Key Stage 3 Curriculum Overview- Chemistry

Progression from Key Stage 2 and Progression through Key Stage 3:

	Autumn Term	Spring Term	Summer Term
Year 6	**Students at the end of Key Stage 2 will be able to:** • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • demonstrate that dissolving, mixing and changes of state are reversible changes. • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.		
Year 7	Transitional content – materials and simple chemical reactions Space science enrichment (2 weeks) Matter topic – particle model, change of state, elements, mixtures and compounds and separating mixtures including practical opportunities	Reactions topic – Chemical reactions and equations, combustion and oxidation and fuels. Acids and alkalis including neutralisation and indictors Extended practical project to include key scientific skills AP1	Earth topic – structure of the earth and rock cycles. Building materials, making concrete and limestone. AP2 RSE – see separate scheme of work
Year 8	Space science enrichment (including trip) (2 weeks) Matter topic – Periodic table, properties of elements and combining elements, simple equations Reactions topic – Metals and acids, displacement reactions, energy changes and thermal decomposition	AP1 HSW topic – 3 week practical investigation to develop practical skills Earth topic – Carbon cycle, greenhouse gases and global warming. Atmosphere and pollutants	AP2 Enrichment topic – Forensics RSE – see separate scheme of work

Year 9	Matter topic – pure and impure substances, formulations. Separating mixtures – distillation and chromatography. Models of the atom and atomic structure Bonding – ionic and metallic AP2 Reactions topic – Rates of reaction, thermal decomposition, catalysts.	Reactions topic continued – chemical calculations, acids and neutralisation, reversible reactions, reactivity series. AP3 Earth's resources, finite and renewable resources. Properties of ceramic, composites and polymers. Crude oil formation and Alkanes	Earth topics – Recycling, Life cycle assessment. Gases in the atmosphere, potable water, water purification and testing for gases RSE – see separate scheme of work

By the end of Key Stage 3 a student should be able to:

Have an understanding of the fundamentals of matter and materials and how chemical reactions occur and chemistry of the Earth, including the @Big ideas' in Chemistry: how atoms are arranged and organised, how chemical reactions occur and are measured, How the periodic table is organised and how elemnts are used in the everyday world and how the earth is structure and how we use the resources provided by the earth.

Have an understanding of key scientific investigative proceedures and understand how to answer scientific questions about the natural world around them, including recording, collection and analysisng data, evaluating proceedures and identify further questions.

Be able to critially think about the uses and implications of science and scientific advancements today and for the future

Be devloping the ability to read and interpret scientific text

Describe associated processes and key characteristics in common language, beginning to use technical terminology accurately and precisely building an extended specialist vocabulary.

Be able to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data, using numerical values and mathematical representations.

Be able to relate scientific explanations to phenomena in the world around them and use modelling and abstract ideas to develop and evaluate explanations.

Working across all science disciplines

pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility

understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review

Evaluate risks.

ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience

make predictions using scientific knowledge and understanding

select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate

use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety

make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements

apply sampling techniques.

apply mathematical concepts and calculate results

present observations and data using appropriate methods, including tables and graphs

interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions

present reasoned explanations, including explaining data in relation to predictions and hypotheses

evaluate data, showing awareness of potential sources of random and systematic error

identify further questions arising from their results