

# Term 3 Year 10 Physics Curriculum Overview

Welcome to the Year 10 Physics curriculum overview. This term, students will continue their studies following the AQA KS4 Physics curriculum. Below is an outline of the topics your child will study, tailored for both Combined Science and Triple Science students, with clear indications where content is specific to Triple Science.

---

## Combined and Triple Science: Unit 5 – Forces

---

### Forces and Motion

#### 1. What is a Force?

- Students will explore what forces are and how they affect objects. They will study types of forces, such as contact and non-contact forces (e.g., friction, gravity, electrostatic, magnetic).
- An introduction to vectors and scalars, explaining how forces are represented and measured, will be included.

#### 2. Forces and Motion

- Students will learn about the relationship between force, mass, and acceleration. The concept of Newton's second law of motion will be introduced, focusing on the formula  $F=ma$  (force = mass  $\times$  acceleration).
- They will study how forces affect the motion of objects, using real-life examples such as cars accelerating or objects falling under gravity.

#### 3. Speed and Velocity

- Students will calculate speed and velocity using the formula  $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$  and  $\text{Velocity} = \frac{\text{Distance}}{\text{Time}}$ .
- They will also learn how to interpret distance-time graphs and understand the difference between speed and velocity.

#### 4. Acceleration and Deceleration

- Students will study how objects accelerate or decelerate when forces are applied. They will be introduced to the equation for acceleration:  $a = \frac{\text{Change in Velocity}}{\text{Time}}$ .
- Practical activities will involve measuring acceleration in different contexts, such as vehicles or objects in free fall.

#### 5. Newton's Third Law of Motion

- The concept of action and reaction forces will be explored. Students will learn that for every action, there is an equal and opposite reaction.
  - Real-world examples, such as rockets launching or walking, will be used to illustrate Newton's third law.
-

## Triple Science Only: Further Study on Forces

### 1. Momentum and Impulse

(Triple Science only)

- Students will study the concept of momentum, which depends on the mass and velocity of an object, and learn how to calculate momentum using the equation:  
$$\text{Momentum} = \text{Mass} \times \text{Velocity}$$
- The principle of conservation of momentum will be introduced, and students will apply it to collision scenarios, such as car crashes or particle interactions.

### 2. Circular Motion and Forces (Triple Science only)

- Students will learn about the forces involved in circular motion, including the concepts of centripetal force and the role of friction in keeping an object in circular motion.
- They will study examples such as planets orbiting the sun and a car turning on a curved road, applying Newton's laws to explain these phenomena.

---

## Assessment and Skills Development

Throughout this term, students will develop their understanding of the key concepts related to forces and motion. They will be involved in practical investigations, including measuring forces, calculating speed, and analyzing motion. Assessment will include practical experiments, quizzes, and end-of-unit tests to track students' understanding and progress.

We look forward to supporting your child as they continue their study of Physics!