Unit 5 ENGINES

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 1**
Length: **10 - 15 class periods**
Status: **Published**

Brief Summary of Unit

This unit is designed to expand on the student's knowledge and diagnostic skills of the internal combustion engine and its relationship with all other systems in a typical vehicle. The unit will begin with a review of the functional purpose and components of an engine. The review will include components, operations, and common problems associated with an engine. In this unit, students will be expected to perform various engine performance-related diagnostics and repairs. These diagnostics and repairs will focus on the use of Scan Tools, Multi-Meters, and an internet-based tool known as All Data. Students will be exposed to tasks such as tune-ups, oil and filter changes, major and minor repairs, and will work in groups.

July 2022

Standards

LA.RI.11-12	Reading Informational Text
LA.RL.11-12	Reading Literature
SCI.HS-PS1-5	Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.
WRK.K-12.P.1	Act as a responsible and contributing community members and employee.
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.8	Use technology to enhance productivity increase collaboration and communicate effectively.
TECH.9.4.12.TL	Technology Literacy
	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.
	Developing and Using Models
	Energy and Matter
	Integration of Knowledge and Ideas
	Energy and Matter

ESESSENTIAL QUESTIONS/ ENDURING UNDERSTANDINGS

Essential Questions

- What are the hydraulic and mechanical principles of an engine, how do they work together, and what are the diagnostic procedures used to identify and correct problems?
- Why will the Internal Combustion Engine (ICE) endure as a viable power source?
- What are the science-related areas of an ICE?

Enduring Understandings

- Students will understand how components are diagnosed and serviced. They will understand what precautions need to be taken when servicing any of the various components involved in engine repair and maintenance. Another enduring understanding will be that the students will realize the environmental impacts and benefits of an Internal Combustion Engine.

LEARNING PLAN

- Teacher-led discussions on the purpose operation and repairs of an automotive internal combustion engine.
- Hands-on Job Sheets pertaining to engine-related issues.
- Use of the text and workbook Modern Automotive Technology.
- Written tests and writing prompts on engine-related topics.
- Group discussions and essential questions throughout the unit.

ASSESSMENT

Summative

Written tests on engine performance and repairs.

Hands-on Job Sheets

Written explanations of completed work.

Formative

Verbal questioning during Hands-on Job Sheets

Visual observations of shop work

Alternative

Student presentation of an engine's operation, repair, or diagnosis.

Benchmark

Midterm/Final Exam

MATERIALS

Text Book; Modern Automotive Technology

Job Sheets

Visual aids

Videos

Shop vehicles

All Data Automotive Internet Program

Google

Electrical, Pneumatic, and Hydraulic tools

Various hand tools

OBJECTIVES

STUDENTS WILL KNOW

- What an engine is, its operation, and major components.
- Advanced diagnostic and repair procedures.
- How engine components work together in an internal combustion engine.
- The tools and procedures for advanced diagnostic procedures.
- Proper safety procedures when performing engine diagnostic operations.

STUDENTS WILL BE SKILLED AT

- Knowing how the engine operates and its components.
- Understanding and performing advanced diagnostic procedures.

Accomodations

- https://docs.google.com/spreadsheets/d/1CvoX6NXdGUPtTPcEqPOsnWbqpDLS4Ego1W1eaIrGYTo/