Subject	Chemistry		
	Interpretation of National Curriculum into Year group Endpoints		
Year	**Term 1**	**Term 2**	**Term 3**
12	Students will desribe and explain the concepts of: **Atoms and reactions** This section builds directly from GCSE Science starting with basic atomic structure and isotopes. Next important basic chemical skills are developed including writing chemical formulae and constructing equations The role of acids, bases and salts in then studied in the context of neutralisation reactions. Finally redox reactions are studied using the concepts of oxidation number and electron transfer. Calculating chemical quantities using the concept of amount of substance is woven throughout the sections. **Electrons, bonding and structure** This section introduces the concept of atomic orbitals and develops a deeper understanding of electron configurations linked to the periodic table. The central role of electrons in ionic and covalent bonding is then studied. The important role of molecules is studied, including an explanation of polarity and intermolecular forces. Finally, this section looks at how bonding and structure contribute to properties of substances. **The Periodic Table** Periodic trends are first studied to extend the understanding of structure and bonding. **Core organic chemistry** This is an introduction to the various types of structures, nomenclature, isomerism and reaction mechanisms seen in organic chemistry taught in the context of the homologous series of the alkanes.	Students will desribe and explain the concepts of: **Physical Chemistry** This section introduces physical chemistry within the general theme of energy. Learners first learn about the importance of enthalpy changes, their uses and determination from experimental results including enthalpy cycles. This section then investigates the ways in which a change in conditions can affect the rate of a chemical reaction, in terms of activation energy, the Boltzmann distribution and catalysis. Reversible reactions are then studied, including the dynamic nature of chemical equilibrium and the influence of conditions upon the position of equilibrium. Finally, the integrated roles of enthalpy changes, rates, catalysts and equilibria are considered as a way of increasing yield and reducing energy demand, improving the sustainability of industrial processes. **Core organic chemistry (continued)** More functional groups are introduced: alkenes, alcohols and haloalkanes and the importance of polarity and bond enthalpy in organic reactions are considered whilst developing nomencalture, isomerism and reaction mechanisms further. Organic practical skills are developed.	Students will desribe and explain the concepts of: **The Periodic Table (continued)** Group properties are then studied using Group 2 and the halogens as typical metal and non-metal groups respectively, allowing an understanding of redox reactions to be developed further. Finally, this section looks at how unknown ionic compounds can be analysed and identified using simple test-tube tests. **Rates of reaction (A2 content)** The largely qualitative treatment of reaction rates encountered in Term 2 is developed within a quantitative and graphical context. **Core organic chemistry (continued)** Finally in this unit, the important techniques of infrared spectroscopy and mass spectrometry are used to illustrate instrumental analysis as a valuable tool for identifying organic compounds. **Aromatic compounds** Building on core organic chemistry aromatic compounds are introduced, including the central role of delocalisation within the chemistry of arenes and phenols. Directing groups are introduced including their importance to organic synthesis.