuals – Provide access to detailed manufacturer repair guides. Automotive Engineering Textbooks – Explore advanced concepts like hybrid systems and aerodynamics. Online Training & Webinars – Use resources from ASE, Snap-On, and major manufacturers.

simulations Podcasts and audio recordings Infographics and visual aids Hands-On Materials: Physical manipulatives and models Lab equipment and supplies for experiments Supplies for creative projects Building materials for engineering challenges	group work Peer tutoring and mentoring programs Individualized Options: Independent study options Compacting the curriculum for advanced learners Varied timelines or check-in points Choice of review activities ESL-Specific Resources: Bilingual dictionaries or glossaries Sentence frames and language scaffolds Visual supports for key vocabulary		3D Modeling & Diagnostic Simulations – Utilize software for digital learning. Hands-On Activities: Advanced Diagnostics & Troubleshooting – Solve complex real-world car issues. Engine Teardown & Rebuild – Fully disassemble and reassemble an engine. Performance Tuning & Fabrication – Work with ECU tuning and custom modifications. Internship/Job Shadowing – Partner with local shops for real-world experience. Competitive Automotive Events – Participate in SkillsUSA or vehicle design competitions. Enrichment & Leadership: Student-Led Research & Presentations – Explore future automotive trends. Technical Writing & Blogging – Create repair guides or tutorial videos. Peer Mentorship & Teaching – Lead small group lessons or assist classmates.

			Cross-Disciplinary Projects – Collaborate with engineering or robotics students. Self-Paced Online Learning – Use CDX Learning or Electude for independent study.

Supplemental Resources

Technology:

- Laptop
- Chromebook
- SmartBoard
- Internet Access
- Projector

Other:

-

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core**
Content Differentiation: Tiered content at different complexity levels Variety of textbooks at different reading levels Supplemental materials like videos, podcasts, and interactive modules	Content Differentiation: Simplified versions of texts with key concepts highlighted Audio versions of texts for auditory learners or struggling readers Leveled readers at different reading levels	Content Differentiation: Simplified versions of texts with key concepts highlighted Audio versions of texts for auditory learners Leveled readers at different reading levels	Content Differentiation: Advanced, above-grade level textbooks and materials Supplementary resources on complex or specialized topics Interdisciplinary curriculum connecting multiple subject areas

Compacting curriculum for advanced learners Choice boards allowing students to select learning activities Varied resources/texts on the same topic Process Differentiation: Flexible grouping (whole group, small group, individual) Learning contracts tailored to student needs Interest centers focused on different aspects of a topic Varied instructional strategies (visual, auditory, kinesthetic) Scaffolded support like graphic organizers and writing frames Technology-enabled instruction (synchronous or asynchronous options) Product Differentiation: Multiple options for demonstrating learning (reports, presentations, models, etc.) Varied assessment methods based on student learning preferences Adjusting product expectations based on student readiness Learning Environment Differentiation:	Bilingual materials for ESL students Visual aids, infographics, and multimedia resources Process Differentiation: Flexible grouping based on readiness levels Scaffolded support like graphic organizers and writing frames Extended time for task completion One-on-one or small group instruction Use of assistive technology (text-to-speech, speech-to-text tools) Product Differentiation: Multiple options for demonstrating learning (oral presentations, projects, etc.) Adjusted expectations based on IEP/504 goals Alternative assessments aligned with student abilities Use of portfolios to showcase progress over time Learning Environment Differentiation:	Bilingual materials and resources1 Visual aids, infographics, and multimedia resources Modified texts with rewording, reduced extraneous information, and added visuals Process Differentiation: Flexible grouping based on language proficiency levels Scaffolded support like graphic organizers and writing frames Extended time for task completion One-on-one or small group instruction Use of gestures and total physical response to support verbal instruction Incorporation of students' native language or culture when possible Product Differentiation: Multiple options for demonstrating learning (oral presentations, projects, etc.) Adjusted expectations based on English proficiency levels Alternative assessments aligned with student abilities Use of portfolios to showcase progress over time	Primary source documents and advanced readings Access to college-level coursework or materials Process Differentiation: Accelerated pacing of instruction Independent study options on topics of interest Problem-based and project-based learning opportunities Socratic seminars and philosophical discussions Mentorship programs with experts in fields of interest Product Differentiation: Open-ended, creative project options Real-world application of learning through authentic tasks Opportunities for original research and experimentation Multimedia presentations and publications Portfolio development to showcase depth of learning Learning Environment Differentiation:

Flexible seating arrangements Options for individual, paired, or group work Varied time allocations for task completion Use of technology to support different learning needs	Flexible seating arrangements Quiet spaces for individual work Sensory tools or fidgets as needed Visual schedules and routines Specialized Supports Implementation of IEP accommodations and modifications ESL supports like sentence frames and vocabulary guides Interventions for at-risk students (e.g. reading interventions) Social-emotional learning supports Ongoing Assessment Frequent formative assessments to monitor progress Data-driven adjustments to instruction Progress monitoring aligned with IEP goals	Learning Environment Differentiation: Flexible seating arrangements Use of learning centers or stations focused on different aspects of a topic Visual schedules and routines Incorporation of culturally relevant materials and examples Specialized Supports: ESL supports like sentence frames and vocabulary guides Use of students' native language for clarification when needed Frequent opportunities for speaking and listening practice Integration of all four language skills (listening, speaking, reading, writing) Instructional Strategies: Slowing down speech and using clear enunciation Rephrasing and clarifying instructions Using visuals to support verbal instruction Providing content in multiple formats (visual, auditory, kinesthetic) Connecting content to students' interests and cultural backgrounds	Flexible grouping with intellectual peers Access to advanced technology and lab equipment Field trips and off-campus learning experiences Online courses and virtual learning options Competitions and academic challenges Specialized Supports: Critical and creative thinking skill development Training in research methods and academic writing Guidance on social-emotional needs of gifted learners College and career planning tailored to advanced learners Opportunities to explore passions and develop talents Instructional Strategies: Inquiry-based and discovery learning approaches Higher-order questioning techniques Abstract and complex problem-solving tasks

		Utilizing music, melodies, or songs to enhance learning Ongoing Assessment: Frequent formative assessments to monitor progress Data-driven adjustments to instruction Accommodated assessments (e.g., simplified language, added visuals)	Emphasis on depth and complexity of content Integration of multiple disciplines and perspectives Assessment Options: Pre-assessments to determine readiness levels Performance-based and authentic assessments Self-assessment and reflection opportunities Above-grade level standardized testing Credit by examination options

Work-Based Learning Experiences (WBL)- *Previously called Structured Learning Experience (SLE)

Each course within a CTE program is now required to include at least one WBL each year.

Work-Based Learning: Sustained, meaningful interactions with industry or community professionals that foster in-depth, firsthand engagement with the tasks required in a given career field. Experiences may be delivered in workplaces, in the community, at educational institutions, and/or virtually. WBL is aligned with national, state, and/or local standards. WBL develops and reinforces relevant technical, academic, and employability knowledge and skills.

WBL Integration/Activity:	Duration:	Brief description of activities:
Career Fair	1-3 day Event	• Annual School wide Career Fairs
Guest Speakers	1-2 hour a couple times throughout the year	• Guest Speakers

Career Related Competitions	Throughout the marking period	• Service Learning & Career Related Competitions such as SkillsUSA
Internships (Paid or non-paid)	Summer Internships	• Internship Opportunities
Informational Interviews /Guest Speakers	1-3 day Event	• Annual STEAM Day
Pre- Apprenticeship	Summer long	• Apprenticeship programs
Career Related Competitions	1-3 day Event	• SkillsUSA Competitions
Interactive/Hands-on Demonstrations with industry Professionals (online, in-person)	30-1hr per student throughout the year or one day	• (Online or in-person) Portfolio Critiques, Project Critiques with Industry professionals
Simulated Workbased Experience	Afterschool year long	• Simulated Workbased Experience
WBL Partners:		
Career and Technical Student Organization- *Every CTE program must incorporate a Career and Technical Student Organization (CTSO).		
CTSO:	**CTSO Advisor:**	

Content Area: Career Readiness, Life Literacies, and Key Skills (NJSLS-CLKS 9.2, 9.3, 9.4) Grades K - 12
Grade: 10

Dev. Date:

Freshman Level: Approximately 10 hours Career Awareness- brief exposure to a variety of work settings needs.	**Sophomore Level: Approximately 20 hours** Career Exploration- understand the nature of work through first-hand exposure to the workplace.	**Junior Level: Approximately 50 hours** Career Preparation - builds basic workplace competence	**Senior Level: Approximately 75 hours** Work-Related Training - a period of work experience for the purpose of training job skills and job-related skills. work experience Students may or may not be paid.
Career fair Guest Speakers Online Career Navigation, Assessments, Videos Informational Interviews Workplace Tours/Field Trips	Informational interviews Job shadowing Workplace tours/worksite visits Simulated Workplace Experience Mock Interviews	Service-learning Interactive/Hands-on demonstrations with industry prof. (online, in person, simulated) Career Cluster Employer Panel Presentations Structured Assignments after a workplace tour, presentation, shadowing Career Related Competitions School-based enterprises Simulated Workplace Experience Non-Paid Work Experience Service Learning/Volunteering	Internships (Paid or Non-Paid) Service Learning Student-led Enterprises Volunteering Work Experience (Paid or Non-Paid) Pre-Apprenticeships Apprenticeship

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)											
	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*	X	LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	X	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*		Erin's Law: *A-769/S-1130*

<table>
<tr><th>Marking
Period</th><th>Unit
Title</th><th>Recommended
Instructional Days</th></tr>
<tr><td>3</td><td colspan="2">Automotive Systems Review</td><td>40</td></tr>
<tr><td colspan="2">9.1 Personal Financial Literacy
Disciplinary Concept:</td><td colspan="2" rowspan="2">Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit</td></tr>
<tr><td colspan="2">Core Ideas and Performance Expectation:</td></tr>
<tr><td colspan="2">9.2 Career Awareness, Exploration, Preparation, & Training
Disciplinary Concept:
Career Awareness and Planning</td><td colspan="2" rowspan="4"><u>Essential Question/s:</u>
What are the major systems of an automobile?

<u>Activity Description</u>:

Activity 1: Systems Scavenger Hunt
● Objective: Students identify and categorize major systems of an automobile.
● Instructions:
● Provide students with labeled diagrams of a car.
● Divide them into pairs or small groups and assign each group a system (e.g., engine, drivetrain, exhaust system).
● Groups locate components of their assigned system on the diagram and research their function.
● Incorporate climate change by asking students to identify how their assigned system impacts emissions or energy efficiency (e.g., how exhaust systems reduce pollutants or how cooling systems prevent overheating that could lead to inefficiency).
● Groups present findings to the class.

Unit Objectives Activities</td></tr>
<tr><td colspan="2">Core Ideas and Performance Expectation:

Career Awareness and Planning
There are strategies to improve one's professional value and marketability.
9.2.12.CAP.2: Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
9.2.12.CAP.3: Investigate how welding skills apply to different career pathways.

Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.5: Develop a plan for obtaining welding certifications and technical training.</td></tr>
<tr><td colspan="2">9.3 CTE
Disciplinary Concept:
Architecture & Construction
Construction
Manufacturing
Manufacturing Production Process Development</td></tr>
<tr><td colspan="2">Core Ideas and Performance Expectation:

Architecture & Construction</td></tr>
</table>

9.3.12.AC.2: Use architecture and construction skills to create and manage a project.

Construction
9.3.12.AC-CST.5: Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.6: Manage relationships with internal and external parties to successfully complete construction projects.

Manufacturing
9.3.12.MN.3: Comply with federal, state and local regulations to ensure worker safety and health and environmental work practices.

Manufacturing Production Process Development
9.3.12.MN-PPD.2: Research, design and implement alternative manufacturing processes to manage production of new and/or improved products.

9.4 Life Literacy & Key Skills
Disciplinary Concept:
Creativity & Innovation
Critical Thinking & Problem Solving
Informations and Media Literacy
Technology Literacy

Core Ideas and Performance Expectation:

Creativity and Innovation
With a growth mindset, failure is an important part of success.
9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

Innovative ideas or innovation can lead to career opportunities.
9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition.

Critical Thinking and Problem Solving

Engines & Drivetrains

Activity 2: Engine Efficiency and Climate Impact

- Objective: Describe the basic function of an engine and drivetrain while exploring fuel efficiency.
- Instructions:
  - Show a video or demonstration of how an engine and drivetrain work.
  - Students work in groups to brainstorm ways engines can be designed to reduce carbon emissions (e.g., hybrid engines, electric motors).
  - Discuss how drivetrain efficiency impacts fuel consumption and greenhouse gas emissions.

Exhaust Systems

Activity 3: Pollution Reduction Challenge

- Objective: Explain how an exhaust system works and its role in reducing emissions.
- Instructions:
  - Provide students with diagrams of exhaust systems (including catalytic converters).
  - Assign groups to research how catalytic converters reduce harmful emissions.
  - Groups design a poster showing the environmental impact of poorly functioning exhaust systems versus efficient ones.

Steering Systems & Suspension Systems

Activity 4: Hands-On Model Building

- Objective: Explain how steering and suspension systems work.
- Instructions:
  - Provide materials to build simple models of steering and suspension systems (e.g., cardboard, straws, rubber bands).

Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

Information and Media Literacy
Digital tools such as artificial intelligence, image enhancement and analysis, and sophisticated computer modeling and simulation create new types of information that may have profound effects on society. These new types of information must be evaluated carefully.
9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.
9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.

Technology Literacy
Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

Career Ready Practices

Act as a responsible and contributing community member and employee.

Attend to financial well-being.

Consider the environmental, social and economic impacts of decisions.

Demonstrate creativity and innovation.

Utilize critical thinking to make sense of problems and persevere in solving them.

- Groups demonstrate their models and explain their functions.
- Discuss how advancements in these systems (e.g., lighter materials) can improve fuel efficiency and reduce environmental impact.

Electrical Systems

Activity 5: Electric Cars vs. Gasoline Cars Debate

- Objective: Describe simple electrical systems and their role in modern vehicles.
- Instructions:
  - Divide students into two teams: one advocates for electric cars, the other for gasoline-powered cars.
  - Each team researches pros and cons, including environmental impact (e.g., emissions vs. battery production).
  - Teams debate the future of automotive electrical systems in reducing climate change.

Cooling Systems & Heat/AC Systems

Activity 6: Climate Control Efficiency Analysis

- Objective: Explain how cooling, heating, and AC systems work while considering energy efficiency.
- Instructions:
  - Students examine diagrams of cooling and HVAC systems.
  - Groups calculate energy usage for heating/AC in cars versus alternative solutions like solar-powered climate control systems.
  - Discuss how efficient climate control reduces fuel consumption and carbon footprint.

Fuel Systems

Activity 7: Fuel System Innovations

Model integrity, ethical leadership and effective management.

Plan education and career paths aligned to personal goals.

Use technology to enhance productivity, increase collaboration, and communicate effectively.

Work productively in teams while using cultural/global competence.

Social and Emotional Learning:

Competencies and Sub-Competencies

Self-Awareness
• Recognize one's feelings and thoughts
• Recognize the impact of one's feelings and thoughts on one's own behavior
• Recognize one's personal traits, strengths, and limitations
• Recognize the importance of self-confidence in handling daily tasks and challenges

Self-Management
• Understand and practice strategies for managing one's own emotions, thoughts, and behaviors
• Recognize the skills needed to establish and achieve personal and educational goals
• Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals

Social Awareness
• Recognize and identify the thoughts, feelings, and perspectives of others
• Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds
• Demonstrate an understanding of the need for mutual respect when viewpoints differ
• Demonstrate an awareness of the expectations for social interactions in a variety of settings.

- Objective: Explain how a basic gasoline fuel system works and explore alternatives.
- Instructions:
  - Students create a flowchart showing how fuel moves through a car's system.
  - Research alternative fuels (e.g., ethanol, biodiesel) and compare their environmental benefits to traditional gasoline.

Brake Systems & Safety/Restraint Systems

Activity 8: Brake System Simulation

- Objective: Explain how brake systems work and describe restraint system components.
- Instructions:
  - Use toy cars or simulations to demonstrate braking mechanisms (hydraulic vs. mechanical brakes).
  - Students research safety features like airbags, seatbelts, and crumple zones, explaining their roles in reducing injuries during accidents.
  - Discuss how advancements in braking technology (e.g., regenerative braking in electric vehicles) contribute to sustainability.

Incorporating Climate Change Standards:

For each activity:

1. Include discussions on how each system impacts vehicle emissions, energy efficiency, or sustainability.
2. Encourage students to brainstorm innovations that align with climate change mitigation efforts (e.g., hybrid/electric engines, lightweight materials for better fuel economy).
3. Highlight real-world examples of automotive companies working toward reducing carbon footprints.

Responsible Decision-Making • Develop, implement, and model effective problem-solving and critical thinking skills • Identify the consequences associated with one's actions in order to make constructive choices • Evaluate personal, ethical, safety, and civic impact of decisions **Relationship Skills** • Establish and maintain healthy relationships • Utilize positive communication and social skills to interact effectively with others	**Interdisciplinary Connections:** NJSLSA.R7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. RST.9-10.7: Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. WHST.9-12.1: Write arguments focused on discipline-specific content. HS-ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
Formative Assessments: Teacher Observation Do Now Homework Class Participation Portfolio Discussions Quiz Journal writing Group Assessment Group Interaction/Discussion/Computer Research Self and Peer Evaluations Examine handouts in notebook for completeness and accuracy of information Project critique and evaluation at completion Observe proper care and use of tools, equipment, and materials	**Benchmarks:** Quiz Exam **Summative Assessments:** Pre-Test Oral Presentations Projects Rubric Teacher observation Written Assessments Reflective Paper Group Presentations Teacher administered a general shop safety test on the topic discussed during that unit. Completed project Performance test on equipment or tool.

Technical Skill Assessments: License/Certification/CTE Assessment/ Industry Valued Credential/ Stackable Credential	**Name of Assessment(s):** **Type of Assessment(s):**

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

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Hands-On Materials: Physical manipulatives and models Lab equipment and supplies for experiments Art supplies for creative projects Building materials for engineering challenges	Individualized Options: Independent study options Compacting the curriculum for advanced learners Varied timelines or check-in points Choice of review activities ESL-Specific Resources: Bilingual dictionaries or glossaries Sentence frames and language scaffolds Visual supports for key vocabulary		Advanced Diagnostics & Troubleshooting – Solve complex real-world car issues. Engine Teardown & Rebuild – Fully disassemble and reassemble an engine. Performance Tuning & Fabrication – Work with ECU tuning and custom modifications. Internship/Job Shadowing – Partner with local shops for real-world experience. Competitive Automotive Events – Participate in SkillsUSA or vehicle design competitions. Enrichment & Leadership: Student-Led Research & Presentations – Explore future automotive trends. Technical Writing & Blogging – Create repair guides or tutorial videos. Peer Mentorship & Teaching – Lead small group lessons or assist classmates. Cross-Disciplinary Projects – Collaborate with engineering or robotics students.

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CTSO:	**CTSO Advisor:**	
ACE Mentorship Program		ACE Mentor Program is an after-school program whose mission is to engage, excite and enlighten high school students to pursue careers in Architecture, Construction, and Engineering through mentoring and to support their continued advancement in the industry.

Freshman Level: Approximately 10 hours Career Awareness- brief exposure to a variety of work settings needs.	**Sophomore Level: Approximately 20 hours** Career Exploration- understand the nature of work through first-hand exposure to the workplace.	**Junior Level: Approximately 50 hours** Career Preparation - builds basic workplace competence	**Senior Level: Approximately 75 hours** Work-Related Training - a period of work experience for the purpose of training job skills and job-related skills. work experience Students may or may not be paid.
Career fair Guest Speakers Online Career Navigation, Assessments, Videos Informational Interviews Workplace Tours/Field Trips	Informational interviews Job shadowing Workplace tours/worksite visits Simulated Workplace Experience Mock Interviews	Service-learning Interactive/Hands-on demonstrations with industry prof. (online, in person, simulated) Career Cluster Employer Panel Presentations Structured Assignments after a workplace tour, presentation, shadowing Career Related Competitions School-based enterprises Simulated Workplace Experience Non-Paid Work Experience Service Learning/Volunteering	Internships (Paid or Non-Paid) Service Learning Student-led Enterprises Volunteering Work Experience (Paid or Non-Paid) Pre-Apprenticeships Apprenticeship

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)											
	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*		LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*		Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	X	Standards in Action: *Climate Change*		Erin's Law: *A-769/S-1130*

Marking Period	Unit Title	Recommended Instructional Days
4	Computer Systems and Diagnostics	45

9.1 Personal Financial Literacy
Disciplinary Concept:

Core Ideas and Performance Expectation:

9.2 Career Awareness, Exploration, Preparation, & Training
Disciplinary Concept:
Career Awareness and Planning

Core Ideas and Performance Expectation:

Career Awareness and Planning
There are strategies to improve one's professional value and marketability.
9.2.12.CAP.2: Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
9.2.12.CAP.3: Investigate how welding skills apply to different career pathways.

Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.5: Develop a plan for obtaining welding certifications and technical training.

9.3 CTE
Disciplinary Concept:
Architecture & Construction
Construction
Manufacturing
Manufacturing Production Process Development

Core Ideas and Performance Expectation:

Architecture & Construction

Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit

Essential Question/s:
What is On-Board Diagnostics?
What are the differences between OBD-I and OBD-II?

Activity Description:

- Scan Tool Scavenger Hunt:
  - Students use scan tools to retrieve specific information from various vehicles.
  - Include a discussion on how technology like scan tools can be used responsibly and ethically, touching on themes of consent and privacy.
- OBD-I vs OBD-II Comparison Chart:
  - Students create a visual chart comparing OBD-I and OBD-II systems.
  - Discuss how advancements in technology can be used to protect individuals, relating it to personal safety and the importance of recognizing and reporting abuse.
- System Function Test Simulation:
  - Students perform system tests using scan tools on mock vehicle setups.
  - Incorporate a lesson on recognizing warning signs in both vehicle systems and personal relationships, emphasizing

9.3.12.AC.2: Use architecture and construction skills to create and manage a project.

Construction
9.3.12.AC-CST.5: Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.6: Manage relationships with internal and external parties to successfully complete construction projects.

Manufacturing
9.3.12.MN.3: Comply with federal, state and local regulations to ensure worker safety and health and environmental work practices.

Manufacturing Production Process Development
9.3.12.MN-PPD.2: Research, design and implement alternative manufacturing processes to manage production of new and/or improved products.

9.4 Life Literacy & Key Skills
Disciplinary Concept:
Creativity & Innovation
Critical Thinking & Problem Solving
Informations and Media Literacy
Technology Literacy

Core Ideas and Performance Expectation:

Creativity and Innovation
With a growth mindset, failure is an important part of success.
9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

Innovative ideas or innovation can lead to career opportunities.
9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition.

Critical Thinking and Problem Solving

the importance of speaking up when something doesn't seem right.

- Computer Override Feature Demonstration:
  - Instructor demonstrates how to use computer override features safely.
  - Discuss the concept of boundaries and consent, relating it to how override features should only be used with proper authorization.
- Live Data Interpretation Exercise:
  - Students analyze live data output from vehicles and interpret the results.
  - Include a discussion on how to interpret non-verbal cues and communication in personal interactions, relating it to recognizing signs of discomfort or distress in others.
- OBD Case Studies:
  - Present real-world scenarios where OBD systems helped diagnose issues.
  - Relate this to recognizing and reporting signs of abuse, emphasizing the importance of speaking up and seeking help.
- Scan Tool Feature Presentation:
  - Students research and present on different scan tool features.
  - Incorporate a discussion on how technology can be both helpful and potentially misused, relating it to online safety and privacy.

Interdisciplinary Connections:
NJSLSA.R7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

RST.9-10.7: Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed. 9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a). **Information and Media Literacy** *Digital tools such as artificial intelligence, image enhancement and analysis, and sophisticated computer modeling and simulation create new types of information that may have profound effects on society. These new types of information must be evaluated carefully.* 9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions. 9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience. **Technology Literacy** *Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.* 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	WHST.9-12.1: Write arguments focused on discipline-specific content. HS-ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
Career Ready Practices	
Act as a Responsible and contributing Citizen and Employee Apply Appropriate Academic and Technical Skills Attend to Personal Health and Financial Well-Being Communicate Clearly, Effectively and with Reason Consider the Environmental, Social and Economic Impacts of Decisions Demonstrate creativity and innovation Employ valid and reliable research strategies Utilize critical Thinking to make sense of problems and persevere in solving them Model Integrity, ethical leadership and effective management Plan education and career path aligned to personal goals Use technology to enhance productivity Work productively in teams while using cultural/ global competence	

Social and Emotional Learning: ***Competencies and Sub-Competencies***	
Self-Awareness • Recognize one's feelings and thoughts • Recognize the impact of one's feelings and thoughts on one's own behavior • Recognize one's personal traits, strengths, and limitations • Recognize the importance of self-confidence in handling daily tasks and challenges **Self-Management** • Understand and practice strategies for managing one's own emotions, thoughts, and behaviors • Recognize the skills needed to establish and achieve personal and educational goals • Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals **Social Awareness** • Recognize and identify the thoughts, feelings, and perspectives of others • Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds • Demonstrate an understanding of the need for mutual respect when viewpoints differ • Demonstrate an awareness of the expectations for social interactions in a variety of settings **Responsible Decision-Making** • Develop, implement, and model effective problem-solving and critical thinking skills • Identify the consequences associated with one's actions in order to make constructive choices • Evaluate personal, ethical, safety, and civic impact of decisions **Relationship Skills** • Establish and maintain healthy relationships	

• Utilize positive communication and social skills to interact effectively with others	

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
Formative Assessments: Teacher Observation Do Now Homework Class Participation Portfolio Discussions Quiz Journal writing Group Assessment Group Interaction/Discussion/Computer Research Self and Peer Evaluations Reverse Engineering Documentation Examine handouts in notebook for completeness and accuracy of information Project critique and evaluation at completion Observe proper care and use of tools, equipment, and materials	**Benchmarks:** Quiz Exam **Summative Assessments:** Pre-Test Oral Presentations Projects Rubric Teacher observation Written Assessments Reflective Paper Group Presentations Teacher administered a general shop safety test on the topic discussed during that unit. Completed project Performance test on equipment or tool.
Technical Skill Assessments: ***License/Certification/CTE Assessment/ Industry Valued Credential / Stackable Credential***	**Name of Assessment(s):** **Type of Assessment(s):**

Differentiated Student Access to Content: **Teaching and Learning *Resources/Materials***			
Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**

Tiered Content Materials: Textbooks at different reading levels (below, at, and above grade level) Simplified versions of texts with key concepts highlighted Advanced supplementary readings for accelerated learners Audio versions of texts for auditory learners or struggling readers Multimedia Resources: Educational videos and documentaries Interactive online modules and simulations Podcasts and audio recordings Infographics and visual aids Hands-On Materials: Physical manipulatives and models Lab equipment and supplies for experiments Art supplies for creative projects Building materials for engineering challenges	Tiered Content Materials: Simplified versions of texts with key concepts highlighted Audio versions of texts for auditory learners or struggling readers Leveled or topical readers at different reading levels Books on tape Highlighted text Collaborative Learning Tools: Opportunity to work alone, in pairs, or small groups Structured group roles for small group work Peer tutoring and mentoring programs Individualized Options: Independent study options Compacting the curriculum for advanced learners Varied timelines or check-in points Choice of review activities ESL-Specific Resources: Bilingual dictionaries or glossaries	Keep material concept-focused and principle-driven. Allow the use of digital translation or grouping students together. Provide multiple means of action and expression.	Advanced Learning Resources: ASE Certification Prep – Encourage study for industry-recognized certifications. OEM Service Manuals – Provide access to detailed manufacturer repair guides. Automotive Engineering Textbooks – Explore advanced concepts like hybrid systems and aerodynamics. Online Training & Webinars – Use resources from ASE, Snap-On, and major manufacturers. 3D Modeling & Diagnostic Simulations – Utilize software for digital learning. Hands-On Activities: Advanced Diagnostics & Troubleshooting – Solve complex real-world car issues. Engine Teardown & Rebuild – Fully disassemble and reassemble an engine. Performance Tuning & Fabrication – Work with ECU tuning and custom modifications.

	Sentence frames and language scaffolds Visual supports for key vocabulary		Internship/Job Shadowing – Partner with local shops for real-world experience. Competitive Automotive Events – Participate in SkillsUSA or vehicle design competitions. Enrichment & Leadership: Student-Led Research & Presentations – Explore future automotive trends.

Supplemental Resources

Technology:

- Laptop
- Chromebook
- SmartBoard
- Internet Access
- Projector

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
Content Differentiation: Tiered content at different complexity levels Variety of textbooks at different reading levels	Content Differentiation: Simplified versions of texts with key concepts highlighted Audio versions of texts for auditory learners or struggling readers	Content Differentiation: Simplified versions of texts with key concepts highlighted Audio versions of texts for auditory learners	Content Differentiation: Advanced, above-grade level textbooks and materials Supplementary resources on complex or specialized topics

Supplemental materials like videos, podcasts, and interactive modules Compacting curriculum for advanced learners Choice boards allowing students to select learning activities Varied resources/texts on the same topic Process Differentiation: Flexible grouping (whole group, small group, individual) Learning contracts tailored to student needs Interest centers focused on different aspects of a topic Varied instructional strategies (visual, auditory, kinesthetic) Scaffolded support like graphic organizers and writing frames Technology-enabled instruction (synchronous or asynchronous options) Product Differentiation: Multiple options for demonstrating learning (reports, presentations, models, etc.) Varied assessment methods based on student learning preferences Adjusting product expectations based on student readiness	Leveled readers at different reading levels Bilingual materials for ESL students Visual aids, infographics, and multimedia resources Process Differentiation: Flexible grouping based on readiness levels Scaffolded support like graphic organizers and writing frames Extended time for task completion One-on-one or small group instruction Use of assistive technology (text-to-speech, speech-to-text tools) Product Differentiation: Multiple options for demonstrating learning (oral presentations, projects, etc.) Adjusted expectations based on IEP/504 goals Alternative assessments aligned with student abilities Use of portfolios to showcase progress over time	Leveled readers at different reading levels Bilingual materials and resources1 Visual aids, infographics, and multimedia resources Modified texts with rewording, reduced extraneous information, and added visuals Process Differentiation: Flexible grouping based on language proficiency levels Scaffolded support like graphic organizers and writing frames Extended time for task completion One-on-one or small group instruction Use of gestures and total physical response to support verbal instruction Incorporation of students' native language or culture when possible Product Differentiation: Multiple options for demonstrating learning (oral presentations, projects, etc.) Adjusted expectations based on English proficiency levels Alternative assessments aligned with student abilities	Interdisciplinary curriculum connecting multiple subject areas Primary source documents and advanced readings Access to college-level coursework or materials Process Differentiation: Accelerated pacing of instruction Independent study options on topics of interest Problem-based and project-based learning opportunities Socratic seminars and philosophical discussions Mentorship programs with experts in fields of interest Product Differentiation: Open-ended, creative project options Real-world application of learning through authentic tasks Opportunities for original research and experimentation Multimedia presentations and publications Portfolio development to showcase depth of learning

Learning Environment Differentiation: Flexible seating arrangements Options for individual, paired, or group work Varied time allocations for task completion Use of technology to support different learning needs	Learning Environment Differentiation: Flexible seating arrangements Quiet spaces for individual work Sensory tools or fidgets as needed Visual schedules and routines Specialized Supports Implementation of IEP accommodations and modifications ESL supports like sentence frames and vocabulary guides Interventions for at-risk students (e.g. reading interventions) Social-emotional learning supports Ongoing Assessment Frequent formative assessments to monitor progress Data-driven adjustments to instruction Progress monitoring aligned with IEP goals	Use of portfolios to showcase progress over time Learning Environment Differentiation: Flexible seating arrangements Use of learning centers or stations focused on different aspects of a topic Visual schedules and routines Incorporation of culturally relevant materials and examples Specialized Supports: ESL supports like sentence frames and vocabulary guides Use of students' native language for clarification when needed Frequent opportunities for speaking and listening practice Integration of all four language skills (listening, speaking, reading, writing) Instructional Strategies: Slowing down speech and using clear enunciation Rephrasing and clarifying instructions Using visuals to support verbal instruction Providing content in multiple formats (visual, auditory, kinesthetic)	Learning Environment Differentiation: Flexible grouping with intellectual peers Access to advanced technology and lab equipment Field trips and off-campus learning experiences Online courses and virtual learning options Competitions and academic challenges Specialized Supports: Critical and creative thinking skill development Training in research methods and academic writing Guidance on social-emotional needs of gifted learners College and career planning tailored to advanced learners Opportunities to explore passions and develop talents Instructional Strategies: Inquiry-based and discovery learning approaches

		Connecting content to students' interests and cultural backgrounds Utilizing music, melodies, or songs to enhance learning Ongoing Assessment: Frequent formative assessments to monitor progress Data-driven adjustments to instruction Accommodated assessments (e.g., simplified language, added visuals)	Higher-order questioning techniques Abstract and complex problem-solving tasks Emphasis on depth and complexity of content Integration of multiple disciplines and perspectives Assessment Options: Pre-assessments to determine readiness levels Performance-based and authentic assessments Self-assessment and reflection opportunities Above-grade level standardized testing Credit by examination options

Work-Based Learning Experiences (WBL)- *Previously called Structured Learning Experience (SLE)

Each course within a CTE program is now required to include at least one WBL each year.

Work-Based Learning: Sustained, meaningful interactions with industry or community professionals that foster in-depth, firsthand engagement with the tasks required in a given career field. Experiences may be delivered in workplaces, in the community, at educational institutions, and/or virtually. WBL is aligned with national, state, and/or local standards. WBL develops and reinforces relevant technical, academic, and employability knowledge and skills.

WBL Integration/Activity:	Duration:	Brief description of activities:
Career Fair	1-3 day Event	• Annual School wide Career Fairs with various presentation in the Architecture and Constructions fields
Guest Speakers	1-2 hour a couple times throughout the year	• Guest Speakers
Career Related Competitions	Throughout the Marking Period	• Service Learning & Career Related Competitions such as SkillsUSA
Internships (Paid or non-paid)	Summer Internships	• Internship Opportunities
Informational Interviews /Guest Speakers	1-3 day Event	• Annual STEAM Day
Pre- Apprenticeship	Summer long	• Apprenticeship programs
Career Related Competitions	1-3 day Event	• SkillsUSA Competitions
Interactive/Hands-on Demonstrations with industry Professionals (online, in-person)	30-1hr per student throughout the year or one day	• (Online or in-person) Portfolio Critiques, Project Critiques with Industry professionals
Simulated Workbased Experience	Afterschool year long	• Simulated Workbased Experience
WBL Partners:		
Career and Technical Student Organization- *Every CTE program must incorporate a Career and Technical Student Organization (CTSO).		

Content Area: Career Readiness, Life Literacies, and Key Skills (NJSLS-CLKS 9.2, 9.3, 9.4) Grades K - 12
Grade: 10

Dev. Date:

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