

Year (Lesson per fortnight)	Autumn 1 (7 wks)	Autumn 2 (7)	Spring 1 (7)	Spring 2 (6)	Summer 1 (5)	Summer 2 (7)
Year 12 (9) Approx 180 Lessons total	<p>Approx 31 Lessons</p> <p>2-1 Atoms and reactions (Teacher 1)</p> <p>What will be learnt</p> <ol style="list-style-type: none"> 1-The changing atom 2-Atomic structure 3-Atomic masses 4-Determining masses using mass spectrometry 5-Ions and the P.Table 6-Amounts of substance and the mole. 7-Types of formulae 8-Moles and gas volumes 9-Moles and solutions 10-Chemical equations 11-Moles and reactions 12-Percentage Yield 13-Atom economy 14-Acids and bases 15-Salts 16-Formulae of crystals and salts 17-Titrations 18-Oxidation numbers 19-Redox reactions <p>Main outcomes</p> <p>To recap on the fundamentals of Chemistry taught in GCSE and to develop quantitative techniques linked to the mole. Understand how acids and bases react and</p>	<p>Approx 31 Lessons</p> <p>2-1 continued (Teacher 1)</p> <p>4-1 Basic concepts and hydrocarbons (Teacher 2)</p> <p>What will be learnt</p> <ol style="list-style-type: none"> 1-naming organic chemicals 2-organic compounds and their formulae 3-skeletal formulae 4-Isomerism 5-reaction mechanisms 6-properties of alkanes 7-reactions of alkanes 8-properties of alkenes 9-addition reactions of alkenes 10-addition polymerisation 11-polymers-dealing with polymer waste <p>Main outcomes</p> <p>To develop the understanding of organic chemistry learnt at GCSE. To understand the properties and reactions of basic organic compounds.</p> <p>Skills involved</p> <p>Practical skills</p> <p>*See list below table</p> <p>Maths skills</p>	<p>Approx 31 Lessons</p> <p>3-1 The Periodic Table (Teacher 1)</p> <p>What will be learnt</p> <ol style="list-style-type: none"> 1-the development of the periodic table 2-the modern periodic table 3-electrons and the periodic table 4-evidence for electron shells 5-periodicities: ionisation energies and atomic radii 6-metallic bonding and structure 7-periodicities: melting points 8-Group 2 elements: redox reactions 9-Group 2 compounds: reactions 10-Group 17: the halogens 11-testing for ions <p>Main outcomes</p> <p>To further develop a deep understanding of the periodic table and to be able to explain trends and patterns within its groups and periods.</p> <p>Skills involved</p> <p>Practical skills</p> <p>*See list below table</p> <p>Maths skills</p>	<p>Approx 23 Lessons</p> <p>4-2 Alcohols, haloalkanes and analysis (Teacher 2)</p> <p>What will be learnt</p> <ol style="list-style-type: none"> 1-properties of alcohols 2-oxidation of alcohols 3-other reactions of alcohols 4-Haloalkanes 5-Haloalkanes the environment 6-practical skills for organic synthesis 7-synthetic routes in organic synthesis 8-infrared spectroscopy 9-infrared spectroscopy: functional groups 10-mass spectrometry in organic chemistry 11-mass spectrometry: fragmentation patterns 12-combined techniques <p>Main outcomes</p> <p>To further the understanding of organic chemistry specifically linked to alcohols and haloalkane. To understand how to synthesise a compound from another compound. Understand chemical analysis via IR</p>	<p>Approx 27 Lessons</p> <p>3-2 Physical Chemistry (Teacher 1)</p> <p>What will be learnt</p> <ol style="list-style-type: none"> 1-enthalpy and reactions 2-enthalpy profile diagrams 3-enthalpy terms 4-calorimetry 5-Bond enthalpies 6-Hess' law and enthalpy cycles 7-collision theory and rates of reaction 8-catalysts 9-the Boltzmann distribution 10-Chemical equilibrium 11-equilibrium and industry 12-the equilibrium constant Kc <p>Main outcomes</p> <p>To introduce the concept of enthalpy changes, to deepen the understanding of exothermic and endothermic changes, understand collision theory and revisit the concept of equilibrium.</p> <p>Skills involved</p> <p>Practical skills</p> <p>*See list below table</p>	<p>Approx 31 Lessons</p> <p>End of year exam</p> <p>5-1 Rates, equilibrium and pH (Teacher 1)</p> <p>What will be learnt</p> <ol style="list-style-type: none"> 1-Orders, rate equations and rate constants 2-concentration-time graphs 3-rate-concentration graphs 4-rate-determining step 5-the effect of temperature on the rate Constants 6-equilibrium 7-equilibrium and Kp 8-equilibrium constants and their significance 9-Bronsted-Lowry acids and bases 10-Acid-base reactions and Ka 11-Calculating pH of strong and weak acids 12-The ionisation of water and Kw 13-Buffers 14-Neutralisation – Titration curves. <p>Main outcomes</p> <p>Further develop the concept of rates of reaction learnt at GCSE. To</p>

	<p>how this relates to chemical formulae.</p> <p>Skills involved</p> <p>Practical skills</p> <p>*See list below table</p> <p>Maths skills</p> <p>Mean calculations. Percentages. Ratios. Equations. Multi-step calculations.</p> <p>How will it be assessed?</p> <p>Transition test HW booklet End of unit test PAGs</p> <p>2-2 Electrons, bonding and structure (Teacher 2)</p> <p>What will be learnt</p> <p>1-shells and orbitals 2-sub shells and energy levels 3-an introduction to chemical bonding 4-ionic bonding 5-structures of ionic compounds 6-covalent bonding 7-dative covalent bonding 8-structures of covalent bonding 9-shapes of molecules and ions 10-electronegativity and bond polarity 11-intermolecular forces 12-hydrogen bonding</p> <p>Main outcomes</p>	<p>Comparing data.</p> <p>How will it be assessed?</p> <p>HW booklet End of unit test PAGs</p>	<p>Describing patterns. Comparing data.</p> <p>How will it be assessed?</p> <p>HW booklet End of unit test PAGs</p> <p>4-1 continued (Teacher 2)</p>	<p>spectroscopy and mass spectrometry.</p> <p>Skills involved</p> <p>Practical skills</p> <p>*See list below table</p> <p>Maths skills</p> <p>Data analysis.</p> <p>How will it be assessed?</p> <p>HW booklet End of unit test PAGs</p>	<p>Maths skills</p> <p>Measuring and calculating changes, ranges and averages. Equations and multi-step calculations.</p> <p>How will it be assessed?</p> <p>HW booklet End of unit test PAGs</p> <p>4-2 continued...</p> <p>Recap 2-1, 3-1, 3-2 (Teacher 1)</p> <p>Recap 2-2, 4-1, 4-2 (Teacher 2)</p>	<p>fully understand the concept of equilibrium and changes to equilibrium. To understand the significance of rate constants in chemical reactions.</p> <p>Skills involved</p> <p>Practical skills</p> <p>*See list below table</p> <p>Maths skills</p> <p>Graphs, gradients, equations and multi-step calculations.</p> <p>How will it be assessed?</p> <p>HW booklet End of unit test PAGs</p> <p>6-1 Aromatic compounds, carbonyls and acids. (Teacher 2)</p> <p>What will be learnt</p> <p>1-Benzene and its structure 2-naming aromatic compounds 3-Electrophilic substitution 4-Halogenation and Friedel-Crafts 5-Phenols 6-Electrophilic substitution in aromatic compounds 7-Reactions of carbonyl compounds 8-Characteristic tests for carbonyl compounds 9-Carboxylic acids 10-Esters</p>
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