Chemistry GCSE Y10 – Course overview

Chemistry helps us understand the substances that make up our world and how they change. In Year 10, students build on their Key Stage 3 knowledge to explore the structure of atoms, the patterns within the periodic table, how substances are bonded together, and how chemical reactions can be measured and explained. Through practical work and problem-solving, students develop the knowledge and skills needed to think and work like chemists.

Advent 1: The Periodic Table

Students explore the structure of the atom and how scientific understanding of atomic theory has developed over time. They learn how the periodic table is organised and how an element's position can be used to predict its properties and reactivity.

Key areas of study:

- Atomic structure and the development of the periodic table
- Groups, periods and periodic trends
- Group 1 metals
- Group 7 halogens
- Group 0 noble gases

Advent 2: Bonding and Structure

Students investigate how atoms join together through ionic, covalent and metallic bonding. They explore how different bonding arrangements give substances their characteristic properties and uses.

Key areas of study:

- Ionic, covalent and metallic bonding
- Properties of ionic compounds, simple molecules and metals
- Giant ionic and giant covalent structures
- Graphene and nanoparticles
- Materials and their applications

Lent 1: Quantitative Chemistry

Students learn how chemists measure substances and calculate the amounts involved in reactions. This unit develops mathematical skills and provides the foundation for much of the chemistry studied later in the course.

Key areas of study:

- Relative formula mass
- The mole
- Reacting masses
- Concentration of solutions
- Chemical calculations and balanced equations

Lent 2: Chemical Change – Metal Reactivity

Students explore why some metals are more reactive than others and how this affects their extraction and uses. They investigate redox reactions and learn how electrolysis can be used to extract and purify metals.

Key areas of study:

- The reactivity series
- Oxidation and reduction
- Extraction of metals
- Electrolysis
- Displacement reactions

Trinity 1: Chemical Change – Acids and Reactions

Students investigate the behaviour of acids and alkalis and learn how chemists use neutralisation reactions to produce useful substances.

Key areas of study:

- Acids, alkalis and pH
- Neutralisation reactions
- Reactions of acids with metals and carbonates
- Preparation of salts
- Strong and weak acids
- Titration techniques

Trinity 2: Energy Changes

Students examine how energy is transferred during chemical reactions and explain why some reactions release energy while others require it.

Key areas of study:

- Exothermic and endothermic reactions
- Energy profiles
- Bond energies
- Energy transfers in chemical reactions
- Applications in fuels, batteries and everyday life