Combined Science GCSE Y11 – Course Overview

Combined Science helps students develop an understanding of the biological, chemical and physical processes that shape the world around us. In Year 11, students deepen their understanding of ecology, homeostasis, genetics, chemical reactions and the forces that govern the physical world. Through practical investigations and scientific enquiry, students develop the knowledge and skills needed to apply scientific concepts to real-world situations and prepare for their GCSE examinations.

Advent 1

Students explore the interactions between organisms and their environment, investigate energy changes in chemical reactions, and develop their understanding of electrical circuits.

Key areas of study:

Biology
- Ecosystems and biodiversity
- Decomposition and nutrient cycles
- Human impacts on the environment

Chemistry
- Exothermic and endothermic reactions
- Energy transfers in chemical reactions
- Applications of energy changes

Physics
- Electrical charge and current
- Potential difference and resistance
- Series and parallel circuits

Advent 2

Students investigate how the nervous system coordinates responses within the body, examine the factors affecting the rate of chemical reactions, and explore the uses of electricity in homes and industry.

Key areas of study:

Biology
- Homeostasis
- The nervous system
- Reflex actions and response coordination

Chemistry
- Rates of reaction

• Collision theory
• Factors affecting reaction rates

Physics
• Domestic electricity supply
• Electrical power and energy transfers
• Electrical safety

Lent 1

Students continue their study of homeostasis through hormonal coordination, complete their work on reaction rates, investigate organic compounds and explore the behaviour of waves.

Key areas of study:

Biology
• Hormonal coordination
• Control of blood glucose levels
• Human reproductive hormones

Chemistry
• Completion of rates of reaction
• Organic chemistry
• Hydrocarbons and fuels

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

Lent 2

Students begin their study of inheritance, investigate electrolysis and chemical change, and examine the relationships between forces, energy and motion.

Key areas of study:

Biology
• DNA, genes and chromosomes
• Genetic variation
• Inheritance and reproduction

Chemistry
• Electrolysis
• Extraction and purification of materials
• Chemical change and redox reactions

Physics
• Forces and motion
• Hooke's Law
• Work done and energy transfer
• Weight and gravitational force

Trinity 1

Students complete their study of inheritance and evolution, investigate reversible reactions, and explore the principles of electromagnetism and space physics.

Key areas of study:

Biology
• Inheritance and inherited disorders
• Evolution and natural selection
• Classification and biodiversity

Chemistry
• Reversible reactions
• Dynamic equilibrium
• Factors affecting equilibrium

Physics
• Electromagnetism
• Electromagnets and motors
• The National Grid and transformers
• Space physics and the solar system