CURRICULUM MAP – CHEMISTRY

TRINITY ACADEMY

3rd Form study P1 for terms 1-3, then P2 for terms 4-6. 4th & 5th from study P2 then P1.	Term	1	2	3	4	5	6
	Title	(P1)Atomic structure and the periodic table (P1)Bonding structure and the properties of matter (P1)Quantitative chemistry	(P1)Chemical changes (P1)Energy changes	(P2)Rates and Equilibrium (P2)Organic Chemistry	(P2)Chemical Analysis (P2)The Earth's resources and atmosphere		
	Prior Knowledge	Describe atoms elements and mixtures. Be able to write a chemical and symbol word equation. Basic mathematical skills and the ability to rearrange equations.	Be able to describe the reactivity series. Be able to explain the different properties of compounds and elements Understand energy diagrams. Describe some separation techniques.	Be able to understand energy diagrams Recall factors that can affect the rate of reaction. Recognise some carbon compounds.	Recall ways of identifying some substances. Describe the composition and structure of the Earth and atmosphere, the rock cycle, the carbon cycle. Describe the production of carbon dioxide by human activity and the impact on climate.		
	Core Knowledge	Describe a simple model of the atom consisting of the nucleus and electrons, relative atomic mass, electronic charge and isotopes. Explain the characteristic properties of metals and non-metals Explain chemical reactivity of elements in relation to their position in the Periodic Table. Be able to describe the properties and trends in properties of elements according to their place in the periodic table Describe changes of state of matter in terms of particle	Make and record appropriate observations during chemical reactions including the measurement of temperature changes and rates of reaction by a variety of methods such as production of gas and colour change. Describe the reactions of neutralisation, combustion, displacement Safely use of a range of equipment to purify and/or separate chemical mixtures including evaporation, filtration, crystallisation, distillation. Use appropriate apparatus and techniques to draw, set up and use electrochemical cells for separation and production of elements and compounds.	Be able to identify and explain the factors that influence the rate of reaction: varying temperature or concentration, changing the surface area of a solid reactant or by adding a catalyst Describe factors affecting reversible reactions. Describe carbon compounds and their uses both as fuels and feedstock. Describe fractional distillation, alkanes, alkenes, crude oil and the process of cracking.	Be able to explain the difference between strong and weak acids Distinguish between pure and impure substances Describe and explain separation techniques for mixtures of substances: filtration, crystallisation, chromatography, simple and fractional distillation. Explain how fractional distillation of crude oil and cracking makes more useful materials Interpret chemical equations		

		kinetics, energy transfers and the relative strength of chemical bonds and intermolecular forces Describe types of chemical bonding: ionic, covalent, and metallic Describe bonding of carbon including the structures, bonding and properties of diamond, graphite, fullerenes and graphene. Be able to calculate the relative molecular mass, moles in a reaction, difference in mass and percentage yield.	Describe bond breaking, bond making, activation energy and reaction profiles Balance chemical equations, ionic equations and state symbols Understand reduction and oxidation in terms of loss or gain of oxygen		Analyse the evidence for composition and evolution of the Earth's atmosphere since its formation Be able to describe evidence of the climate change including common atmospheric pollutants: sulphur dioxide, oxides of nitrogen, particulates and their source Discuss the Earth's water resources and how to obtain potable water. Discuss the life cycle of products and recycling to assess environmental impacts associated with all the stages of a product's life.		
	By the end of KS4 students are able to:	• Use a variety of scientific vocabulary and nomenclature. • Use appropriate apparatus to perform measurements in different chemical reactions. • Explain a correct scientific method in experiments and make conclusions then quantify the results by being objective, evaluating data in terms of accuracy, precision, repeatability and reproducibility and identifying potential sources of random and systematic error. • Complete a variety of chemical calculations. • Describe different chemical bonds and how this relates to properties of a substance. • Describe a variety of chemical reactions including metals, acids, alkalis and gases. • Explain the factors that affect the rate of reactions. • Be able to explain the fractional distillation describe the properties of hydrocarbons • Understand and analyse the effect of human impact on the Earth's resources and atmosphere.					