

Key Stage 5 Curriculum Overview

Subject: Chemistry

Year 12

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Assessment
<p>Atomic structure;</p> <ul style="list-style-type: none"> Fundamental particles Mass number, atomic number and isotopes Electron arrangement Ionisation energy <p>Amount of substance;</p> <ul style="list-style-type: none"> Relative atomic mass Moles Ideal gas equation Empirical and molecular formulae Balanced equations Atom economy <p>Introduction to organic chemistry;</p> <ul style="list-style-type: none"> Carbon compounds Nomenclature Isomerism <p>Alkanes</p> <ul style="list-style-type: none"> Fractional distillation of crude oil Industrial cracking Combustion <p>Halogenoalkanes;</p> <ul style="list-style-type: none"> Nucleophilic substitution in halogenoalkanes Elimination reactions 	<p>Bonding;</p> <ul style="list-style-type: none"> Ionic bonding Covalent bonding Metallic bonding Electronegativity Forces acting between molecules Shapes and bond angles Bonding and physical properties <p>Kinetics</p> <ul style="list-style-type: none"> Collision theory Maxwell-Boltzmann distribution Catalysts <p>Energetics;</p> <ul style="list-style-type: none"> Exothermic and endothermic reactions Enthalpy Measuring enthalpy change Hess's law Thermochemical cycles Bond enthalpies <p>Alkenes</p> <ul style="list-style-type: none"> Reactions of alkenes Addition polymers 	<p>Alcohols</p> <ul style="list-style-type: none"> Ethanol production Reactions of alcohols <p>Periodicity;</p> <ul style="list-style-type: none"> The periodic table Trends in period 3 Trends in ionisation energy <p>Equilibrium;</p> <ul style="list-style-type: none"> Changing conditions Equilibrium in industry Equilibrium constant Kc calculations Dynamic equilibrium <p>Organic analysis</p> <ul style="list-style-type: none"> Test tube reactions Mass spec Infrared spec 	<p>Group 2</p> <ul style="list-style-type: none"> The physical and chemical properties of group 2 elements <p>Halogens</p> <ul style="list-style-type: none"> Chemical reactions of halogens Reactions of halide ions Uses of chlorine <p>Oxidation and reduction;</p> <ul style="list-style-type: none"> Oxidation states Redox equations 	<p>Revision; Atomic structure</p> <p>Amount of substance</p> <p>Bonding</p> <p>Kinetics</p> <p>Energetics</p>	<p>Revision;</p> <p>Equilibrium</p> <p>Organic intro</p> <p>Alkanes</p> <p>Redox</p> <p>Halogenoalkanes</p> <p>Periodicity</p> <p>G2 and 7</p> <p>Alcohols</p> <p>Organic analysis</p> <p>Kinetics;</p> <ul style="list-style-type: none"> Rate expression Determining rate equation Rate determining step <p>Optical isomerism</p> <p>Aldehydes and ketones</p>	<p>CPAC</p> <p>End of unit assessment</p> <p>PPQs homework</p>

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Period 3 <ul style="list-style-type: none"> Reactions of P3 Oxides of P3 Acidic/basic nature of P3 oxides Transition metals <ul style="list-style-type: none"> Properties of transition metals Complex ions Coloured ions Variable oxidation states Catalysts Ions in solution <ul style="list-style-type: none"> Acid-base chemistry of aqueous transition ions Ligand substitution reactions Carboxylic acids; <ul style="list-style-type: none"> Carboxylic acids and esters Reactions of carboxylic acids and esters Acylation 	Acids, bases and buffers; <ul style="list-style-type: none"> pH scale Weak acids and bases Titration Indicators Buffers Electrode potentials; <ul style="list-style-type: none"> Electrochemical series Predicting direction of redox Electrochemical cells Thermodynamics; <ul style="list-style-type: none"> Enthalpy change Born-Haber cycles Why do reactions take place? Equilibrium constant; <ul style="list-style-type: none"> K_p for homogenous systems 	Organic synthesis; <ul style="list-style-type: none"> Synthetic routes Organic analysis Amines <ul style="list-style-type: none"> Properties of amines as bases Amines as nucleophiles Polymers <ul style="list-style-type: none"> Condensation polymers Biological molecules <ul style="list-style-type: none"> Amino acids Peptides, polypeptides and proteins Enzymes DNA Action of anticancer drugs Structure determination; <ul style="list-style-type: none"> H nmr Interpreting nmr Chromatography;	Revision of A Level topics	Revision Deliberate practice A Level examinations		CPAC End of unit assessment PPQs homework

Aromatic chemistry;

- Arenes
- Naming and properties
- Reactions of arenes

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