Year 11 Chemistry Sequence

	Content Taught	Reference	Essential knowledge	Assessment	Rationale
YEAR 11 CHEMISTRY					
HT1	**Organic Chemistry 1** Students understand how crude oil is formed, how the fractions are separated and the properties of these fractions. This includes patterns in the length of the hydrocarbon chains and the reasoning behind those properties. How long hydrocarbons are made useful through cracking and how alkenes and alkanes can be identified. Triple: Students look at structures and properties of molecules with different functional groups: alcohols, carboxylic acids and esters. Students then look at addition and condensation polymers, then their relationship to DNA and amino acids.	**4.7 Organic chemistry** 4.7.1 4.7.2 4.7.3	Carbon compounds as fuels and feedstock Reactions of alkenes and alcohols Synthetic and naturally occurring polymers **Wider reading:** https://sherpa-online.com/blog/read/GCSE-Chemistry---Crude-Oil-and-Hydrocarbons-what-is-Crude-Oil-and-how-do-we-use-it	**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 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 GCSE 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. Topics covered:	Students build on their knowledge and understanding from year 10, in the form of bonding and small molecules, looking at how organic molecules react and how they can be used. This then leads to applications of chemistry such as how ions or compounds are identified and how chemistry is applied in an industrial setting. Following this topic, Chemistry of the atmosphere as the opportunity to

				Working scientifically Atomic structure Chemical analysis Bonding Quantitative Chemistry Chemical changes Rate of chemical change Extent of chemical change Organic Chemistry Questions are taken from past exam papers and graded using typical grade boundaries from GCSE Chemistry exams.	further apply understanding of bonding to the atmosphere, and build scientific cultural capital in understanding climate change and the use of science in the media. Then, investigate further applications of the chemistry content covered throughout the rest of the course in areas such as the delivery and treatment of water, fertilisers, materials science and the protection of metals.
HT2	**Chemical analysis 2** Students understand the difference between purity in everyday and purity in chemistry. Then look to how companies use formulations and how compounds are separated using chromatography and test tube reactions for common gases. Triple students: use flame tests and simple test tube reactions to identify cations and anions. Then look at flame emission spectroscopy to further identify unknown ions.	**4.8 Chemical Analysis** 4.8.1 4.8.2 4.8.3	Purity, formulations and chromatography Identification of common gases Identification of ions by chemical and spectroscopic means **Wider reading:** https://edu.rsc.org/feature/know-your-poison-the-festival-chemical-safety-net/3007847.article	**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.	

HT3	**Earth Chemistry 2** Students understand the changes in the atmosphere from the formation to the earth's atmosphere, the evolution of the current atmosphere and the impact of current human activities on the environment.	**4.9 Chemistry of the atmosphere** 4.9.1 4.9.2 4.9.3	The composition and evolution of the Earth's atmosphere Carbon dioxide and methane as greenhouse gases Common atmospheric pollutants and their sources **Wider reading:** https://edu.rsc.org/feature/grounded-keeping-the-carbon-beneath-our-feet/4011133.article	**Formative Assessment:** Daily, Weekly and Monthly Reviews focussing on reviewing material on Essential Knowledge. HUse 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 GCSE 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	**Using resources 1** Students understand sustainable development, how water is cleaned and treated, and the environmental impact of the manufacturing process through life cycle assessments. Furthermore, students see how	**4.10 Using resources** 4.10.1	Using the Earth's resources and obtaining potable water Life cycle assessment and recycling	**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:**	

	copper can be extracted using more environmentally friendly methods. Triple: students look at applications of ideas covered earlier in the course: corrosion protection, ceramics and composites, alloys, the haber process and how fertilizers are made.		Using materials The Haber process and the use of NPK fertilizers **Wider reading:** https://www.sciencehistory.org/historical-profile/fritz-haber	Assessment taken in the hall in exam conditions.	
HT5	**Revisit of all content.** Time taken to review and reteach topics in which the students have struggled with either the substantive or disciplinary knowledge. Using data driven instruction to identify key topics, practicals or misconceptions which will allow the students to revisit key areas throughout the term, with the intention to reteach the knowledge, refresh understanding and review through revision techniques and recall.	All	Identify skill and knowledge weaknesses and deliver re-teach and review using data driven instruction to identify disciplinary or substantive knowledge.	**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 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 GCSE 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.	
HT6	**Revisit of all content.** Time taken to review and reteach topics in which the students have struggled with either the substantive or disciplinary knowledge. Using data driven instruction to identify key topics, practicals or misconceptions which will allow the students to revisit key areas throughout the term, with the intention to reteach the knowledge, refresh understanding and review through revision techniques and recall.	All	Identify skill and knowledge weaknesses and deliver re-teach	**<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 GCSE 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.	