Physics GCSE Y10 – Course Overview

Physics helps us understand the fundamental principles that govern the universe, from the behaviour of atoms to the movement of waves and the flow of electricity. In Year 10, students build on their Key Stage 3 knowledge to explore atomic structure, the properties and applications of waves, and the principles of electrical circuits. Through practical investigations and scientific enquiry, students develop the knowledge and skills needed to think and work like physicists.

Advent 1: Atomic Structure

Students explore the structure of the atom and investigate the properties of radioactive materials. They learn how scientific models of the atom have developed over time and consider the applications and risks associated with radiation.

Key areas of study:
• The structure of the atom
• Development of the atomic model
• Isotopes and radioactive decay
• Nuclear radiation and its properties
• Half-life
• Uses and risks of radiation

Advent 2: Waves

Students investigate the properties of waves and how energy is transferred through different types of wave motion. They examine the electromagnetic spectrum and its many practical applications.

Key areas of study:
• Properties of waves
• Wave speed, frequency and wavelength
• Transverse and longitudinal waves
• Reflection and refraction
• The electromagnetic spectrum
• Applications of electromagnetic waves

Lent 1: Waves

Students continue their study of waves by exploring how sound and light behave. They investigate the transmission of information using waves and develop practical skills through experimental work.

Key areas of study:
• Sound waves and hearing
• Ultrasound and seismic waves
• Visible light and colour
• Communication using waves

• Required practical investigations
• Applications of wave technology

Lent 2: Electricity

Students begin their study of electricity by exploring electrical charge, current and potential difference. They learn how electrical circuits are constructed and analysed.

Key areas of study:
• Electrical charge and current
• Potential difference and resistance
• Circuit symbols and diagrams
• Series and parallel circuits
• Current and potential difference in circuits
• Required practical investigations

Trinity 1: Electricity

Students develop their understanding of electrical systems and investigate how electricity is generated, transferred and used safely in homes and industry.

Key areas of study:
• Resistance and factors affecting resistance
• Domestic electricity supply
• Energy transfers in electrical appliances
• Power and efficiency
• Electrical safety

Trinity 2: Static Electricity

Students investigate how objects become electrically charged and explore the forces that exist between charged objects. They examine the benefits and hazards of static electricity and consider its applications in everyday life and industry.

Key areas of study:
• Charging by friction
• Positive and negative charges
• Electrostatic attraction and repulsion
• Electric fields
• Sparks and electrostatic discharge
• Hazards and applications of static electricity