Automotive I

Unit Title: **General Shop, Tool, and Machine Safety**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
Students will understand that… ● The machines must be used properly or injury may occur. ● A clean workspace can prevent many injuries from occurring in the first place.	● What are the hazardous tools and chemicals that can be found in the shop? ● What proactive measures do we use to prevent injury from these hazards? ● How do you use the tools which help suppress “out of control” hazards?
Content: ● Chemical handling. ● Tool safety. ● Common hand tools. ● Purpose of common hand tools. ● Organization of hand tools. ● Machine safety. ● Fire suppression. ● Locations of all fire extinguishers, fire blankets, eye wash station, and emergency power shut off buttons. • Power tool safety general rules. ● Air tool safety general rules. ● Wire wheel, metal grinder, drill press, brake lathes and air tools.	**Skills(Objectives):** Students will be able to… ● Handle shop chemicals safely. ● Safely handle all tools. ● Safely operate all machines. ● Know the locations of all fire extinguishers, fire blankets, eye wash station, and emergency power shut off buttons. ● Demonstrate use of wire wheel, metal grinder, drill press, brake lathes and air tools. ● Demonstrate air tool safety procedures. ● Identify common hand tools. ● Know the purpose of the most common hand tools. ● Understand the necessity of keeping tools clean and organized.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.

Automotive I

REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Stage 2: Assessment Evidence

Performance Task(s):
- Chapter/Unit Test
- Presentations/Projects
- Practical Demonstration

Other Evidence:
- Do Now
- Concept Map
- Notebook

Stage 3: Learning Plan

Learning Opportunities/Strategies:
- Observation
- Homework
- Class participation
- Writing Assignments
- Hands on Demonstrations

Resources:
- Shop Safety Equipment
- Fire Extinguisher Information Sheet
- Fire Evacuation Review
- Shop Tools

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Lubricating System**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
Students will understand that… ● There is a difference between petroleum vs synthetic motor oil ● The lubrication system is a viable way to determine the condition of an engine ● It is necessary to service the lubrication system of a car periodically.	● How does one evaluate the effectiveness of petroleum vs synthetic motor oil? ● How can one determine the condition of an engine? ● Why is it necessary to service the lubrication system?
Content: ● Parts of a lubrication system. ● The function of the lubrication system. ● The maintenance of the lubrication system. ● Problem diagnostics of the lubrication system. ● Common engines with lubrication problems. ● Synthetic vs petroleum motor oil analysis.	**Skills(Objectives):** Students will be able to… ● Complete an oil change. ● Complete lubrication system diagnostics procedures. ● Be able to weigh the pros and cons of petroleum and synthetic oils.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Automotive I

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
• Chapter/Unit Test • Presentations/Projects • Practical Demonstration	• Do Now • Concept Map • Notebook

Stage 3: Learning Plan

Learning Opportunities/Strategies:	**Resources:**
• Observation • Homework • Class participation • Writing Assignments • Hands on Demonstrations	• Lubrication system transparencies • Lubrication system video • Text chapter readings and questions • Maintenance and diagnostics equipment for demonstrations

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Cooling System**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
Students will understand that… ● Knowledge of cooling systems is important to automobile maintenance.	● Why is knowing the correct procedures for cooling maintenance important?
Content: ● Cooling system ○ Parts identification ○ Inspection and maintenance ○ Diagnostics ○ Repair	**Skills(Objectives):** Students will be able to… ● Complete cooling system inspection and service ● Complete cooling system malfunction diagnostics procedures. ● Repair cooling system components.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
● Chapter/Unit Test ● Presentations/Projects ● Practical Demonstration	● Do Now ● Concept Map ● Notebook

Automotive I

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Observation
- Homework
- Class participation
- Writing Assignments
- Hands on Demonstrations

Resources:

- Cooling system transparencies
- Cooling system video
- Text chapter readings and questions
- Maintenance and diagnostics equipment for demonstrations

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Basic Engine Tune-Up**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.

Central Idea/Enduring Understanding:

Students will understand that…

- Preventative maintenance is critical in maintaining vehicle performance and economy.

Essential/Guiding Question:

- How is preventative maintenance important to the performance and economy of running a vehicle?

Automotive I

Content:	**Skills(Objectives):**
• Spark plug, spark plug wire replacement. • PCV system operation, value inspection procedures. • Air filter replacement. • Throttle body inspection and cleaning	Students will be able to… • Gap and replace spark plugs. • Inspect and replace PCV valve. • Inspect and replace air filter. • Inspect and clean a throttle body.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
• Chapter/Unit Test • Presentations/Projects • Practical Demonstration	• Do Now • Concept Map • Notebook

Stage 3: Learning Plan

Learning Opportunities/Strategies:	**Resources:**
• Observation • Homework • Class participation	• Rotary lifts • Shop vehicles • Shop hand tools

Automotive I

• Writing Assignments • Hands on Demonstrations	• AllData vehicle database • AllData worksheet • Automotive Technology textbook Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition • Shop engines • Spark plug sockets • Spark plug boot pliers • www.fueleconomy.gov • Overhead LCD projector

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Exhaust System**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.

Central Idea/Enduring Understanding:

Students will understand that…

- Exhaust systems are prone to rust and wear.
- Exhaust system repairs are relatively simple and can often be done at home with few tools.

Essential/Guiding Question:

- Why is exhaust system maintenance importance to the safety and performance of a vehicle?

Automotive I

Content:	**Skills(Objectives):**
• Parts and function of an exhaust system. • Exhaust system problem diagnostics. • Exhaust system repair.	Students will be able to… • Identify parts of an exhaust system. • Complete the inspection and diagnostics of an exhaust system. • Repair exhaust system components

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
• Chapter/Unit Test • Presentations/Projects • Practical Demonstration	• Do Now • Concept Map • Notebook

Stage 3: Learning Plan

Learning Opportunities/Strategies:	**Resources:**
• Observation	• Shop vehicles

Automotive I

• Homework • Class participation • Writing Assignments • Hands on Demonstrations	• Shop hand tools • Shop air tools • AllData vehicle database • Automotive Technology textbook, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition • www.howstuffworks.com • Overhead LCD projector • Rotary lifts

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Tire and Wheel Fundamentals**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
Students will understand that… ● The leading cause of blow outs is improper tire care. ● Drivers should understand how to purchase and maintain tires properly.	● What is essential tire maintenance? ● What should one look for when purchasing tires?
Content: ● Wheel geometry. ● Tire construction. ● Tire markings. ● Tire wear. ● Tire rotation. ● Wheel rotation. ● Wheel bearings. ● Tire mounting and balancing. ● Puncture repair. .	**Skills(Objectives):** Students will be able to… ● Identify tire wear. ● Measure and maintain proper tire pressure. ● Repair tire punctures. ● Mount and balance tires. ● Pack wheel bearings. ● Identify tire markings. ● Rotate tires.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Automotive I

Stage 2: Assessment Evidence

Performance Task(s):
- Chapter/Unit Test
- Presentations/Projects
- Practical Demonstration

Other Evidence:
- Do Now
- Concept Map
- Notebook

Stage 3: Learning Plan

Learning Opportunities/Strategies:
- Observation
- Homework
- Class participation
- Writing Assignments
- Hands on Demonstrations

Resources:
- Rotary lifts
- Shop vehicles
- Shop hand tools
- Tire mounting machine
- Tire balancing machine
- Tire patch and plug tools
- Automotive Technology textbooks, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Suspension System**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
Students will understand that… ● Suspension inspection and maintenance can play a critical role in the prevention of automotive breakdowns and accident.	● How can the suspension system of an automobile be correctly maintained?
Content: ● Suspension system parts and function. ● Suspension system inspection and maintenance. ● Suspension system repair. .	**Skills(Objectives):** Students will be able to… ● Identify suspension system parts. ● Complete suspension system maintenance. ● Complete suspension system inspection and diagnostics procedures. ● Repair suspension system components

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
● Chapter/Unit Test ● Presentations/Projects ● Practical Demonstration	● Do Now ● Concept Map ● Notebook

Automotive I

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Observation
- Homework
- Class participation
- Writing Assignments
- Hands on Demonstrations

Resources:

- AllData repair manual database
- Automotive Technology text Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition
- Shop vehicles
- Shop hand tools
- Shop air tools
- Grease guns

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Brake System**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
Students will understand that… ● A reliable brake system is important to the safety of an automobile.	● How is a brake system properly maintained?
Content: ● Brake system parts and function. ● Inspection and maintenance of a brake system. ● Brake problem diagnostics. ● Brake system repair.	**Skills(Objectives):** Students will be able to… ● Complete brake system maintenance. ● Complete brake system inspection and diagnostics procedures. ● Repair brake system components.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
● Chapter/Unit Test ● Presentations/Projects ● Practical Demonstration	● Do Now ● Concept Map ● Notebook

Automotive I

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Observation
- Homework
- Class participation
- Writing Assignments
- Hands on Demonstrations

Resources:

- AllData automotive repair database
- Automotive Technology text, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition
- Shop vehicles
- Shop hand tools
- Shop air tools
- Brake specialty hand tools
- Disc and drum brake lathes
- Brake size reference manual

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Battery Maintenance and Electronics**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
Students will understand that… ● A basic understanding of the automotive electrical system is necessary. ● Students entering the automotive field should be able to use a DVOM to diagnose electrical problems.	● How can electrical problems be successfully diagnosed?
Content: ● Basic electrical theory. ● Basic DVOM use. ● Battery testing. ● Battery charging. ● Battery jump starting. ● Battery maintenance. ● Battery disposal. ● Fuses/testing and purpose.	**Skills(Objectives):** Students will be able to… ● Define volts, amps, and ohms. ● Measure voltage with a DVOM. ● Test a car battery. ● Safely charge a car battery. ● Safely jump start a dead car battery. ● Properly handle and dispose car batteries. ● Test and replace fuses.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Automotive I

Stage 2: Assessment Evidence

Performance Task(s):
- Chapter/Unit Test
- Presentations/Projects
- Practical Demonstration

Other Evidence:
- Do Now
- Concept Map
- Notebook

Stage 3: Learning Plan

Learning Opportunities/Strategies:
- Observation
- Homework
- Class participation
- Writing Assignments
- Hands on Demonstrations

Resources:
- Snap-on battery tester
- Battery charger
- DVOM
- Battery cleaning equipment
- Shop vehicles
- Shop hand tools
- Automotive Technology text, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Transmission Service**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
Students will understand that… ● Transmission rebuilding is generally a specialized profession and is not attempted by general service technicians.	● How is a transmission effectively serviced?
Content: ● Transmission parts identification. ● Transmission maintenance procedures. ● Transmission inspection. ● Transmission diagnostics.	**Skills(Objectives):** Students will be able to… ● Complete a transmission flush and filter change. ● Complete a transmission inspection. ● Identify external transmission parts on 2 and 4 wheel drive transmissions.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
● Chapter/Unit Test ● Presentations/Projects ● Practical Demonstration	● Do Now ● Concept Map ● Notebook

Automotive I

Stage 3: Learning Plan

Learning Opportunities/Strategies:

- Observation
- Homework
- Class participation
- Writing Assignments
- Hands on Demonstrations

Resources:

- Transmission transparencies
- Part identification (2 and 4 wheel drive vehicles on lifts)
- Shop vehicles
- Shop hand tools
- AllData vehicle database
- Automotive Technology textGoodheart-Wilcox Publisher, Auto Fundamentals 13th Edition,
- www.howstuffworks.com
- overhead LCD projector
- Rotary lifts

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **Engine Fundamentals**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
Students will understand that… ● Fuel efficiency and power are in demand today. ● Engine problem diagnostics are relevant to all automotive students.	● How is today's demand for fuel efficiency impacting the engines of cars? ● How are engine problems properly diagnosed?
Content: ● Engine classification. ● Engine operation. ● Engine parts identification. ● Engine parts function.	**Skills(Objectives):** Students will be able to… ● Handle shop chemicals safely. ● Safely handle all tools. ● Safely operate all machines. ● Know the locations of all fire extinguishers, fire blankets, eye wash station, and emergency power shut off buttons. ● Demonstrate use of wire wheel, metal grinder, drill press, brake lathes and air tools. ● Demonstrate air tool safety procedures. ● Identify common hand tools. ● Know the purpose of the most common hand tools. ● Understand the necessity of keeping tools clean and organized.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.

Automotive I

REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Stage 2: Assessment Evidence

Performance Task(s):
- Chapter/Unit Test
- Presentations/Projects
- Practical Demonstration

Other Evidence:
- Do Now
- Concept Map
- Notebook

Stage 3: Learning Plan

Learning Opportunities/Strategies:
- Observation
- Homework
- Class participation
- Writing Assignments
- Hands on Demonstrations

Resources:
- Shop vehicles
- Shop engines
- Shop hand tools
- AllData vehicle database
- Automotive Technology textbook Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition,
- Rotary lifts

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Unit Title: **On-Board Computer Diagnostics**

Stage 1: Desired Results

Standards & Indicators:

9.3.12.TD-MTN.1 Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

9.3.12.TD-HSE.1 Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1:	Demonstrate the ability to reflect, analyze, and use creative skills and ideas.	With a growth mindset, failure is an important part of success.
9.4.12.CI.3:	Investigate new challenges and opportunities for personal growth, advancement, and transition.	Innovative ideas or innovation can lead to career opportunities.
9.4.12.IML.3:	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions.	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.4:	Assess and critique the appropriateness and impact of existing data visualizations for an intended audience	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.TL.4:	Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth	There are strategies to improve one's professional value and marketability.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Automotive I

9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Central Idea/Enduring Understanding:

Students will understand that…

- All drivers, in addition to mechanics, should understand the function of the automobile computer system.
- The understanding of the system, as well as the ability to interact with the system, can save you a great deal of time and money when completing vehicle diagnostics.

Essential/Guiding Question:

- How can a driver understand the function of the automobile computer system?

Content:

- On board computer system.
- Diagnostic trouble codes.
- Scan tool operations.

Skills(Objectives):

Students will be able to…

- Understand the purpose of an on board computer.
- Understand how to determine the existence of a trouble code through the use of a scan tool.
- Understand how to obtain additional information about trouble codes in order to solve code inspired problems.

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.
8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.
RL.11-12.1 Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RL.9-10.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently
CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.

Automotive I

REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Stage 2: Assessment Evidence

Performance Task(s):
- Chapter/Unit Test
- Presentations/Projects
- Practical Demonstration

Other Evidence:
- Do Now
- Concept Map
- Notebook

Stage 3: Learning Plan

Learning Opportunities/Strategies:
- Observation
- Homework
- Class participation
- Writing Assignments
- Hands on Demonstrations

Resources:
- Diagnostic scan tools
- Shop vehicles
- Shop hand tools
- AllData vehicle database
- Automotive Technology textbook, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Extra credit assignments for faster paced students	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Pair students with a partner if needed	Teacher tutoring Peer tutoring Cooperative learning groups Differentiated instruction Response to Intervention (RTI) www.help4teachers.com (search tiered lesson plan template) Pair students with a partner if needed Pacing deadlines for slower paced students	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

Automotive I

Pacing Guide

Course Name	Resource	Standards
MP 1		
UNIT 1 General Shop, Tool, and Machine Safety 25 Days	• Shop Safety Equipment • Fire Extinguisher Information Sheet • Fire Evacuation Review • Shop Tools	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 1		
UNIT 2 Lubricating System 5 Days	• Lubrication system transparencies • Lubrication system video • Text chapter readings and questions, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition • Maintenance and diagnostics equipment for demonstrations	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 1		
UNIT 3 Cooling System 5 Days	• Cooling system transparencies • Cooling system video • Text chapter readings and questions, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

Automotive I

	• Maintenance and diagnostics equipment for demonstrations	**9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 1		
UNIT 4 Basic Engine Tune-Up 5 Days	• Rotary lifts • Shop vehicles • Shop hand tools • AllData vehicle database • AllData worksheet • Automotive Technology textbook, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition • Shop engines • Spark plug sockets • Spark plug boot pliers • www.fueleconomy.gov • Overhead LCD projector	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 1		
UNIT 5 Exhaust System 5 Days	• Shop vehicles • Shop hand tools • Shop air tools • AllData vehicle database • Automotive Technology textbook, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition • www.howstuffworks.com • Overhead LCD projector • Rotary lifts	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 2		
UNIT 6 Tire and Wheel Fundamentals 5 Days	• Rotary lifts • Shop vehicles • Shop hand tools • Tire mounting machine • Tire balancing machine • Tire patch and plug tools	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental

Automotive I

	• Automotive Technology textbooks, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition	rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 2		
UNIT 7 Suspension System 7 Days	• AllData repair manual database • Automotive Technology text Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition • Shop vehicles • Shop hand tools • Shop air tools • Grease guns	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 2		
UNIT 8 Brake System 8 Days	• AllData automotive repair database • Automotive Technology textGoodheart-Wilcox Publisher, Auto Fundamentals 13th Edition • Shop vehicles • Shop hand tools • Shop air tools • Brake specialty hand tools • Disc and drum brake lathes • Brake size reference manual	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 2		
UNIT 9 Battery Maintenance and Electronics 5 Days	• Snap-on battery tester • Battery charger • DVOM • Battery cleaning equipment • Shop vehicles	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation.

Automotive I

	• Shop hand tools • Automotive Technology text, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition	**9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 2		
UNIT 10 Transmission Service 5 Days	• Transmission transparencies • Part identification (2 and 4 wheel drive vehicles on lifts) • Shop vehicles • Shop hand tools • AllData vehicle database • Automotive Technology text, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition • www.howstuffworks.com • overhead LCD projector • Rotary lifts	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 2		
UNIT 11 Engine Fundamentals 8 Days	• Shop vehicles • Shop engines • Shop hand tools • AllData vehicle database • Automotive Technology textbook, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition • Rotary lifts	**9.3.12.TD-MTN.1** Develop preventative maintenance plans and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.
MP 2		
UNIT 12 On-Board Computer Diagnostics	• Diagnostic scan tools • Shop vehicles • Shop hand tools	**9.3.12.TD-MTN.1** Develop preventative maintenance plans

Automotive I

7 Days	● AllData vehicle database ● Automotive Technology textbook, Goodheart-Wilcox Publisher, Auto Fundamentals 13th Edition	and systems to keep facility and equipment inventory in operation. **9.3.12.TD-HSE.1** Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces. **9.3.12.TD-HSE.2** Develop solutions to improve performance of health, safety and environmental management services.