

Higher Level Planning and though rationale behind sequencing of the curriculum- Science KS3

Year 7

<u>Aut 1</u>	<u>Aut 2</u>	<u>Spr 1</u>	<u>Spr 2</u>	<u>Sum1</u>	<u>Sum2</u>
Baseline Assessment	Combined assessment, assessing knowledge of all topics from previous term. Gaps in knowledge addressed.				
Introduction to Science	Organisms - Cells	Genes - Genes and Variation	Earth– Structure and composition	Waves - Light	Matter–Elements, atoms and compounds
Re-teach, Assessment and feedback					
Electricity - Current	Electricity - Voltage and resistance	Forces - Speed	Organisms – Organisation Movement	Ecosystems- Plant reproduction	Reactions- Metal vs non metals
Re-teach, Assessment and feedback					
Structure and function of living organisms - Cells	Matter - Particle Model			Matter– Elements, atoms and compounds	Energy - Energy Transfer

Year 8

<u>Aut 1</u>	<u>Aut 2</u>	<u>Spr 1</u>	<u>Spr 2</u>	<u>Sum1</u>	<u>Sum2</u>
Baseline Assessment	Combined assessment, assessing knowledge of all topics from previous term. Gaps in knowledge addressed.				
Electricity and electromagnets - Magnetism	Forces - Contact forces	Organisms – Breathing	Organisms – Digestion	Ecosystems- Interdependence and Food webs	Reactions - Acid and alkalis
Re-teach, Assessment and feedback					
Reactions – Properties and Reactions	Earth – Resources	Matter - Separating mixtures	Earth - Universe	Energy- Energy costs	Waves - Sound
Re-teach, Assessment and feedback					

Year 9

<u>Aut 1</u>	<u>Aut 2</u>	<u>Spr 1</u>	<u>Spr 2</u>	<u>Sum1</u>	<u>Sum2</u>
Baseline Assessment	Combined assessment, assessing knowledge of all topics from previous term. Gaps in knowledge addressed.				
Electricity - Electromagnetism	Genes- Reproduction	Ecosystems- Respiration	Ecosystems - Photosynthesis	Waves - Wave properties and effects	Genes - Evolution
Combined assessment, assessing knowledge of all topics from previous term. Gaps in knowledge addressed.					
Matter- Atomic structure	Reactions- Heating and cooling Reactions- Types of reaction	Forces - Pressure	Earth- Earth's resources	Reactions - Chemical energy	Earth - Climate
Combined assessment, assessing knowledge of all topics from previous term. Gaps in knowledge addressed.					

	When?	Composites and components.	Why?
Year 7	Autumn 1	Introduction to Science	<p>Students will need to grasp an understanding for safety in the lab and the different equipment for different experiments....</p> <p>You will notice that we follow an interleaved approach in science (physics, chemistry and biology composites are all mixed up) because 'it allows the brain to differentiate between schema connections and this will strengthen memory associations,' (Rohrer, 2012)</p>
		Electricity - Current	<p>Electricity is the first composite that students at Willenhall will learn because students can use their knowledge from introduction to science and safety in the lab to apply this to experiments using circuits. Students will be able to link knowledge to their homes because every household in the UK as electricity supply. With the concept that everything is made up of smaller units (electricity and electrons) we then move onto cells. Connections can then be made between this topic, being current, and the subsequent physics topic of voltage and resistance. Students can be stretched to think about the relationship between current, voltage and resistance. (SPR)</p>
		Structure and function of living organisms - Cells	<p>Students will learn that cells are the building blocks of living organisms and this builds on the knowledge that everything is made up of smaller things. Whilst we want our students to differentiate between the physics (electricity) and the biology (cells) entities we still want them to make schemata connections. Just like cells being the building block of living organisms this component (cells) of the composite structure and function of the living organism will act as a building block for the knowledge gained throughout KS3 of the structure and function of the living organism. Then students revisit the concept of electricity in another way. Again this topic is starting at the smallest level in which we refer to in biology. Students can then link this knowledge to how DNA is found within the cell, and more specifically, the nucleus. They can also apply understanding to the following biology topic on movement in which students learn that tissue is made up of multiple</p>

			cells, and structures within the cell provide energy e.g. mitochondria to enable movement (SPR)
	Autumn 2	Electricity – Voltage and resistance	This component is built from composite Electricity. Students return to the composite electricity to strengthen their schemas, build on existing knowledge and close any gaps they might have had in knowledge....Students have previously learned that electricity happens because of the movement of electrons in a circuit. The force that pushes electrons around is called voltage: This is the source of energy just like energy is required in order to build molecules into larger macromolecules, and to turn macromolecules into organelles and cells, and then turn those cells into tissues, organs, and organ systems, and finally into an organism. Components in a circuit will oppose the flow of electrons, this is resistance. Students can link their understanding of voltage and resistance back to the topic of current. E.g. how is current effected by an increased resistance? (SPR)
		Matter – Particle Model	Students are then introduced to their first chemistry composite, however we teach this particle model here because it allows them to make links to the previous topics that all things are made up of smaller things. All matter is made up of particles, just like all living things are made up of cells and all electricity is made up of electrons. The particle model includes the particle theory of matter suggesting that particles are constantly moving or in continual state of motion. The degree to which particles move depends on the amount of energy they have and on their relationship with other particles. This first chemistry topic is working at the smallest level of the particle model. Teaching this knowledge early enables students to apply this to genes (must be made up of particles) as well as structure of the Earth (particle arrangement of rocks) which is taught in the Spring term (SPR)
	Spring 1	Genes – Genes and variation	Now students have an understanding of cells and the structure and function of them, we then introduce genes. Students know by now that within a cell the nucleus makes up the DNA which holds genes. We then build upon this knowledge to look at how certain genes have been selected to our advantage and aided in species survival. This

			topic also involves graph skills teaching students about scale, axis, labels and titles. Students then have the opportunity to apply this knowledge to the following topic 'force and speed' in which they are required to draw distance-time graphs and velocity-time graphs. (SPR)
		Forces- Speed	This component is from Forces composites. After students have learned what is the makeup of our genotype, now they are introduced to forces and speed. DNA is a chemical molecule that can interact with radiation just like non-contact forces. Radiation can then modify the structure of DNA leading to mutation. Here students discover two types of forces: contact and non-contact forces. Moreover, students will also get an understanding on different forces for instance that act on a car. The magnitude of each force friction, thrust, air resistance, reaction and weight will either accelerate or decelerate the car therefore the speed of the car depends on these forces. The measurement of how far something travels in a particular time is called speed. Students here have the opportunity to become familiar with units and equations which builds on the previous physics knowledge on voltage and resistance. Students are given further opportunity to become familiar with graphs, both in regards to interpreting them and drawing them themselves. (SPR)
	Spring 2	Earth – Structure and composition	This component is from Earth composite. After students have learned gravity as the force that allows an Astronaut in a space station to float around and perform tricks. Gravity an example of a non-contact force on which all objects and people act stretches far beyond Earth. Our home planet Earth is a rocky, terrestrial planet. Earth is special because it is an ocean planet. Water covers 70% of Earth's surface. Our atmosphere is made mostly of nitrogen and has plenty of oxygen for us to breathe. This topic follows nicely on from the previous chemistry topic on the particle model since students can link the particle model to properties of rocks. There is also the link of forces when talking about the uplift of rocks and how this is a result of a large force. (SPR)
		Organisms – Organisation and movement	We return to the composite organisms again to strengthen memory and forge associations growing our schema and neuronal connections.

			Students will make the connections between cells being the building block and all cells make up tissue, and tissues make up organs, and organs our part of a bodily system. With this in mind they then look at movement (skeletal and muscular system)...
	Summer 1	Waves- Light	This component is part of the waves composite. Just as students have learned that organisms are organised and can move around, so does light. Light is a transverse wave that moves differently in different media: solids, liquids, gases and in vacuum. Light or visible light is organised in different colours: this is is called dispersion observed when we use a prism. Just like organisms behave differently, so does light when it is either reflected by a mirror or refracted by glass or water. Next, students learn how plants use sunlight to produce their food.
		Ecosystems – Plant reproduction	This is part of the Ecosystems composite. Just like, light is a spectrum, made up of different colours so is an ecosystem. Here students learn that an ecosystem is made up of plants and animals that are found in a particular location and in the area in which they live. As plants live in their habitat, they will compete for light water, space and nutrients so do animals compete for food, space, water and mates. Students find out that plants are living organisms and learn not only flowers have colours and smell, but also a reproductive system (stamen and carpel).
		Matter – Elements, atoms and compounds	This component is part of the matter composite. Students have learned that stamen is the reproductive male part of the flower that comprises: anther and filament; carpel the female reproductive part of the flower that comprises stigma, style and ovary, here they will learn that elements are made up of one type of atom only; that atoms can combine to form compounds. Next, students will learn that compounds are formed as a result of chemical reactions
Summer 2	Reactions – Metals vs non metals	This is the first composite on reactions. Firstly, students differentiate physical changes from chemical ones. Secondly, they study properties of metals and non-metals. Lastly, they learn about some common chemical reactions: Metals with oxygen, acids, water etc....These	

			<p>reactions result in either just sharing electrons or transferring electrons (covalent or ionic bonding). Next, students will explore energy in solids, liquids and gases.</p>
		Energy – Energy Transfer	<p>Building on the states of matter and atomic behaviour alongside the previous knowledge of electronics we here will develop a deeper knowledge of the behaviour of energy. This will then pave the way for further study of efficiency, the cost of energy and energy conversion.</p>
Year 8	Autumn 1	Electricity –Magnetism	<p>Electricity is interleaved into year 8 because we build on the knowledge gained in year 7 and with retrieval practice, we build on the knowledge of the electricity component. This topic is then revisited in year 9 when we tie together to delve into the world of electromagnetism and its uses.</p>
		Reactions – Properties and reactions	<p>Layering up knowledge from the earlier topics of reactions and metals vs non-metals. An opportunity to recap year 7 work on the structure of compounds and laying the foundations for the more complex balancing of equations.</p>
	Autumn 2	Forces – Contact forces	<p>Having been introduced to forces and the role they play on moving items during the year 7 scheme. Forces further developed in year 9 when we investigate the relationship between forces and pressure.</p>
		Earth- Resources	<p>Following on from the work down exploring metals and their origins this topic will help develop knowledge on the resources we harvest from our planet and provide fuel for looking at the human impact on our fragile ecosystems. Due to the breath of content this component will be revisited in year 9, as it also plays a pivotal role in our chemistry GCSE spec.</p>
	Spring 1	Organisms - Breathing	<p>Students build upon schema through the spiral curriculum in which the composites are built upon from organisms to then identifying organisation and movement to now building knowledge on how organisms' breath. The breathing composite covers the respiratory system, Breathing, Gas exchange, Multicellular and unicellular organisms.</p>

		Matter- Separating mixtures	In year 7 pupils learn about the building blocks of chemistry and how different substances come together to form either compounds or mixtures; this prior knowledge provides a hook for the new learning in this component. Here the pupils will experience a wide range of practical skills that will prepare them for GCSE required practical activities.
	Spring 2	Organisms - Digestion	Composites are built upon from organisms to then identifying organisation and movement to then how organism's breath and now digestion happens in organisms. Introducing the Digestive system and what Nutrients we have in foods. Then on to how we test different food types using the test for starch and glucose and the test for lipids and protein. After talking about Bacteria being a prokaryote in cells we go on to talk about bacteria further digestion and what Enzymes are in digestion. Introducing the Lock and key model. Metabolism. Illnesses/ digestive issues.
		Earth - Universe	After looking at the Earth's structure and composition we will scale up this knowledge to a universal level. We will now look at the structure and function of the universe and how this impacts on our Earth's structure and composition.
	Summer 1	Ecosystems – Food webs	During year 7, students would have mastered the fundamental knowledge of producers (plants) and will then use knowledge to explore the significance they play in our ecosystems.
		Energy - Costs	Just like energy transferring across ecosystems and never being lost, students will then explore this concept in physics- energy costs. Having already learnt the principles of energy, they can revisit and build upon this knowledge by assessing the use of certain types of energy.
	Summer 2	Reactions – Acid and Alkalis	Developing the scheme of reactions on from looking at their properties and sample reactions related to metals we now add in the acids and alkalis. This will lead on a summary component, types of reaction, in year 9.

		Waves - Sound	The chance to revisit the topic of waves but with an alternative twist. Students will draw upon the knowledge they grasped in year 7 whilst looking at waves – light to draw comparisons on the two different types of waves. It enables new knowledge to be learnt but old knowledge to be revisited and the chance of retrieval practice and spaced distribution.
Year 9	Autumn 1	Electricity - Electromagnetism	Bridging the two year 8 topics of electricity and magnetism this component services as an excellent recap of core concepts and also a chance to offer lots of stretch and challenge as we look on to preparing for KS4.
		Matter- Atomic structure	Having secured knowledge of elements, compounds and atoms. Students will be able to build on this by looking at the inner working of the atom. What makes up the atom and ultimately results in it giving it is properties.
	Autumn 2	Genes- Reproduction	We return here to the mechanics of cellular function and the idea that the cell is the fundamentals of life. We now go into greater depth and look at how cells come together and are formed. However, students needed to have the background contextual knowledge of the functions and structure of a cell to understand the reproductive principles and the development of life.
		Reactions- Heating and Cooling	Bringing together physics topics of energy transfer from year 8 and chemical properties of reactants and products to look at endo and exothermic reactions. This unit directly feeds into GCSE chemistry topics and a corresponding required practical.
		Reactions – Types of reaction	A component that ties together and recaps all previous units studying different forms of reactions. Using skills acquired to balance equations, discuss products and reactants and give a varied range of example reactions to support points made.
	Spring 1	Ecosystems – respiration	With a strong understanding of reactions and their equations gleaned from earlier chemistry topics, we will have hopefully removed the fear surrounding one of the two equations essential for GCSE biology. This component sets the science for the Spring 2 'Photosynthesis' unit also.

		Forces - Pressure	A more complex component of the 'forces' composite, thus left till later in the curriculum model. Here we investigate pressure and the interaction of forces to created such pressure. Recapping the core concepts of our forces knowledge in the process.
	Spring 2	Ecosystems - Photosynthesis	With a strong understanding of reactions and their equations gleaned from earlier chemistry topics, and then the spring 1 topic of respiration pupil now complete this arm of their schema by adding in photosynthesis process.
		Earth – Earth's resources	This component begun during year 8 autumn term however is also added into the curriculum mapping here to allow the breadth of knowledge gathered during the months in-between to feed into this schema and provide a platform for more detailed issued relating to limited supplies.
	Summer 1	Waves- Waves properties and effects	An early component of 'light' allows pupils to reopen their prior knowledge of wave behaviours as we add in key properties and effects.
		Reactions- Chemical Energy	Having studies in detail, and also revisited many of the components that make up the composite of reactions this unit, along with year 9's increased maths confidences and general maturity allow us to tackle a trickier topic. Here we will look at calculations that accompany those chemical reactions in preparation for GCSE.
	Summer 2	Genes - Evolution	Students will by now have a detailed understanding of the workings of cells and reproduction and they can use this now to think about how genetic mutations have occurred that as allowed for adaptations and evolution.
		Earth - Climate	This unit fits nicely at the end of the year as during the summer term we have the time, and weather, to look at ecosystems and how they impacted by climate changes occuring around us. It also serves a an excellent unit to draw together and consolidate our work surrounding Earth as a full composite; adding in biological knowledge and the physics energy composites to create a very well rounded unit.

Higher Level Planning and though rationale behind sequencing of the curriculum- Science KS4

YEAR	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
10	Baseline assessment	Combined assessment, assessing knowledge of all topics from previous term. Gaps in knowledge addressed.				
	4.1 Cell Biology (14) <i>Required practical: Microscopy Osmosis</i>	5.1 Atomic Structure (13)	4.3 Infection and response (16)	4.5 Homeostasis and response (11) <i>Required practical: Reaction Time</i>	5.5 Energy changes (4) <i>Required practical: Temperature changes</i>	6.4 Atomic structure (5)
	Re-teach, Assessment and feedback					
	6.1 Energy (17) <i>Required practical: Specific Heat Capacity</i>	5.2 Bonding structure and properties of matter (10)	5.3 Quantitative chemistry (11)	5.4 Chemical changes (12) <i>Required practical: Making salts Electrolysis</i>	6.3 Particle Model (6) <i>Required practical: Density</i>	5.7 Organic chemistry (4)
	Re-teach, Assessment and feedback					
	4.2 Organisation (16)	6.2 Electricity (10) <i>Required practical:</i>			5.6 Rate and extent of chemical change (8)	5.8 Chemical analysis (3) <i>Required practical: Chromatography</i>

	<i>Required practical: Enzymes Food tests</i>	<i>Resistance I-V Characteristics</i>			<i>Required practical: Rates if reaction</i>	
Re-teach, Assessment and feedback						
						6.5 Forces (16) <i>Required practical: Force and extension Acceleration</i>
Re-teach, Assessment and feedback						
YEAR 11	6.6 Waves (9) <i>Required practical: Waves Radiation and absorption</i>	4.4 Bioenergetics <i>Required practical: Photosynthesis</i>	6.8 Space			
Re-teach, Assessment and feedback						
	6.7 Magnetism (3)	4.6 Inheritance, variation and evolution	5.9 Chemistry of the atmosphere			

Re-teach, Assessment and feedback					
	4.7 Ecology <i>Required practices:</i> <i>Field investigation</i>	5.10 Using resources <i>Required practices:</i> <i>Water purification</i>			
Re-teach, Assessment and feedback					

Composites Paper 1 Biology	Components	Lessons
4.1 Cell Biology	Cell structure and function	The world of the microscope
		Animal and plant cells
		Eukaryotic and prokaryotic cells
		Specialisation in animal cells
		Specialisation in plant cells
	Cell Transport	Diffusion
		Osmosis
		Osmosis in plants
		Active transport
	Cell Division	Exchanging materials
		Cell division

		Growth and differentiation
		Stem cells
		Stem cell dilemmas
4.2 Organisation	Principles of organisation and the digestive system	Tissues, organs and organ systems
		The Human digestive system
		The chemistry of food
		Catalysts and enzymes
		Factors affecting enzyme action
		How the digestive system works
		Making digestion efficient
	Animal tissues, organs and organ systems	The blood
		The blood vessels
		The heart
		Helping the heart
		Breathing and gas exchange
	Plant tissue, organs and systems	Tissues, organs and plants
		Transport systems in plants
		Evaporation and transpiration
Factors affecting transpiration		
4.3 Infection and response	Communicable diseases	Health and disease
		Pathogens and disease
		Viral diseases
		Bacterial diseases
		Diseases caused by fungi and protists
	Treating diseases	Preventing infections
		Human defence responses
		Vaccination
		Antibiotics and painkillers
		Discovering drugs
	Developing drugs	
	Non- communicable diseases	Non communicable diseases

		Cancer	
		Smoking	
		Diet and exercise	
		Alcohol	
4.4 Bioenergetics	Photosynthesis	Photosynthesis	
		The rate of photosynthesis	
		How plants use glucose	
		Making the most of photosynthesis	
	Respiration	Aerobic respiration	
		The response to exercise	
		Anaerobic respiration	
		Metabolism and the liver	
4.5 Homeostasis and response	The nervous system	Principles of homeostasis	
		The structure and function of the human nervous system	
		Reflex actions	
	The endocrine system	Principles of hormonal control	
		The control of blood glucose levels	
		Treating diabetes	
		The role of negative feedback	
		Human reproduction	
		Hormones and the menstrual cycle	
		The artificial control of fertility	
		Infertility treatments	
	4.6 Inheritance, variation and evolution	Reproduction	Types of reproduction
			Cell division in sexual reproduction
			DNA and the genome
Inheritance in action			
More about genetics			
Inherited disorders			
Screening for genetic disorders			
Variation and evolution		Variation	

		Evolution by natural selection
		Selective breeding
		Genetic engineering
		Ethics of genetic technologies
	Genetics and evolution	Evidence for evolution
		Fossils and extinction
		More about extinction
		Antibiotic resistant bacteria
		Classification
		New systems of classification
4.7 Ecology	Adaptations, interdependence and competition	The importance of communities
		Organisms in their environment
		Distribution and abundance
		Competition in animals
		Competition in plants
		Adapt and survive
		Adaptation in animals
		Adaptations in plants
	Organisation of an ecosystem	Feeding relationships
		Materials cycling
		The carbon cycle
	Biodiversity and the effect of human interaction on ecosystem	The human population explosion
		Land and water pollution
		Air pollution
		Deforestation and peat destruction
		Global Warming
		Maintaining biodiversity Total: 100 lessons

Composites Paper 1 Physics	Components	Lessons
6.1 Energy	Conservation and dissipation of energy	Changes in energy stores
		Conservation of energy

		Energy and work
		Gravitational potential energy stores
		Kinetic energy and elastic energy stores
		Energy dissipation
		Energy and efficiency
		Electrical appliances
		Energy and power
	Energy transfer by heating	Energy transfer by conduction
		Specific heat capacity
		Heating and insulating buildings
	Energy resources	Energy demands
		Energy from wind and water
		Power from the sun and the Earth
		Energy and the environment
		Big energy issues
6.2 Electricity	Electric circuits	Current and charge
		Potential difference and resistance
		Component characteristics
		Series circuits
		Parallel circuits
	Domestic uses and safety	Alternating current
		Cables and plugs
		Electrical power and potential difference
		Electrical currents and energy transfer
		Appliances and efficiency
6.3 Particle Model	Changes of state	States of matter
		Density
		Changes of state
	Internal energy and transfers	Internal energy
		Specific Latent heat
	Pressure	Gas pressure and temperature

6.4 Atomic Structure	Atoms and radiation	Atoms and radiation
		The discovery of the nucleus
		Changes in the nucleus
		More about alpha, beta and gamma radiation
		Activity and half- life
6.5 Forces	Force laws and principles	Vectors and scalars
		Forces between objects
		Resultant forces
		Centre of mass
		The parallelogram of forces
		Resolution of forces
	Forces and elasticity	Forces and elasticity
	Motion	Speed and distance – time graph
		Velocity and acceleration
		More about velocity – time graphs
		Analysing motion graphs
	Forces and motion	Forces and acceleration
		Weight and terminal velocity
		Forces and braking
		Momentum
Forces and elasticity		
6.6 Waves	Wave properties	The nature of waves
		The properties of waves
		Reflection and refraction
		More about waves
	Types of waves	Electromagnetic waves
		Light, infrared, microwaves and radio waves
		Communications
		Ultraviolet waves, X-rays and gamma waves
		X-rays in medicine
6.7 Magnetism/ electromagnetism	Magnetic fields	Magnetic fields
		Magnetic fields of electric currents

		The Motor effect
6.8 Space		

Composites Paper 1 Chemistry	Components	Lessons	
5.1 Atomic Structure	A simple model of the atom, symbols, relative atomic mass, electronic charge and isotopes	Atoms	
		Chemical equations	
		Separating mixtures	
		Fractional distillation and paper chromatography	
		History of the atom	
		Structure of the atom	
		Ions, atoms and isotopes	
		Electronic structures	
		The periodic table	Development of the periodic table
			Electronic structures and the periodic table
Group 1 – the alkali metals			
Group 7 – the halogens			
5.2 Bonding structure and properties of matter	Chemical bonds, ionic, covalent and metallic bonds	Explaining trends	
		States of matter	
		Atoms into ions	
		Ionic Bonding	

		Giant ionic structure
		Covalent bonding
		Structure of simple molecules
	Structure and bonding of carbon	Giant Covalent structures
		Fullerenes and graphene
Bonding in metals	Bonding in metals	
	Giant metallic structures	
5.3 Quantitative chemistry	Chemical measurements, conservation of mass and the quantitative interpretation of chemical equations	Relative masses and moles
		Equations and calculations
		From masses to balanced equations
		Expressing concentrations.
5.4 Chemical Change	Reactivity of metals	The reactivity series
		Displacement reactions
		Extracting metals
	Reactions of acids	Salts from metals
		Salts from insoluble bases
		Making more salts
		Neutralisation and the pH scale
		Strong and weak acids
	Electrolysis	Introduction to electrolysis
		Changes at the electrodes
		The extraction of aluminium
		Electrolysis of aqueous solutions
5.5 Energy changes	Exothermic and endothermic reactions	Exothermic and endothermic reactions
		Using energy transfers from reactions
		Reaction profiles
		Bond energy calculations
5.6 Rate and Extent of Chemical Change	Rate of reaction	Rate of reaction
		Collision theory and surface area
		The effect of temperature

		The effect of concentration and pressure
		The effect of catalysts
		Reversible reactions and dynamic equilibrium
		Energy and reversible reactions
5.7 Organic Chemistry	Carbon compounds as fuels and feedstock	Dynamic equilibrium
		Altering conditions
		Hydrocarbons
		Fractional distillation of oil
5.8 Chemical analysis	Purity, formulations and chromatography	Burning hydrocarbon fuels
		Cracking hydrocarbons
	Identification of common gases	Pure substances and mixtures
		Analysing chromatograms
5.9 Chemistry of the atmosphere	The composition and evolution of the Earth's atmosphere	Testing for gases
	Carbon dioxide and methane as greenhouse gases	History of our atmosphere
		Our evolving atmosphere
		Greenhouse gases
Common atmospheric pollutants and their sources	Global Climate change	
5.10 Using resources	Using the Earth's resources and obtaining potable water	Atmospheric pollutants
		Finite and renewable resources
		Water safe to drink
		Treating waste water
	Life cycle assessment and recycling	Extracting metals from ores
Life cycle assessments		
		Reduce, reuse and recycle