Science – Chemistry

ALDER Community High School

KS4

Threshold concept lesson

Year 10 Autumn	**Topic 1 – Atomic structure**
	History of atom
	Atomic Structure
	Atomic Mass
	Isotopes
	History of the Periodic Table
	Modern Periodic Table (with electron configuration)
Year 10 Autumn	**Topic 2 – States of matter and mixtures**
	States of matter (+ changes of state)
	Mixtures and purity
	Filtration and Crystallisation
	Chromatography (2 lessons)
	Distillation
	Water purification
Year 10 Autumn	**Topic 3 – Group 1 and Ions**
	Group 1 – alkali metals
	Forming Ions
	Ionic bonding
	Properties of ionic compounds
	Testing for cations (Triple)
	Testing for anions (Triple)
	Unknown ions (Triple)
	Ionic equations (Triple)
	Flame Photometry (Triple)
Year 10 Autumn/Spring	**Topic 4 – Group 7, 0 and Covalent**
	Group 7
	Halogen reactivity
	Covalent bonds
	Properties of covalent bonding
	Group 0

Year 10 Spring	**Topic 5 – Calculations Involving Masses**
	Relative formula mass
	Percentage composition
	Empirical formula
	Making MgO
	Conservation of mass – word and symbol equations
	Balancing equations (if needed – should be confident from KS3)
	Moles
	Reacting masses (H)
	Limiting reactants (H)
	Stoichiometry (H)
	Concentration
	Percentage Yield (Triple)
	Atom Economy (Triple)
	Calculations with gases (Triple)
Year 10 Summer	**Topic 6 – Acids**
	Acids, alkalis and indicators
	Strong and weak acids (H)
	Investigating pH (core practical)
	Neutralisation - metals and acids (practical)
	Neutralisation - Metal carbonates and acids (practical)
	Naming salts
	Making copper sulphate (core practical)
	Insoluble salts
	Titration
	Titration calculations (Triple)
Year 11 Autumn	**Topic 7 – Metals**
	Reactivity series
	Displacement
	Redox (H)
	Metal ores
	Biological methods of extraction (H)
	Metallic Bonding
	Recycling
	Life Cycle assessment
	Transition Metals (Triple)

	Alloys (Triple)
	Corrosion (Triple)
Year 11 Autumn	**Topic 8 - Electrolysis**
	Electrolysis Introduction
	Electrolysis – molten
	Electrolysis - solution
	Electrolysis half equations (H)
	Electrolysis (Core practical)
	Electroplating (Triple)
	Chemical and fuel cells (Triple)
Year 11 Spring	**Topic 9 – Rate and energy changes of reaction**
	Collision Theory
	Surface area (core practical)
	Analysing rate data
	Temperature (core practical)
	Catalysts
	Nanoparticles (Triple)
	Heat energy changes – Exothermic and Endothermic reactions
	Reaction profiles
	Bond energy calculations (H)
	Reversible reactions and equilibria
	Le Chatelier Principle (H)
	The Haber Process and fertilisers (Triple)
Year 11 Spring	**Topic 10 – Fuels and Earth Science**
	Crude oil and hydrocarbons
	Fractional distillation
	Cracking and hydrogen
	Combustion
	Pollution
	Allotropes of carbon
	Earth's early atmosphere
	The changing atmosphere – Greenhouse Effect
	The modern atmosphere - Climate change

Year 11 Spring	
	Naming and drawing hydrocarbons
	Reactions of alkenes
	Alcohols
	Ethanol Production
	Carboxylic acids
	Combustion of alcohols
	Additions polymerisation
	Condensation polymerisation
	Polymers
	Ceramics and polymers
	Thermosetting and thermosoftening polymers