

# Term 1 Year 10 Physics Curriculum Overview

**Unit 1: Energy.** Key Topics Include:

## Forms of Energy

- Types of Energy: Identifying different stores of energy, including kinetic, gravitational, elastic, thermal, and chemical.
- Energy Transfers: Understanding how energy can be transferred between different forms, for example, potential energy converting to kinetic energy during free fall.

## Conservation of Energy

- Energy Conservation Principle: Learning that energy cannot be created or destroyed, only transformed from one form to another.
- Closed Systems: Exploring the concept of closed systems where energy is conserved.

## Energy Calculations

- Calculating Kinetic and Gravitational Potential
- Energy: Using the formulas:
- Kinetic Energy:  $KE = \frac{1}{2}mv^2$
- Gravitational Potential Energy:  $GPE = mgh$
- Understanding Work Done: Learning how to calculate work done using the formula  $Work = Force \times Distance$

## Efficiency

- Efficiency Calculations: Understanding how to calculate the efficiency of machines and processes, and discussing the importance of energy efficiency in reducing energy waste.
- Energy Transfers in Everyday Devices: Investigating how energy efficiency affects devices like light bulbs, motors, and heating systems.

**Unit 2: Electricity:** Key Topics Include:

## Basic Electrical Concepts

- Electric Charge: Understanding the concept of electric charge and the difference between positive and negative charges.
- Current, Voltage, and Resistance: Learning how current (I), voltage (V), and resistance (R) are related through Ohm's Law:  $V = IR$

## Electrical Circuits

- Components of Circuits: Identifying and understanding the function of key components in circuits, such as resistors, switches, and power sources.
- Circuit Diagrams: Learning to draw and interpret circuit diagrams using standard symbols.

### **Series and Parallel Circuits**

- Series Circuits: Exploring the characteristics of series circuits, including how voltage and current behave in this configuration.
- Parallel Circuits: Investigating parallel circuits and understanding how they differ from series circuits in terms of voltage, current, and overall resistance.

### **Power and Energy in Electrical Systems**

- Calculating Power: Using the formula  $P=IV$  to calculate electrical power and understanding how energy is consumed in electrical appliances.
- Energy Transfer: Discussing how electrical energy is transferred and the factors affecting energy consumption in circuits.

### **Practical Work**

- Conducting experiments to build and investigate series and parallel circuits, measure current and voltage, and explore the effects of changing circuit components on resistance and current.