

Unit 6 Electrical 2019

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

Summary

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Students will learn the basics of the automotive electrical system. Emphasis will be placed on basic electricity and the care, maintenance, and repair of the automotive battery. Students will be introduced to the use of a Digital MultiMeter and battery testing equipment.

Introduction:

The goal of this unit is to teach the students the importance of the Automotive Electrical System and how the science of electrochemical reactions produce electricity for use in an automobile. The content introduced will be in accordance with STEAM learning and incorporate the SM elements in the acronym. The Science will be in learning about the chemical reaction that occurs when a positively charged plate and a negatively charged are submerged in an acid, and how that electricity is sent throughout the electrical system. The Math involved will be the computation of how to determine the force, heat, or resistance in an electrical circuit using Ohms' Law.

July 2019

Standards

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| MA.K-12.1 | Make sense of problems and persevere in solving them. |
| LA.RH.9-10.3 | Analyze in detail a series of events described in a text; draw connections between the events, to determine whether earlier events caused later ones or simply preceded them. |
| LA.RH.9-10.4 | Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history and the social sciences; analyze the cumulative impact of specific word choices on meaning and tone. |
| MA.K-12.5 | Use appropriate tools strategically. |
| CRP.K-12.CRP1.1 | Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going |

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| | beyond the minimum expectation and in participating in activities that serve the greater good. |
| CRP.K-12.CRP2 | Apply appropriate academic and technical skills. |
| CRP.K-12.CRP5 | Consider the environmental, social and economic impacts of decisions. |
| CRP.K-12.CRP8 | Utilize critical thinking to make sense of problems and persevere in solving them. |
| CRP.K-12.CRP11 | Use technology to enhance productivity. |
| SCI.MS-PS3-3 | Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. |
| SCI.MS-PS2-5 | Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. |
| SCI.MS-PS1-4 | Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. |
| CAEP.9.2.12.C.1 | Review career goals and determine steps necessary for attainment. |
| CAEP.9.2.12.C.2 | Modify Personalized Student Learning Plans to support declared career goals. |
| CAEP.9.2.12.C.3 | Identify transferable career skills and design alternate career plans. |
| TECH.8.1.12.A | Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations. |

Essential Questions

How is electricity used in an automotive system?

How does the knowledge of basic electricity apply to the diagnosis and operation of the automotive electrical system?

What is the primary component in the electrical system how does it operate and what are the supporting components?

What are two common diagnostic tests performed on batteries and what will the results tell you?

Objectives

Students will know.....

how to maintain a properly functioning electrical system and battery.

how to recognize possible problems and knowing how the system operates.

how the electrical system functions and how to test a simple circuit

Students will be skilled at.....

testing the battery which is an electrochemical device that stores voltage for starter operation and power when

the car is not running.

common test procedures and precautions to take while servicing batteries and electrical circuits.

jump starting and charging procedures and precautions.

Learning Plan

Preview the essential questions and connect to learning throughout the unit.

Teacher led discussion on what the electrical system's purpose is and how it operates.

Demonstration of the use and function of a Multi Meter and other electrical diagnostic equipment.

Video on automotive electrical system pausing frequently to engage students in discussion of key points.

Hands on Task Sheets pertaining to the electrical system.

Written test on essential knowledge and lesson mastery.

Closing discussion and anticipatory set.

Assessment

participate in class discussions related to the electrical system is its purpose and how it works.-

Formative

use hands on job sheets to master this lesson and be able to apply the knowledge in real life situations. -

Formative

test the electrical system using various applicable equipment. Formative

written quizzes and tests on system function and operation.- Summative

Materials

Modern Automotive Technology text and workbook chapter 29

Internet

Database

Modifications

<https://docs.google.com/spreadsheets/d/1AckQSTINShzIM-rDV5YKYUFm2WMCxJQiS10rEZ4jCC8/edit?usp=sharing>