



# Southmoreland School District Energy & Transportation Systems Curriculum Overview

## **Energy & Transportation Systems Overview:**

This course will give an introduction to the various forms of energy that power our world and the technology we use. Those energy forms will be applied to the transportation industry. Students will participate in laboratory and research-based applications. Forms of energy conversion and mechanical advantage will be discussed, as well as the physical and mathematical properties involved.

## **Module Titles:**

**Module 1: Energy Types**

**Module 2: Transportation Systems Introduction**

**Module 3: Machine Safety**

**Module 4: Air Transportation**

**Module 5: Water Transportation**

**Module 6: Land Transportation**

**Module 7: Mechanical Power Systems**

## **Module Overviews:**

**Module 1: Energy Types**

Energy that powers our world comes in many forms. Students will define each form and provide practical examples of each. We will look at the many types of renewable, nonrenewable, and inexhaustible energy sources. This will lead to discovery of various forms of green and alternative energy sources as well as the careers associated with various energy fields.

**Module 2: Transportation Systems Introduction**

Transportation, the movement of people and products from one place to another. Students will define the various modes of transportation including air, land, space and water transportation with the overall goal of improving each system to become more efficient and profitable as well as the careers associated with transportation systems. Students will discuss the 6 subsystems of transportation and how those components apply to improving each transportation system. Students will explore each mode more specifically throughout the course.



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### **Module 3: Machine Safety**

Students will learn about various tools and machines within the material processing environment. Teacher lead demonstrations will be provided and all students must pass a written (and sometimes practical) examination of the machine to use within the course. \*Student safety packets are good for the entire school year and must be completed each year.

### **Module 4: Air Transportation**

Students will explore the 6 subsystems of transportation, specifically how they apply to the air transportation system. Students will review the evolution of air travel and how today's air transportation system seeks to develop more efficient and safer ways of transporting people and goods. Students will explore Bernoulli's Principle and how it applies to the formation of airfoils keeping large aircraft suspended in air.

### **Module 5: Water Transportation**

Students will explore the 6 subsystems of transportation, specifically how they apply to the water transportation system. Students will review the evolution of water travel and how today's water transportation system seeks to develop more efficient and safer ways of transporting people and goods. Students will explore various boat hull designs to develop an efficient transportation system.

### **Module 6: Land Transportation**

Students will explore the 6 subsystems of transportation, specifically how they apply to the land transportation system. Students will review the evolution of land travel and how today's land transportation system seeks to develop more efficient and safer ways of transporting people and goods. Students will review vehicular maintenance and apply these skills as the soon to become future drivers.

### **Module 7: Mechanical Power Systems**

Students will explore mechanical power systems in regards to the 6 simple machines and other mechanical transfer devices such as pulleys, gears and springs. Students will apply these concepts to account for mechanical advantage and increase efficiency through those systems.