Chemistry
(Science)

KS4 Curriculum Breakdown

Sirius ACADEMY WEST
WHERE STARS ARE BORN

	Year 10	*Year 11*
HT1	**Atomic Structure and the Periodic Table** • Atoms and structure of • Chemical Equations • Separating mixtures • History of the atom • Ions and isotopes • Electronic configuration • Development of the Periodic Table • Group 1 • Group 7 • Transition metals	**Rates of Reaction** • Measuring and calculating rates • Factors affecting rates • Collision theory • Catalysts • Reversible reactions and energy changes • Equilibrium and factors affecting equilibrium
HT2	**Structures and Bonding** • States of matter • Atoms into ions • Ionic bonding and properties of • Covalent bonding and properties of • Fullerenes and graphene	**Organic Chemistry** • Hydrocarbons • Fractional distillation of crude oil • Combustion of hydrocarbons • Cracking hydrocarbons • Alkenes

	• Metallic bonding and properties of • Nanoparticles and uses of	• Alcohols • Carboxylic acids • Esters • Addition and condensation polymers • Natural polymers • DNA
HT3	**Chemical Quantities and Calculations** • Relative masses and moles • Equations and reacting masses • From masses to balanced equations • % yield • Atom economy • Concentrations • Titrations and calculations of • Volume of gases	**Chemical Analysis** • Pure substances and mixtures • Analysing chromatograms • Testing for gases • Testing for cations • Testing for anions • Instrumental analysis
HT4	**Chemical Changes** • Reactivity series • Displacement reactions • Extracting metals • Salts from metals • Salts from insoluble bases • Neutralisation and pH scale • Strong and weak acids • Electrolysis • Extraction of aluminium • Electrolysis of aqueous solutions • Half equations (oxidation & reduction)	**Chemistry of the Atmosphere** • History and evolution of the atmosphere • Greenhouse gases • Climate change • Atmospheric pollutants
HT5	**Chemical Changes (continued)** • Reactivity series • Displacement reactions • Extracting metals • Salts from metals • Salts from insoluble bases • Neutralisation and pH scale • Strong and weak acids	**Using Resources** • Sustainable development • Potable water • Waste water treatment • Alternative ways of extracting metals • Life cycle assessment and recycling • Reducing the use of resources • Corrosion and prevention of

	• Electrolysis • Extraction of aluminium • Electrolysis of aqueous solutions • Half equations (oxidation & reduction)	• Alloys and uses • Ceramics, polymers & composites • Haber Process • Production & use of NPK fertilisers
HT6	**Energy Changes** • Exothermic and endothermic reactions (in terms of temperature changes and energy transfers) • Reaction profiles • Bond energy calculations • Chemical cells and batteries **Key skill development** **Application and exam technique**	**Key skill development** **Application and exam technique**