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Kings Curriculum Map

Subject Name

	Autumn Term	Spring Term	Summer Term
Year 9	**Reactivity** Reactivity series of metals, displacement reactions, reactions of metals and their compounds, conservation of mass in reactions. Word equations **Atoms** Areas of the periodic table, Chemical formula, Development of the PT, General structure of the atom, Size of atoms, Electronic configuration, Ideas regarding atomic structure, Group 0, Chemical reactions and conservation of mass, Mr's and % element in a compound	**Chemical Analysis** Chromatography, Formulations, Purity **Acids and Bases** Indicators, Acid definition, Neutralisation, Reaction of acids with Metals, carbonates, oxides and hydroxides, Making a soluble salt req prac **Oil** Hydrocarbons, Fractional distillation, Alkanes structure and properties, Alkenes structure and properties, Combustion of hydrocarbons, Global warming, Acid rain, Global dimming, Alternative fuels, Carbon footprints	**Rates of Reaction** Methods of measuring rates, Effect of concentration on rate, Effect of catalysts on rate, Effect of temperature on rate, Effect of surface area on rate, Reversible reactions **Atmosphere** Composition of the Atmosphere, Evolution of the Atmosphere
Year 10	**Metals** Properties of metals, Reaction of metals with water, Group 1 metals, Displacement reactions, Metal extracting (smelting), Alloys, Copper extraction (Bioleaching/Phytomining), Metal extraction (Electrolysis) **Atoms and Bonding** Ionic bonding and properties of ionic substances, Covalent bonding and properties of covalent substances, Metallic bonding and properties of metallic substances, Group 1, Group 7, Nanoscience	**Acids and Bases** Ionic equation for neutralisation, Weak and strong acids, Word equations for reactions of acids with metals, carbonates, hydroxides and oxides, Naming the salts produced in different neutralisation reactions. **Electrolysis** Cell diagrams, products of electrolysis, ionic equations, oxidation and reduction, Electroplating, Aluminium extraction, Half equations.	**Rates and Equilibrium** Factors affecting Rates of reaction, measuring rates of reactions, Endo and Exothermic reactions, Dynamic equilibrium, Le Chateliers principal. Haber process. **Polymers** Hydrocarbons, Fractional distillation, Alkanes, Alkenes, Cracking, Monomers and Polymers, HDP and LDP, Life cycle assessments
Year 11	**Calculations**	**PPE Analysis**	**Revision/Exams**

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	Mr's, % Mass. Definition of Atomic mass, Moles, Balancing equations, % yields, Concentrations. **Water** Potable water, Different types of water, Sources of water, Desalination of water.	Working on areas of weakness as identified by the PPE and more focus on exam and revision techniques	
Year 12	**Atomic structure:** Atoms, Mass spectrometry, electronic structure and ionisation energies. **Amount of substance:** The mole, chemical equations, titrations, formulas, chemical yield and atom economy. **Introduction to Organic chemistry:** Formulas, functional groups, nomenclature, mechanisms, isomers **Alkanes and haloalkanes:** Alkanes and petroleum, alkanes, Halogenalkanes, Nucleophilic substitution and Elimination reactions.	**Bonding:** Ionic and Covalent bonding, shapes of molecules, intermolecular forces, Metallic bonding and metallic properties. **Energetics:** Enthalpy changes, Bond enthalpies, Hess's law. **Alkenes and Alcohols:** Reactions of Alkenes, Addition polymers, Dehydrating alcohols, Ethanol production and oxidation of alcohols. **Organic analysis:** Tests for functional groups, Mass and infrared spectroscopy	**Kinetics:** Reaction rates, Catalysts and measuring rates. **Equilibrium and redox reactions:** Reversible reactions, industrial process, equilibrium constants, Redox reactions and equation. **Periodicity:** The Periodic table. Periodicity. **Group 2 and group 7 elements:** Group 2 metals and group 2 compounds, Group 7, halide ions and test for ions.
Year 13	**Thermodynamics:**	**Electrode potentials:**	**Period 3 elements:** Period 3 elements and oxides.

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	Enthalpy changes, Born-Haber cycles, Enthalpies of solution, Entropy and free energy change. **Rate Equations and K_p:** Reaction rates and graphs, rate equation, Rate-concentration graphs. Rate determining step. Arrhenius equation, Gas equilibria. **Acids and bases:** Acids, bases and Kw, pH calculations, Titrations and pH curves, titration calculations, Buffer action and calculating the pH of buffers. **Isomerisation and carbonyl compounds:** Optical isomers, Aldehydes and Ketones, Carboxylic acids and Esters, Acyl chlorides, Purifying organic compounds. **Aromatic compounds and amines:** Reactions of Aromatics, Amines and amides, reactions of Amines	Standard electrode potentials, electrochemical series, electrochemical cells. **Polymers:** Condensation polymers, monomers and repeating units, disposal of polymers **Amino acids, proteins and DNA:** Amino acids, proteins, enzymes, DNA **Further synthesis and analysis:** Organic synthesis, NMR spectroscopy, chromatography.	**Transition metals:** Complex ions, isomerism in complex ions, formation of coloured ions, ligand substitution reactions, variable oxidation states, transition metal titrations, metal-aqua ions.