Unit 4: Drive Train

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

Summary

In this unit students will learn how the automotive drive train operates. Learning experiences will include exploring areas such as front wheel drive, rear wheel drive, clutch operation and differential operation. The students will be engaged in disassembly and reassembly of major drive train components. They will learn how each assembly operates, how to diagnose common system complaints, and the proper method of repair of each component or part. Web based research, hands on task sheets, text, and work books will also be part of the unit along with writing prompts and written tests. Emphasis will be placed on safety and proper use of shop equipment

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Essential Question/Enduring Understandings

Essential Questions:

- Why is it important to know how the drive train operates when diagnosing drive train-related problems?
- What is involved in the transfer of power from the engine to the wheels?

Enduring Understandings:

- the differences in Front Wheel and Rear Wheel drive vehicles require different diagnostic tests and repair procedures.
- resolving problems with different types of drive requires knowledge of the operation and components of each.
- these systems contain heavy sharp components and as always safety is a number one priority.

Objectives

Students Will Know:

- the safety procedures specific to the drivetrain system.
- that clutches are mechanical couplers for manual transmissions.
- how clutches operate and their components.
- how axles differ on each type of transmission (FWD+RWD).
- what the differential is where it is located and how it operates in each type of drive (FWD+RWD).
- the operation and components of the automotive drive train.
- the specialized vocabulary of the drivetrain system.

Students Will Be Skilled At:

- diagnosing and repairing simple dive train problems
- differentiating between front wheel drive and rear-wheel drive vehicles
- identifying drive train components
- explaining the function of drive train components and symptoms

Learning Plan

- Preview the essential questions and connect to learning throughout the unit.
- Teacher presentation and student research regarding automotive drivetrains.
- Modern Automotive Technology text and workbook assignments.
- Hands-on job sheets on disassembly and identification of drivetrain components.
- Writing prompt on drive train operation.
- Written test on manual drive trains.
- Use of a cooperative learning technique to evaluate unit mastery.
- Closing discussion.

Assessment

- **Formative**
- answer the essential questions.
- participate in research and discussions regarding manual drive trains.
- complete hands-on tasks that demonstrate knowledge, skills, and understandings gained through this unit of study. This will include but not be limited to the tear down and rebuild of a drivetrain.
- demonstrate safe work habits during unit.
- demonstrate the proper use of tools.
- **Summative**
- complete a web based research project on new drive train technology.
- complete a writing prompt on manual drive trains.
- complete a written test on drivetrains.
- **Alternative**
- Presentation on Manual Drive Trains
- **Benchmark**

- Mid-Term/Final Exam

Materials

- Modern Automotive Technology; Text and Workbooks
- Job Sheets
- shop cars
- automotive repair tools
- Automotive Data System

Standards

Standards

- NJ Learning Standards
  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.
  ELA.L.KL.9–10.2.A Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level.
  ELA.L.KL.9–10.2.C Demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

- Computer Science and Design
  CS.9-12.8.1.12.CS.3 [*Performance Expectation*] - Compare the functions of application software, system software, and hardware.
  CS.9-12.8.1.12.CS.4 [*Performance Expectation*] - Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.
  CS.9-12.8.2.12.EC.1 [*Performance Expectation*] - Analyze controversial technological issues and determine the degree to which individuals, businesses, and governments have an ethical role in decisions that are made.

- NJ Career Readiness
  WRK.9.2.12.CAP.4 [*Performance Expectation*] - 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.
  WRK.9.2.12.CAP.5 [*Performance Expectation*] - Assess and modify a personal plan to support current interests and post-secondary plans.
  WRK.9.2.12.CAP.2 [*Performance Expectation*] - Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.

- Mathematics
  MATH.9-12.F.BF.A.1 [*Standard*] - Write a function that describes a relationship between two quantities

- ELA Practices
  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.
ELA.L.VL.9–10.3.E Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
ELA.RL.CR.9–10.1 Cite a range of thorough textual evidence and make relevant connections to strongly support analysis of multiple aspects of what a literary text says explicitly and inferentially, as well as including determining where the text leaves matters uncertain.

Integrated Accommodationsand Modifications

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