



Co-op Academy Walkden | Chemistry Learning Journey

Students leave with curiosity, knowledge and the skills to investigate the world around them.

Other post 16 options – Apprenticeships, other A level subjects, other BTEC subjects, other training, College

A level Sciences – Chemistry

Students have a love of science that will stimulate them to further discover more about the world,

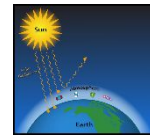
They can discern facts from fiction and have a shrewd understanding of how to interpret, analyse and evaluate information.



Using Our Resources (C15)

Linking the use of earth's resources to specific uses based on their properties. Key links back to KS3 material properties and uses of materials in technology. The chemical processes to make specific products are also explained and evaluated.

Our Atmosphere (C13)
Describing how the atmosphere has evolved over time to the present day and looking at the impact of current actions on how the atmosphere continues to change. In particular evaluating the impact on climate change and the effects of atmospheric pollutants



The Earth's Resources (C14)

Exploring the different resources from the earth's crust including extraction, treatment and disposal. This revisits metal extraction, evaluates the treatment of drinking water and the construction of lifecycle assessments.

Polymers (C11)

Use the concepts from bonding, crude oil and organic reactions to explain how polymers are formed through addition and condensation and describe real life examples where polymers are part of everyday life.



Year 11

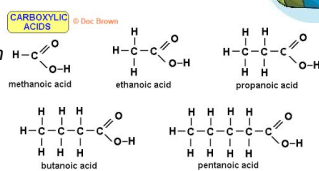
Crude Oil and Fuels (C9)

Introducing the concept of bonding to produce larger carbon based structures and the patterns in naming and trends in these. Further extending knowledge of specific chemical reactions (combustion and cracking) and separation techniques (fractional distillation)



Organic Reactions (C10)

Building on the foundations of crude oil to extend understanding of different functional groups of organic compounds their reactions and conventions of naming them. This further extends knowledge of constructing chemical equations.



Chemical Analysis (C12)

To build on the concept of pure substances and mixtures by learning how to analyse individual samples through chemical testing techniques.



Energy Changes (C7)

Consolidating knowledge of exothermic and endothermic reactions, energy diagrams and using bond energies for calculations. Apply this and knowledge of electron transfer to the design of batteries and fuel cells



Chemical Changes (C5)

Build on the foundations of knowledge of chemical reactions and displacement from KS3. Explaining observations and trends in terms reactivity and electronic structure. Consolidating knowledge of how to construct chemical equations (word and symbol)



Chemical Calculations (C4)

Using atomic structure and the periodic table to calculate relative atomic mass and then moles. Using the concept of moles to calculate quantities for solids, solutions and gases



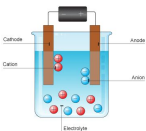
Rates and Equilibrium (C8)

Using particle theory to explain how rates of reaction can be altered. Apply the ideas of energy change and diagrams to explain use of catalysts. Extend these ideas to explain equilibrium and how to alter it to increase yield in reactions



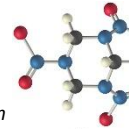
Electrolysis (C6)

Use knowledge of ions, bonding and chemical equations to explain how electrolysis works in terms of electron transfer in both molten compounds and solutions.



Structure and Bonding (C3)

Use knowledge of electronic structure to explain different types of bonding (Ionic, Covalent, Metallic) and link the structure of these to the properties of everyday objects. Explore new scientific discoveries such as graphene, fullerenes and nanoparticles.



Year 10

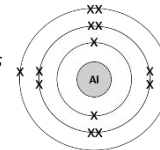
Earth's Resources (Earth)

Building on displacement reactions to investigate metal extraction. Evaluate the use of recycling.



Consolidate understanding of atoms, elements and compounds, including chemical formula. Explain how models of the atom developed over time. Use structure of the atom and electronic structure to define ions, atoms and isotopes. Focus on choosing appropriate equipment and method writing for separation techniques.

Atomic Structure (C1)



The Periodic Table (C2)

Explain how evidence led to the development of the periodic table. Link understanding of electronic structures to placement of elements in the periodic table and explain the trends in key groups using these.

PERIODICITY: TRENDS IN THE PERIODIC TABLE

PROPERTY	NON-METALS	METALS
Atomic Size	Small	Large
Electronegativity	High	Low
Ionization Energy	High	Low
Electropositivity	Low	High
Electron Affinity	High	Low

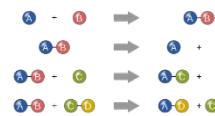
Climate (Earth)

Introducing the concepts of global warming, the carbon cycle and climate change



Types of reactions (Reactions)

Looking at conservation of mass and atoms in chemical reactions, specific reactions of combustion and thermal decomposition



The Periodic Table (Matter)

Introduction to the periodic table focusing on describing the trends and properties of groups 1, 7 and 0

Periodic Table of the Elements

Year 9

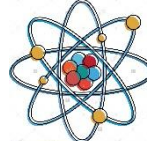
Chemical Energy (Reactions)

Defining exothermic and endothermic reactions, energy diagrams and using bond energies for calculations



Atoms, Elements and Compounds (Matter)

Define elements and compounds. Identify atomic structure. Introduction to chemical formula and polymers



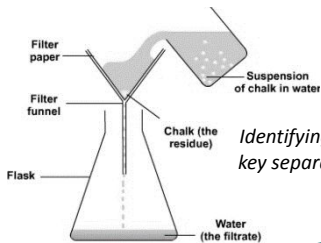
Metals and Non-metals (Reactions)

Elements, Reactions of metals with acids, oxygen and water, investigating displacement reactions of metals. Extending knowledge of chemical equations.



Separating mixtures (Matter)

Identifying pure substances and mixtures, investigating key separation techniques E.g. filtration, crystallisation, distillation and chromatography



Year 8

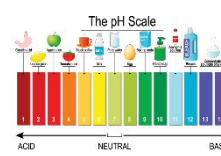
Earth Structure (Earth)

Structure of the Earth, formation and structure of sedimentary, igneous and metamorphic rocks and how they link through the rock cycle



Acids and Alkalis (Reactions)

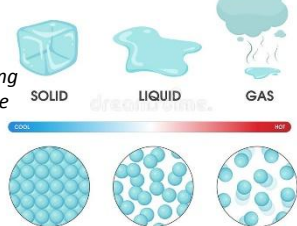
Identifying chemical reactions, investigating acids and alkalis, indicators and pH. Applying this understanding to the concept of neutralisation and making salts. Introduction to chemical equations.



STATE OF MATTER

Particle Model (Matter)

Studying states of matter, changing states, diffusion and gas pressure through the lens of particle movement and energy



Year 7

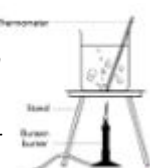
Primary School

KS1 and 2 Chemistry Big Ideas

Everyday materials, Properties and changes of materials, Earth, States of matter, Rocks



Working scientifically planning scientific enquiries to answer questions, taking measurements, using a range of scientific equipment, recording data and results, make predictions, reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations, identifying scientific evidence that has been used to support or refute ideas



KS1 & 2 National Curriculum

