Combined Science GCSE Y10 – Course Overview

Combined Science helps students develop an understanding of the biological, chemical and physical processes that shape the world around us. In Year 10, students build on their Key Stage 3 knowledge to explore living systems, the structure and behaviour of matter, and the fundamental principles of energy and forces. Through practical investigations and scientific enquiry, students develop the knowledge and skills needed to think and work like scientists.

Advent 1

Students begin the year by exploring how living organisms respond to disease, how elements are organised within the periodic table, and how scientific understanding of atomic structure has developed over time.

Key areas of study:

Biology
• Infection and response
• Pathogens and communicable diseases
• Human defence systems and vaccination

Chemistry
• Atomic structure
• The periodic table
• Groups, periods and periodic trends

Physics
• Atomic structure and the atom
• Radioactivity
• Nuclear radiation and its uses

Advent 2

Students investigate how living organisms obtain energy, how atoms combine to form substances, and how waves transfer energy and information.

Key areas of study:

Biology
• Photosynthesis
• Respiration
• Bioenergetics

Chemistry
• Ionic, covalent and metallic bonding
• Structure and properties of materials

Physics
• Transverse and longitudinal waves
• Reflection
• The electromagnetic spectrum

Lent 1

Students continue their study of organisation within living organisms, develop quantitative skills in chemistry, and explore the behaviour and applications of waves.

Key areas of study:

Biology
• Digestion and the digestive system
• Enzymes and enzyme action
• Food tests

Chemistry
• Quantitative chemistry
• Relative formula mass
• Chemical calculations

Physics
• Infrared radiation
• Reflection and refraction
• Lenses
• Sound waves and their applications

Lent 2

Students investigate how substances are transported around the body, why some metals are more reactive than others, and how electrical circuits operate.

Key areas of study:

Biology
• The circulatory system
• Cardiovascular disease
• Cancer and lifestyle factors

Chemistry
• The reactivity series
• Oxidation and reduction
• Extraction of metals

Physics
• Electrical charge and current
• Potential difference and resistance
• Electrical circuits

Trinity 1

Students explore plant organisation, investigate the reactions of acids, and develop their understanding of electrical energy and domestic electricity.

Key areas of study:

Biology
• Plant tissues and organs
• Transport in plants
• Transpiration

Chemistry
• Acids and alkalis
• Neutralisation reactions
• Preparation of salts

Physics
• Domestic electricity
• Energy transfers in electrical appliances
• Electrical safety

Trinity 2

Students examine ecological sampling techniques, investigate energy changes in chemical reactions, and begin their study of forces and motion.

Key areas of study:

Biology
• Sampling techniques in ecology
• Fieldwork and data collection

Chemistry
• Exothermic and endothermic reactions
• Energy transfers in chemical reactions

Physics
• Forces and motion
• Speed and velocity
• Introduction to acceleration