Year 11 Chemistry Curriculum Map

Overview	The Year 11 Chemists are now introduced to the world of Organic chemistry. The chemistry of carbon compounds is so important that it forms a separate branch of chemistry. A great variety of carbon compounds is possible because carbon atoms can form chains and rings linked by C-C bonds. This branch of chemistry gets its name from the fact that the main sources of organic compounds are living, or once-living materials from plants and animals. These sources include fossil fuels which are a major source of feedstock for the petrochemical industry. Chemists are able to take organic molecules and modify them in many ways to make new and useful materials such as polymers, pharmaceuticals, perfumes and flavourings, dyes and detergents. Analysts have developed a range of qualitative tests to detect specific chemicals. The tests are based on reactions that produce a gas with distinctive properties, or a colour change or an insoluble solid that appears as a precipitate. Instrumental methods provide fast, sensitive and accurate means of analysing chemicals, and are particularly useful when the amount of chemical being analysed is small. Forensic scientists and drug control scientists rely on such instrumental methods in their work. The Earth's atmosphere is dynamic and forever changing. The causes of these changes are sometimes man-made and sometimes part of many natural cycles. Scientists use very complex software to predict weather and climate change as there are many variables that can influence this. The problems caused by increased levels of air pollutants require scientists and engineers to develop solutions that help to reduce the impact of human activity. Industries use the Earth's natural resources to manufacture useful products. In order to operate sustainably, chemists seek to minimise the use of limited resources, use of energy, waste and environmental impact in the manufacture of these products. Chemists also aim to develop ways of disposing of products at the end of their useful life in ways that ensure that materials and stored energy are utilised. Pollution, disposal of waste products and changing land use has a significant effect on the environment, and environmental chemists study how human activity has affected the Earth's natural cycles, and how damaging effects can be minimised.				
Year 11	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1 & 2
Topic	C9 Crude Oil and Fuels C10 Organic Reactions	C11 Polymers C12 Chemical Analysis	C13 The Earth's Atmosphere	C14 The Earth's Resources C15 Using Our Resources	Revision and exam preparation Final examinations and bridging work to A level
Knowledge	Carbon compounds as fuels and feedstock Reactions of alkenes and alcohols (chemistry only)	Synthetic and naturally occurring polymers (chemistry only) Purity, formulations and chromatography Identification of common gases	The composition and evolution of the Earth's atmosphere Carbon dioxide and methane as greenhouse gases Common atmospheric pollutants and their sources	Using the Earth's resources and obtaining potable water Life cycle assessment and recycling Using materials (chemistry only) The Haber process and the use of NPK fertilisers (chemistry only)	

		Identification of ions by chemical and spectroscopic means (chemistry only)			
Skills	Make models of alkane molecules using the molecular modelling kits. Investigate the properties of different hydrocarbons. Recognise substances that are alkenes from their names or from given formulae in these forms.	Recognise and use expressions in decimal form. Make estimates of the results of simple calculations. Use of appropriate qualitative reagents and techniques to analyse and identify unknown samples or products including gas tests, flame tests, precipitation reactions. Safe use of a Bunsen burner Use of appropriate qualitative reagents and techniques to analyse and identify unknown samples or products including gas tests, flame tests, precipitation reactions.	To use ratios, fractions and percentages. Evaluate the quality of evidence in a report when given appropriate information Describe uncertainties in the evidence base Recognise the importance of peer Review of results and of communicating results to a wide range of audiences.	Translate information between graphical and numeric form. Interpret LCAs of materials or products given appropriate information. Make estimates of the results of simple calculations.	