Course Title – Car Care

Implement start year – 2017-2018

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Unit #3 - Auto Systems

Transfer Goal –

Students will be able to independently integrate and apply essential technical and problem solving skills when servicing a vehicle.

Stage 1 – Desired Results

Established Goals	**21st Century Themes (www.21stcenturyskills.org)**
2009 NJCCC Standard(s), Strand(s)/CPI # (http://www.nj.gov/education/cccs/2009/final.htm) **Common Core Curriculum Standards for Math and English** (http://www.corestandards.org/)	___ Global Awareness ___Financial, Economic, Business and Entrepreneurial Literacy ___Civic Literacy ___Health Literacy ___Environmental Literacy

8.2 Technology Education, Engineering, and Design All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment. G. The Designed World: The designed world is the product of a design process that provides the means to convert resources into products and systems. • 8.2.12.G.1 Analyze the interactions among various technologies and collaborate to create a product or system demonstrating their interactivity. CCSS.ELA-LITERACY.RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. CCSS.ELA-LITERACY.WHST.9-10.2.F Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). 9.1 21st-Century Life & Career Skills All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. 9.1.12.A.1 Apply critical thinking and problem-solving strategies during structured learning experiences.	**21st Century Skills** Learning and Innovation Skills: _x__Creativity and Innovation _x__Critical Thinking and Problem Solving _x__Communication and Collaboration Information, Media and Technology Skills: _x__Information Literacy _x__Media Literacy _x__ICT (Information, Communications and Technology) Literacy Life and Career Skills: _x__Flexibility and Adaptability _x__Initiative and Self-Direction _x__Social and Cross-Cultural Skills _x__Productivity and Accountability _x__Leadership and Responsibility

Enduring Understandings: *Students will understand that . . .*	**Essential Questions:**
EU 1 fluids provide cooling, cleaning, and lubricating to vehicle components.	*EU 1* • How can you use the color of a fluid to your advantage? • Why are different types of oils available? • Why is it important for the engine to run at an optimum temperature?
EU 2 a vehicle engine is a complex system requiring fuel, air, and ignition.	EU 2 • Why is it important to verify amperage ratings before installing fuses? • Why do gas/fuel stations have more than one type of fuel? • Why is it important to set the correct gap on a spark plug?
EU 3 the steering, suspension, brakes, and drivetrain are the systems that control the vehicle.	*EU 3* • Why would the steering wheel of a vehicle pull to one side? • What would it feel like to ride in a vehicle that did not have a suspension system? • How does a 100 pound driver stop a 3000 pound vehicle? • Why is friction important? • What is the purpose of the drivetrain?
EU 4 exhaust and emission systems are complex mechanisms that provide safety, efficiency, and protect our environment.	*EU 4* • Why is it critical to move exhaust gases away from the passenger cabin? • Why don't older cars have catalytic converters? • Why are all cars not required to have emissions testing?

Knowledge: *Students will know . . .*	**Skills:** *Students will be able to . . .*
EU 1 • how to identify different types of fluids used in an automobile. • the purpose of engine oil. • oil service and viscosity ratings. • the importance of oil filters. • the purpose of the cooling system. • cooling system components. • how coolant flows in an engine.	*EU 1* • perform basic fluid level checks. • analyze fluid conditions. • perform an oil change including filter. • explain how to service a coolant system.
EU 2 • electricity in terms of voltage, current and resistance. • how to identify and describe the components in the starting and charging system. • the importance of fuses in the electrical system. • the purpose and components of the fuel system. • the purpose and components of the ignition system.	*EU 2* • test the starter and alternator. • clean and test a battery safely. • safely perform a jump start of a vehicle. • remove and replace air and fuel filters. • safely perform basic service procedures on the ignition system.
EU 3 • define the purpose and identify the functions of the suspension and steering system. • discuss the importance of tires and explain their ratings. • define the purpose and principles of the braking system. • identify the different types of brakes and their components. • discuss the advantages of anti-lock brakes. • Define the purpose of the drivetrain. • Identify drivetrain components.	*EU 3* • inspect steering and suspension components. • inspect and rotate tires. • safely perform basic inspections on the braking system. • inspect drivetrain systems.
EU 4 • define the purpose of the exhaust and emission system. • Identify and explain the components in the exhaust and emission system.	*EU 4* • inspect exhaust and emission system components.

Stage 2 – Assessment Evidence

Other Recommended Evidence:

- Quiz/Test
- Discussions
- Worksheets
- Workbook
- Web searches

Stage 3 – Learning Plan

Suggested Learning Activities to Include Differentiated Instruction and Interdisciplinary Connections: *Each learning activity listed must be accompanied by a learning goal of A= Acquiring basic knowledge and skills, M= Making meaning and/or a T= Transfer.*

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- Teacher led discussions on fluids in a vehicle (A)
- Teacher led discussions on electrical, fuel, and ignition systems. (A)
- Teacher led discussions on suspension, steering, and tires (A)
- Teacher led discussions on brakes. (A)
- Teacher led discussions on the drivetrain. (A)
- Teacher led discussion on the exhaust and emission system. (A)
- Teacher/Student demonstration on oil changes (A,M,T)
- Teacher/ Student demonstration on changing a tire (A,M,T)
- Teacher/ Student demonstration on servicing a cooling system (A,M,T)
- Teacher/ Student demonstration on testing a starter, alternator, and battery (A,M,T)
- Teacher/ Student demonstration on jumpstarting a vehicle (A,M,T)
- Teacher/ Student demonstration on replacing air and fuel filters (A,M,T)
- Teacher/ Student demonstration on inspecting and rotating tires (A,M,T)
- Teacher/ Student demonstration on inspecting the brake system (A,M,T)
- Teacher/ Student demonstration on inspecting the drivetrain system. (A,M,T)
- Teacher/ Student demonstration on inspecting the exhaust system (A,M,T)
- Workbook on vehicle systems unit such as chapters 8-17 in Auto Upkeep Basic car Care, Maintenance, and Repair book. (A)