

Curriculum Content Map			Subject: Year 11 Combined Science (Chemistry)										
Month		September	October	November	December	January	February	March	April	May	June	July	
	Units of Work	Chapter 9 - Crude oil and fuels	Chapter 10 - Chemical analysis Chapter 11 - Polymers	Chapter 12 - Chemical analysis Chapter 13 - The Earth's atmosphere	Chapter 13 - The Earth's atmosphere	C14 - The Earth's resources	Chapter 15 - Using our resources	Chapter 15 - Using our resources	Revision for Combined Science GCSE	Revision for Combined Science GCSE	EXAM SEASON		
Cultural Transmission	National Curriculum area - KS3	National Curriculum K54 Programme of Study: Chemistry • bonding of carbon leading to the vast array of natural and synthetic organic compounds that occur due to the ability of carbon to form families of similar compounds, chains and rings • separation techniques for mixtures of	National Curriculum K54 Programme of Study: Chemistry Chemical analysis • distinguishing between pure and impure substances • separation techniques for mixtures of substances: filtration, crystallisation, chromatography, simple and fractional	National Curriculum K54 Programme of Study: Chemistry Chemical analysis • distinguishing between pure and impure substances • separation techniques for mixtures of substances: filtration, crystallisation, chromatography, simple and fractional	National Curriculum K54 Programme of Study: Chemistry Earth and atmospheric science • evidence for composition and evolution of the Earth's atmosphere since its formation • evidence, and uncertainties in evidence, for additional anthropogenic causes of	National Curriculum K54 Programme of Study: Chemistry Chemical and allied industries • life cycle assessment and recycling to assess environmental impacts associated with all the stages of a product's life • the viability of recycling of certain	National Curriculum K54 Programme of Study: Chemistry All Content	National Curriculum K54 Programme of Study: Chemistry All Content	National Curriculum K54 Programme of Study: Chemistry All Content	National Curriculum K54 Programme of Study: Chemistry All Content			
	Substantive Knowledge	What crude oil is made up of What alkanes are (and the names of the first 4 alkanes) and how to represent their chemical formula or displayed formula How size of molecules affects physical properties of alkanes and how the alkanes are separated by fractional distillation How the fractions of crude oil are used complete and incomplete combustion and the balanced equations of combustion Cracking larger hydrocarbons to more useful smaller ones and alkenes and how the alkenes differ from alkanes HT: Mole calculations for the complete combustion of alkanes	Distinguishing pure and impure substances using melting point and chromatography Analysis of chromatograms and how to determine Rf value from a chromatogram Tests and positive results for Hydrogen, oxygen, carbon dioxide and chlorine Addition and condensation polymerisation and the monomers from displayed formulae Drawing diagrams representing the formation of polymers from a given alkene relating a repeating unit of a polymer to its monomer The appearance and properties of different functional groups how polyesters are formed The formation of natural polymers such as proteins, starch and cellulose HT: The structure of amino acids and how they react together to form polypeptides and proteins by condensation polymerisation Nucleotides and DNA and the way they are arranged in DNA	Distinguishing pure and impure substances using melting point and chromatography Analysis of chromatograms and how to determine Rf value from a chromatogram Tests and positive results for Hydrogen, oxygen, carbon dioxide and chlorine Theory of the development of the atmosphere and the evidence behind the theory The main changes that took place and the likely causes of these changes The relative proportions of gases in our atmosphere now The greenhouse effect Evaluation of the evidence about global climate change The importance of peer review and communication of results to a wide range of audiences methods of reducing carbon dioxide and methane emissions The scale, risk and environmental implications of global climate change Combustion products and air pollution	Theory of the development of the atmosphere and the evidence behind the theory The main changes that took place and the likely causes of these changes The relative proportions of gases in our atmosphere now The greenhouse effect Evaluation of the evidence about global climate change The importance of peer review and communication of results to a wide range of audiences methods of reducing carbon dioxide and methane emissions The scale, risk and environmental implications of global climate change Combustion products and air pollution	Chemical and allied industries • life cycle assessment and recycling to assess environmental impacts associated with all the stages of a product's life • the viability of recycling of certain materials • carbon compounds, both as fuels and feedstock, and the competing demands for limited resources • fractional distillation of crude oil and cracking to make more useful materials • extraction and purification of metals related to the position of carbon in a reactivity series	The use of experimental results to show the conditions necessary for rusting How we can protect objects from rusting Examples of alloys, why they are alloyed and the uses of alloys The properties of polymers and how reaction conditions are changed to modify the polymers made The differences between thermosetting and thermosoftening polymers How the properties of materials are related to their uses and how to select appropriate materials and how to quantitatively compare the physical properties of materials The production of ammonia including the raw materials and conditions used and its importance Control of equilibrium position and rate in the Haber process Production of fertilisers in the lab and in a factory and how fertilisers improve crop production	The use of experimental results to show the conditions necessary for rusting How we can protect objects from rusting Examples of alloys, why they are alloyed and the uses of alloys The properties of polymers and how reaction conditions are changed to modify the polymers made The differences between thermosetting and thermosoftening polymers How the properties of materials are related to their uses and how to select appropriate materials and how to quantitatively compare the physical properties of materials The production of ammonia including the raw materials and conditions used and its importance Control of equilibrium position and rate in the Haber process Production of fertilisers in the lab and in a factory and how fertilisers improve crop production					
	Disciplinary Knowledge	The How!	Students will have a combination of theory and practical lessons. They will learn to interpret information in tables, graphs and diagrams. Students will have to read regularly and demonstrate comprehension of new learning	Students will have a combination of theory and practical lessons. They will learn to interpret information in tables, graphs and diagrams. Students will have to read regularly and demonstrate comprehension of new learning	Students will have a combination of theory and practical lessons. They will learn to interpret information in tables, graphs and diagrams. Students will have to read regularly and demonstrate comprehension of new learning	Students will have a combination of theory and practical lessons. They will learn to interpret information in tables, graphs and diagrams. Students will have to read regularly and demonstrate comprehension of new learning	Students will have a combination of theory and practical lessons. They will learn to interpret information in tables, graphs and diagrams. Students will have to read regularly and demonstrate comprehension of new learning	Students will have a combination of theory and practical lessons. They will learn to interpret information in tables, graphs and diagrams. Students will have to read regularly and demonstrate comprehension of new learning	Students will have a combination of theory and practical lessons. They will learn to interpret information in tables, graphs and diagrams. Students will have to read regularly and demonstrate comprehension of new learning	Students will have a combination of theory and practical lessons. They will learn to interpret information in tables, graphs and diagrams. Students will have to read regularly and demonstrate comprehension of new learning	Students will have a combination of theory and practical lessons. They will learn to interpret information in tables, graphs and diagrams. Students will have to read regularly and demonstrate comprehension of new learning		
	Sequencing (Flow)	Retrieval & Extension	Retrieval will focus on the content from year 10 during September. Focus on key concepts such as periodic table and structure of atoms. Creativity and the creation of questions should be encouraged as the extension tasks	Retrieval should adopt a standardised - Last Lesson, Last week, Last year format. The use of neatpod and other similar systems should be used to facilitate and record retrieval exercises every lesson	Retrieval should adopt a standardised - Last Lesson, Last week, Last year format. The use of neatpod and other similar systems should be used to facilitate and record retrieval exercises every lesson	Following the AP1 assessment, the retrieval should refer to the AP1 question by question analysis and should include a question from the AP1 which needs to be developed	Following the AP1 assessment, the retrieval should refer to the AP1 question by question analysis and should include a question from the AP1 which needs to be developed	Following the AP2 assessment the focus should now shift from AP1 and the retrieval should now include a last lesson, last week and AP2 gap topic question - preferably lifted straight from the AP2 assessment paper	Following the AP2 assessment the focus should now shift from AP1 and the retrieval should now include a last lesson, last week and AP2 gap topic question - preferably lifted straight from the AP2 assessment paper	Retrieval should be linked in some way to the mock exams and should focus students on reducing gaps in knowledge that have been identified from the question by question analysis	Retrieval should be linked in some way to the mock exams and should focus students on reducing gaps in knowledge that have been identified from the question by question analysis		
	Summative Assessment		AFL within each lesson and also the use of homeworks and end of unit assessments. Use fo systems such as neatpod to formally record and analyse AFL	AFL within each lesson and also the use of homeworks and end of unit assessments. Use fo systems such as neatpod to formally record and analyse AFL	AP1 - Paper 1	AFL within each lesson and also the use of homeworks and end of unit assessments. Use fo systems such as neatpod to formally record and analyse AFL	AP2 - Paper 1	AFL within each lesson and also the use of homeworks and end of unit assessments. Use fo systems such as neatpod to formally record and analyse AFL	Mock examinations (papers 1 and 2)	Use of past exam papers and questions as the basis of revision	Use of past exam papers and questions as the basis of revision		
	Personal Empowerment	Virtue	Friendliness & Civility	Justice & Truthfulness	Courage	Generosity	Gratitude	Good Speech	Good Temper & Humour	Self-Mastery	Self-Mastery		
Link to Virtue		The opportunity to reflect, think deeply and critically about an issue. It is at this time of year that students and staff will be building and strengthening a working relationship within Chemistry. Students will need to remember the virtues of friendliness and civility and the importance of these in building and sustaining relationships for learning	Students will seek scientific truth in diagrams and equations in order to deepen understanding. They will be introduced the use of chromatography in forensic science	students will need to demonstrate courage as they try to understand the concepts linked to understanding groups - in particular tackling questions on concepts such as climate change and have courage to make changes in their lifestyles to potentially reduce their personal contribution to climate change	Students will be encouraged to be generous with their time and support for each other as they all try to justify the need for conservation of the Earth's resources	Students will demonstrate gratitude for the work carried out by early chemists who led the way on utilising the Earth's resources in many different ways in chemistry	Students should be encouraged to discuss the work using key terms linked to the topic of fuels. There might be the opportunity for research and presentation in this topic	Students will need to demonstrate good temper during this month when tackling the mock exams	Students will need to develop the skill of self mastery as they spend time reviewing the mock assessment and acting on advice to improve on theres topics	Students will need to focus on the skill of self mastery as they build on the AP3 amd focus on the forthcoming GCSE final exams			
Preparation for Work	Skill	Listening	Leadership	Problem-Solving	Creativity	Staying Positive	Speaking	Staying Positive	Aiming High	Aiming High			
	Link to Skill	Transferable skills Students will need to listen to each other and be able to explain another students' opinion. Students will also need to be listen to the teacher to pull out consistentStudents will lead their learning to ensure they are secure in building on previous knowledge.y underlying themes or use of previous skills.	Students will lead their learning to ensure they are secure in building on previous knowledge.	Students will need to use their problem-solving skills to be able to draw conclusions from data.	Students will be creating questions based on the concepts within the topic. They could be challenge by use of mark schemes as the basis of questions	Students will understand the problems faced by early scientists and the need for peer review	Students will have opportunity to discuss the issues linked to fuels. This could also be linked to news articles and fuel prices etc. They can be encouraged to link discussions back to work on other topics	Students will need to remain positive when revising and revisiting concepts from the course	Students will need to aim high as the end of year and final assessments are coming to a conclusion,	Stidents will need to aim high as they work towards the end of the year and try to secure knowledge ahead of GCSE final exams			
Preparation for Citizenship	SMSC & British Values	Social Mutual Respect	Social Rule of Law	Social Tolerance	Social Individual Liberty	Social Individual Liberty	Social Individual Liberty	Social Tolerance	Social Individual Liberty	Social Individual Liberty			
	Link to SMSC & British Values	Developing opinions on current issues Students will need to build mutual respect for each other as the group dynamics are formed at the start of the academic year	Students can think about links between the rule of law and how these are followed, and how we use laws in chemistry in order to help understanding	Students will need to demonstrate tolerance as they work closely with each other effectively in order to understand this topic	Students should be encouraged to exercise their individual liberty and to create questions on this topic to their own specifications and design	Students should consider how issues with fuel can affect their own individual liberty as travel and freedom of travel may be affected	Students should consider how issues with fuel can affect their own individual liberty as travel and freedom of travel may be affected	Students will need to be tolerant of each other as they all set out to revise different areas of strength and weakness as this can put different demands on staff and resources	Students will need to be tolerant of each other as they all set out to revise different areas of strength and weakness as this can put different demands on staff and resources	Students will need to be tolerant of each other as they all set out to revise different areas of strength and weakness as this can put different demands on staff and resources			