Unit 6: Heating/Cooling

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 3**
Length: **2-3 weeks**
Status: **Published**

Summary

In this unit, students will learn how the automotive heating/cooling system operates. They will learn the names of the major components, their operation, simple diagnosis, and repair. Students will engage in hands-on activities based on the removal and disassembly of major and minor components of the heating/cooling system. They will be performing work on school vehicles, on displays, and their own vehicles when available. Students will learn how to use the diagnostic tools involved, and to determine corrective action. Emphasis will be placed on safety and proper use of shop equipment.

July 2024

Essential Questions/Enduring Understandings

Essential Questions:

- Why is it important to understand the heating/cooling system before attempting to do any repairs to it?
- What precautions need to be taken when testing or working on the heating and cooling system and why?

Enduring Understandings:

- proper care and maintenance of the heating/cooling system is crucial to automobile maintenance.
- failure of major components is possible and should not be ignored.
- maintaining normal operating temperature is essential for an automobile to run properly and efficiently.
- knowing how the system and its components operate will benefit them by saving them time when diagnosing a problem.

Objectives

Students Will Know:

- the safety procedures specific to the heating and cooling system.
- the specialized vocabulary of the heating and cooling system.
- how an automotive heating/cooling system functions and basic diagnostic procedures.
- the functions of radiators, thermostats, heater cores, hoses, and water pumps.

Students Will Be Skilled At:

- how to test the system in order to make a proper diagnosis.
- how to repair minor system problems.
- how to remove and replace major and minor system components, after proper diagnosis.

Learning Plan

- Preview the essential questions and connect them to learning throughout the unit.
- Teacher presentation and student research into the heating/cooling system.
- Modern Automotive Technology workbook and textbook assignments.
- Hands-on job sheet on system components and their operation.
- Writing prompt on the heating/cooling system
- Written test on the heating/cooling system.
- Closing discussion.

Assessments

- **Formative**
- answer the essential questions.
- participate in research and discussions regarding the heating/cooling system.
- perform hands on tasks pertaining to system maintenance. Including but not limited to: component testing, diagnostics, removal and replacement.
- demonstrate safe work habits.
- demonstrate the proper use of tools.
- exit ticket
- Job Sheets
- **Summative**
- complete a writing prompt on the heating/cooling system.
- complete a written test on the heating/cooling system.
- Job Sheets
- **Alternative**
- Research/Presentation on heating and cooling systems
- **Benchmark**
- Mid Term/Final

Materials

- Modern Automotive Technology; Text and Workbooks
- Job Sheets
- Shop Vehicles
- Heating and Cooling Systems
- Automotive Repair Tools
- Automotive Data Base System

Standards

ELA.L.SS.9–10.1	Demonstrate command of the system and structure of the English language when writing or speaking.
ELA.L.KL.9–10.2	Apply knowledge of language to make effective choices for meaning, or style, and to comprehend more fully when reading, writing, speaking or listening.
CS.9-12.CS	Computing Systems
CS.9-12.DA	Data & Analysis
WRK.K-12.P.1	Act as a responsible and contributing community members and employee.
WRK.K-12.P.2	Attend to financial well-being.
WRK.K-12.P.3	Consider the environmental, social and economic impacts of decisions.
WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.6	Model integrity, ethical leadership and effective management.
TECH.9.4.8.CI.1	Assess data gathered on varying perspectives on causes of climate change (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).
TECH.9.4.8.TL	Technology Literacy
	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.

Integrated Accommodations and Modifications

https://docs.google.com/spreadsheets/d/1lEj-WZghahz_kVoSbGd5jrLwq1j70EoM4UU5jXISQZs/edit?usp=sharing