VICTORIA COLLEGE
EST 1852

Chemistry KS3 Curriculum Overview 2020/21

	Autumn Term	Spring Term	Summer Term
Y7	**Introduction** Introduction to Chemistry Hazards and Apparatus Variables and graph drawing skills **Acids and alkalis** Acids and alkalis Use of indicators The pH scale Neutralisation reactions Reactions of acids with alkalis, metals and carbonates **Elements and Compounds** Elements and the Periodic Table Compounds and Mixtures	**Particle Theory** Solids, liquids and gases Particle theory model Changes of state **Separation Techniques** Filtration and evaporation Chromatography Miscible and immiscible liquids **Earth Science** Igneous, sedimentary and metamorphic rocks	**Earth Science** The Rock Cycle Structure and composition of the Earth Revision For end of year examination Practical investigation
Y8	**Formulae and Equations** Structure of the atomic and sub-atomic particles Electron arrangements Names of elements and how to write their formulae (including which elements are diatomic) Names of compounds with two elements present and how to write their formulae Names of compounds with three elements present and how to write their formulae Conservation of mass in a chemical reaction	**Metals** The reactivity series of metals Displacement reactions of metals Corrosion and rusting **Separation Techniques** Miscible and immiscible liquids Distillation Solubility and saturation Solubility curves	**Earth Science** Shrinking Earth Theory Continental Drift Theory Tectonic Plates The Earth's atmosphere now The Earth's atmosphere over time Carbon dioxide, the greenhouse effect and global warming **Water** The water cycle Purifying water to make it safe to drink

	Balancing a chemical equation Use of state symbols in a chemical equation Writing a full balanced equation from either a word equation or given information **Particle Theory** Particle theory model Cooling curves Diffusion Pure and impure substances Dissolving **Metals** Ores and their extraction Periodic Table and metals Reactions of metals with oxygen and acids		
Y9	**Types of Reaction** Physical and chemical changes Exothermic and endothermic reactions Catalysts Formulae and equations recap Neutralisation Metal and non-metal oxides Making salts Oxidation, reduction and REDOX Thermal decomposition reactions Burning and combustion **Rates of Reaction** Following reaction rate Collision theory Surface area	**Rates of Reaction** Concentration Temperature Catalysts Interpreting graphs and calculating gradients **Materials** Crude oil (petroleum) and fractional distillation Polymers Composites and ceramics **Introduction to Bonding** Ions and ionic bonding Covalent bonding **Experimental Techniques (IGCSE)** Measurement Chromatography	**Experimental Techniques (IGCSE)** Purity Distillation **Air and Water (IGCSE)** Water and water treatment Air and fractional distillation of air Noble gases Carbon dioxide and the carbon cycle Common air pollutants and their problems Rusting and its prevention **Note:** *The 9 Express set may have some variation at the end of the year, owing to moving into the GCSE faster in Years 10 and 11*

Chemistry GCSE Curriculum Overview – 2020/21

	Autumn Term	Spring Term	Summer Term
Y10	*Note: The following outline is for option groups with 2 lessons per week in Year 10 (who will then move into 3 lessons per week in Year 11).* *For option groups with 3 lessons per week in Year 10, they will move through this material faster and will also cover material for Year 11 as well.* *Triple Science students with 1 lesson per week may follow a slightly different route.* **Particles** Atomic structure, isotopes and electron arrangements Elements, mixtures and compounds The Periodic Table Ions and ionic bonding Reactions of the alkali metals Non-metals and covalent bonding Structure types related to ionic and covalent bonding **Reaction Rates** Exothermic and endothermic reactions Energy level diagrams Bond energy calculations Following reaction rate Collision theory Looking at how changing surface area, concentration or temperature changes the rate of reaction Catalysts Interpreting graphs and calculating gradients	**Acids, Bases & Salts** The pH scale Neutralisation and making soluble salts Strong and weak as descriptions of acids Ammonia and ammonium salts Classification of oxides Making insoluble salts Thermal decomposition and the limestone cycle **Analysis** Tests for gases Tests for positive ions Tests for negative ions **Stoichiometry and Calculations** Writing balanced equations Relative atomic mass, relative molecular mass and the Avogadro constant The mole Empirical and molecular formulae Moles calculations including solids and gases Limiting and excess reagents Concentration and moles calculations including solutions	**Stoichiometry and Calculations** Titrations Percentage yield and percentage purity **Metals** Ores and mining Metallic bonding and alloys Extraction and reactions of metals Oxidation and reduction reactions involving metals

| Y11 | **Note:** *This following outline is for options groups with 3 lessons per week in Year 11 (who had 2 lessons per week in Year 11). For groups taking 2 lessons per week in Year 11, they will have covered some of this material during Year 10, when they had 3 lessons per week.*
 Triple Science students with 2 lessons per week may deviate slightly from this scheme

 Metals
 Ores and mining
 Metallic bonding and alloys
 Reactions of metals
 Oxidation and reduction reactions involving metals
 Extraction and uses of iron/steel, zinc and aluminium
 Transition metals
 Thermal decomposition of metal hydroxides, carbonates and nitrates

 Organic Chemistry
 Petroleum and fractional distillation
 Alkanes
 Isomerism and homologous series
 Alkenes
 Alcohols
 Carboxylic acids and esters
 Addition polymerisation and condensation polymerisation
 Natural polymers | **Electrolysis**
 Electroplating
 Fuel cells
 The halogens

 Reversible Reactions
 Dynamic equilibria and Le Chatelier's Principle
 The Haber Process
 The Contact Process

 Examination Preparation | |

	Stoichiometry and Calculations Limiting and excess reagents Concentration and moles calculations including solutions Titrations Percentage yield and percentage purity **Electrolysis** Oxidation, reduction and half-equations Electrolysis in molten and aqueous conditions		