Year 12 Chemistry Sequence

	Content Taught	Reference	Essential knowledge	Assessment	Rationale
YEAR 12 CHEMISTRY					
HT1	**Atomic structure** **Amount of Substance** **Introduction to Organic Chemistry**	**3.1.1 Atomic structure** 3.1.1.1 3.1.1.2 3.1.1.3 **3.1.2 Amount of Substance** 3.1.2.1 3.1.2.2 3.1.2.3 3.1.2.4 **3.3.1 Introduction to organic chemistry** 3.3.1.1 3.3.1.2 3.3.1.3	**Atomic structure** Fundamental particles Mass number and isotopes Electron configuration **Amount of Substance** Relative atomic mass and relative molecular mass The mole and the Avogadro constant The ideal gas equation Empirical and molecular formula **Introduction to organic chemistry** Nomenclature Reaction mechanisms Isomerism **Alkanes**	**<u>Formative Assessment:</u>** Daily, Weekly and Monthly Reviews focussing on reviewing material on Essential Knowledge. Use of TLaC techniques in lessons to check pupil understanding of essential knowledge during each lesson. **<u>Summative Assessment:</u>** Assessment is taken in class and covers all topics studied up to this point. Questions are taken from past exam papers and graded using typical grade boundaries from A Level Chemistry exams. Assessment is completed in class based on prior learning. Recall testing, homework testing and exam questions form the basis of assessment for this half term.	The qualification is delivered by 2 teachers who deliver different aspects of the course concurrently (physical and organic). Students begin with fundamental Chemistry in the form of Atomic Structure. This builds on the GCSE Knowledge and allows them to apply their understanding to atomic structure and amount of substance, we follow the order put forward by the exam board as this allows for a development of the literacy, numeracy

	Alkanes	**3.3.2 Alkanes** 3.3.2.1 3.3.2.2	Fractional distillation of crude oil Modification of alkanes by cracking ***Reading for consolidation:*** Physical-I Detailed 1.1. Atomic Structure (physicsandmathstutor.com) Physical-I Detailed 1.2. Amount of Substance (physicsandmathstutor.com) Organic-I Detailed 3.1. Introduction to Organic Chemistry (physicsandmathstutor.com) Organic-I Detailed 3.2. Alkanes (physicsandmathstutor.com)	Assessment is taken in class and covers all topics studied up to this point.	and examination skills to allow them to access the second year of the course. At the same time, the students begin the organic chemistry section. This builds on the topic in GCSE, revisiting the names and structures from combined chemistry and covered in more detail through triple science. Through recall and revisiting aspects, the students begin naming molecules and then progresses through a variety of simple organic reactions and mechanisms as a foundation for the chemical literacy and use of mechanisms in the remainder of the A Level course.
HT2	**Amount of substance** **Bonding**	**3.1.2 Amount of Substance** 3.1.2.5 **3.1.3 Bonding** 3.1.3.1 3.1.3.2 3.1.3.3 3.1.3.4 3.1.3.5	**Amount of substance** Balanced equations and associated calculations **Bonding** Ionic bonding Nature of covalent and dative covalent bonds Metallic bonding Bonding and physical properties	**Formative Assessment:** Daily, Weekly and Monthly Reviews focussing on reviewing material on Essential Knowledge. Use of TLaC techniques in lessons to check pupil understanding of essential knowledge during each lesson. **Summative Assessment:**	

	Alkanes **Haloalkanes**	**3.3.2 Alkanes** 3.3.2.3 3.3.2.4 **3.3.3 Halogenoalkanes** 3.3.3.1 3.3.3.2	Shapes of simple molecules and ions **Alkanes** Combustion of alkanes Chlorination of alkanes **Halogenoalkanes** Nucleophilic substitution Elimination ***Reading for consolidation:*** Physical-I Detailed 1.2. Amount of Substance (physicsandmathstutor.com) Physical-I Detailed 1.3. Bonding (physicsandmathstutor.com) Organic-I Detailed 3.2. Alkanes (physicsandmathstutor.com) Organic-I Detailed 3.3. Halogenoalkanes (physicsandmathstutor.com)	Cumulative assessment is taken in class and covers all topics studied up to this point. Topics covered: Atomic structure Amount of substance Introduction to organic chemistry Alkanes Bonding Alkanes Haloalkanes Questions are taken from past exam papers and graded using typical grade boundaries from A Level Chemistry exams.	
HT3	**Bonding**	**3.1.3 Bonding** 3.1.3.6 3.1.3.7	**Bonding** Bond Polarity Forces between molecules **Energetics**	**Formative Assessment:** Daily, Weekly and Monthly Reviews focussing on reviewing material on Essential Knowledge.	

	Energetics **Haloalkanes** **Alkenes**	**3.1.4 Energetics** 3.1.4.1 3.1.4.2 3.1.4.3 3.1.4.4 **3.3.3 Halogenoalkanes** 3.3.3.3 **3.3.4 Alkenes** 3.3.4.1 3.3.4.2 3.3.4.3	Enthalpy change Calorimetry Applications of Hess's law Bond enthalpies **Halogenoalkanes** Ozone depletion **Alkenes** Structure, bonding and reactivity Addition reactions of alkenes Addition polymers ***Reading for consolidation:*** Physical-I Detailed 1.3. Bonding (physicsandmathstutor.com) Physical-I Detailed 1.4. Energetics (physicsandmathstutor.com) Organic-I Detailed 3.3. Halogenoalkanes (physicsandmathstutor.com) Organic-I Detailed 3.4. Alkenes (physicsandmathstutor.com)	Use of TLaC techniques in lessons to check pupil understanding of essential knowledge during each lesson. **Summative Assessment:** Assessment is taken in class and covers all topics studied up to this point. Questions are taken from past exam papers and graded using typical grade boundaries from A Level Chemistry exams. Assessment is completed in class based on prior learning. Recall testing, homework testing and exam questions form the basis of assessment for this half term. Assessment is taken in class and covers all topics studied up to this point.	

HT4	**Kinetics** **Equilibria** **Redox**	**3.1.5 Kinetics** 3.1.5.1 3.1.5.2 3.1.5.3 3.1.5.4 3.1.5.5 **3.1.6 Chemical equilibria, Le Chatelier's principle and K_c** 3.1.6.1 3.1.6.2 **3.1.7 Oxidation, reduction and redox equations** **3.3.5 Alcohols** 3.3.5.1 3.3.5.2	**Kinetics** Collision theory Maxwell–Boltzmann distribution Effect of temperature on reaction rate Effect of concentration and pressure Catalysts **Equilibria** Chemical equilibria and Le Chatelier's principle Equilibrium constant Kc for homogeneous systems **Redox** Oxidation, reduction and redox equations **Alcohols** Alcohol production Oxidation of alcohols ***Reading for consolidation:*** Physical-I Detailed 1.5. Kinetics (physicsandmathstutor.com)	**Formative Assessment:** Daily, Weekly and Monthly Reviews focussing on reviewing material on Essential Knowledge. Use of TLaC techniques in lessons to check pupil understanding of essential knowledge during each lesson. **Summative Assessment:** Cumulative assessment is taken in class and covers all topics studied up to this point. Topics covered: Atomic structure Amount of substance Introduction to organic chemistry Alkanes Bonding Alkanes Haloalkanes Energetics Alkenes Kinetics Equilibria Redox Questions are taken from past exam papers and graded using typical grade boundaries from A Level Chemistry exams.	

			Physical-I Detailed 1.6. Equilibria (physicsandmathstutor.com) Physical-I Detailed 1.7. Oxidation, Reduction and Redox Equations (physicsandmathstutor.com) Organic-I Detailed 3.5. Alcohols (physicsandmathstutor.com)		
HT5	**Periodicity** **Group 2** **Alcohols** **Organic analysis**	**3.2.1 Periodicity** 3.2.1.1 3.2.1.2 **3.2.2 Group 2, the alkaline earth metals** **3.3.5 Alcohols** 3.3.5.3 **3.3.6 Organic analysis** 3.3.6.1	**Periodicity** Classification Physical properties of Period 3 elements **Group 2** Group 2, the alkaline earth metals **Alcohols** Elimination **Organic Analysis** Identification of functional groups by test-tube reactions ***Reading for consolidation:*** Inorganic-I Detailed 2.1. Periodicity (physicsandmathstutor.com)	**Formative Assessment:** Daily, Weekly and Monthly Reviews focussing on reviewing material on Essential Knowledge. Use of TLaC techniques in lessons to check pupil understanding of essential knowledge during each lesson. **Summative Assessment:** Cumulative assessment is taken in class and covers all topics studied up to this point.	

			Inorganic-I Detailed 2.2. Group 2 Metals (physicsandmathstutor.com) Organic-I Detailed 3.5. Alcohols (physicsandmathstutor.com)		
HT6	**Halogens** **Organic analysis**	**3.2.3 Group 7(17), the halogens** 3.2.3.1 3.2.3.2 **3.3.6 Organic analysis** 3.3.6.2 3.3.6.3	**Halogens** Trends in properties Uses of chlorine and chlorate(I) **Organic Analysis** Mass spectrometry Infrared spectroscopy ***Reading for consolidation:*** Inorganic-I Detailed 2.3. Group 7 the Halogens (physicsandmathstutor.com) Organic-I Detailed 3.6. Organic Analysis (physicsandmathstutor.com)	**Formative Assessment:** Daily, Weekly and Monthly Reviews focussing on reviewing material on Essential Knowledge. Use of TLaC techniques in lessons to check pupil understanding of essential knowledge during each lesson. **Summative Assessment:** Assessment taken in the hall in exam conditions. All year 12 topics assessed. AS Level Chemistry paper 1 and 2 taken.	