

<b>Year 7</b>		
Autumn 1	<p data-bbox="568 276 1276 368"><b>Learning to think like a scientist (6 lessons)</b></p> <p data-bbox="568 424 1276 802">Students cover key scientific concepts including laboratory safety, how to identify chemicals and handle scientific equipment correctly and safely. Students will carry out simple experiments, draw conclusions from these investigations and learn how to analyse their results.</p>	<p data-bbox="1547 276 1827 316"><b>C1.1 Particles</b></p> <p data-bbox="1323 376 2051 659">Students will learn how the particle theory and Brownian motion theory are used to model how particles move in different states of matter. Students will also learn how particles move in processes such as diffusion.</p>
Autumn 2	<p data-bbox="824 818 1025 858"><b>B1.1 Cells</b></p> <p data-bbox="568 919 1276 1345">Students are introduced to the concept of cells being the basic unit of living life. They will build upon this knowledge to understand how tissues, organs and organ systems are formed. Students will learn how to use a light microscope to view samples. This knowledge is used to take part in debate about organ donation.</p>	<p data-bbox="1570 818 1805 858"><b>P1.1 Forces</b></p> <p data-bbox="1323 919 2051 1297">Students will use models to explain how forces act upon objects, such as gravity, air resistance and friction. Pupils are introduced to Hooke's Law and will use this principle to complete some investigations to study the effects of some contact and non-contact forces.</p>
Spring 1	<p data-bbox="734 1361 1111 1401"><b>B1.2 Reproduction</b></p>	<p data-bbox="1424 1361 1951 1449"><b>C1.2 Atoms, elements and compounds</b></p>

	<p>Students will study sexual and asexual reproductive methods and compare the advantages and disadvantages of both. Students begin to learn how gametes differ genetically from somatic cells. The menstrual cycle is included in this module, as well as a practical that investigates plant reproduction and how seed dispersal affects plant populations. Students will also begin to learn how to present data from their investigations.</p>	<p>In this module, pupils gain an understanding of the properties of solids, liquids and gases and the physical processes of these changes of state. Students will develop their confidence on how to draw and interpret particle diagrams. Pupils will also build upon their prior knowledge about the properties of metals and non-metals.</p>
Spring 2	<p><b>P1.2 Space</b></p> <p>This module continues to build on pupil's prior knowledge of non-contact forces, whilst developing their understanding of the relationship between force and distance. Pupils are introduced to formulae to calculate weight, mass and are introduced to the concept of gravitational fields. Pupils will investigate how celestial objects, such as planets are situated in space, as well as how forces impact them.</p>	<p><b>B1.3 Interdependence</b></p> <p>In this unit, pupils will build upon their prior knowledge about prey and predator organisms. Students will learn how levels of organisation within an ecosystem, as well as environmental factors impact the organisms within an ecosystem. Students will also begin to learn about how samples are taken within populations.</p>
Summer 1	<p><b>C1.3 Mixtures</b></p>	<p><b>P1.3 Energy transfers</b></p>

	<p>Pupils will learn to define and describe mixtures and solutions. They are introduced to a range of separation techniques including decanting, evaporation, and chromatography. These skills will develop their ability to interpret quantitative data.</p>	<p>In this introduction to energy, students will learn that energy can be measured in Joules and that it can be stored and carried. By exploring energy transfers in food and heat, students are given the opportunity to link efficiency with energy conservation.</p>
<p>Summer 2</p>	<p><b>P1.4 Electrical circuits</b></p> <p>This module begins with a macroscopic view of electricity, before diving into more detail about smaller components of electrical circuits, such as current, charge and voltage. Students will be given the opportunity to investigate how resistance and current differ in series and parallel circuits.</p>	<p><b>The final half term is dedicated to assessment, revision, reteaching and solidifying understanding of the content covered in this academic year.</b></p>

<b>Year 8</b>		
Autumn 1	<p data-bbox="667 276 1178 316"><b>B2.1 Tissues and Organs</b></p> <p data-bbox="562 373 1290 1054">Pupils begin to look at the muscular and skeletal system and how the two interact with one another to provide the body with structure, protection, support and movement. Students will use models to represent the breathing system, investigating how pressure and volume in the chest cavity change as we breathe. Students will learn how the components of the lungs are well adapted to their function, as well as taking part in a debate about the advantages and disadvantages of organ donation.</p>	<p data-bbox="1458 276 1917 316"><b>C2.1 Acids and Alkalis</b></p> <p data-bbox="1317 373 2063 906">In this unit, pupils will begin to examine specific chemical reactions and learn how to interpret data. Pupils are introduced to the pH scale, along with the concepts of neutralisation. Pupils begin to use word equations to demonstrate chemical reactions to form salts and metal carbonates. There is ample opportunity for pupils to practice using quantitative data, along with practical investigations.</p> <p data-bbox="1317 916 2033 1198">Due to the implementation of a new curriculum our current year 8 students are studying energy transfers here as this was not covered in year 7; acids and alkalis have been covered in their year 7 POS.</p>
Autumn 2	<p data-bbox="622 1214 1223 1254"><b>P2.1 Movement and Pressure</b></p> <p data-bbox="562 1311 1290 1449">This unit introduces speed at a more detailed level, along with formulae that allow pupils to calculate distance, time</p>	<p data-bbox="1473 1214 1901 1302"><b>B2.2 Respiration and Photosynthesis</b></p> <p data-bbox="1335 1359 2040 1449">In this unit, pupils will begin to understand what respiration is and its</p>

	<p>and speed. Pupils then move on to relative motion, acceleration and are taught how to calculate the change in speed of an object. This then leads to students being able to confidently interpret time-distance graphs.</p>	<p>significance to all living organisms. Pupils will develop their comparison skills, as they look at the different types of respiration that occur. Pupils will carry out their first biochemical test to identify the presence of starch in leaves, when investigating photosynthesis in plants.</p>
Spring 1	<p><b>C2.2 Changing substance</b></p> <p>This module begins with learning the distinctions between chemical and physical changes in reactions. Pupils are taught how to interpret chemical formula and chemical equations. Pupils are introduced to the Law of Conservation of Mass and investigate the implications of this law. There are ample opportunities to practice balancing chemical equations in this unit.</p>	<p><b>P2.2 Magnetism</b></p> <p>This unit begins with an introduction to the types of magnetic materials and exploring the rules for attraction and repulsion. Students learn about electromagnets and are given the opportunity to investigate factors that affect the strength of electromagnetism. Students then apply this knowledge to magnetic field and learn the difference between magnetic and geographic poles.</p>
Spring 2	<p><b>B2.3 Life diversity</b></p> <p>Pupils begin to learn about variation and consider how it is impacted by both genetics and environmental factors. Pupils will be able to compare and contrast natural and artificial</p>	<p><b>C2.3 Earth systems</b></p> <p>In this module students will investigate 3 different rock types, learning how their properties are linked to their structure. This knowledge will form the basis of their understanding of the rock</p>

	selection, leading to a greater depth of knowledge about how organisms evolve over time.	cycle. Students will develop their knowledge about pollution and the impact it has on important systems such as the water and carbon cycle.
Summer 1	<p><b>P2.3 Electric circuits- resistance</b></p> <p>Pupils will revisit their prior knowledge of current and voltage in series and parallel circuits. They are introduced to Ohm's law and use this to link the relationship between current, voltage and resistance. There is ample opportunity to build on mathematics skills in this module, as students learn how to substitute numbers into more complex formulae.</p>	<p><b>B2.4 Nutrition</b></p> <p>In this unit, pupils revisit their knowledge from KS2 and year 7. They are taught the importance of a varied and balanced diet alongside an active lifestyle. Students are introduced to the concept of enzymes and are given opportunities to investigate how external conditions can affect their efficiency. Students also test for starch in plants, linking back to their prior knowledge of photosynthesis.</p>
Summer 2	<p><b>P2.4 Light</b></p> <p>This unit builds upon KS2 knowledge about how light behaves and reflection. Students are introduced to the concept of refraction, alongside calculating angles. They are also offered the opportunity to investigate how light behaves.</p>	<p><b>The final half term is dedicated to assessment, revision, reteaching and solidifying understanding of the content covered in this academic year.</b></p>

<b>Year 9</b>		
Autumn 1	<p><b>B3.1 Growth and Differentiation</b></p> <p>Pupils will revisit the structure of cells and learn to classify them as eukaryotic and prokaryotic. Students investigate bacterial growth, as well as practising their aseptic techniques in a practical. Students develop their knowledge of cell transport such as diffusion, osmosis and active transport. They begin to investigate how specialised cells are adapted to their functions, as well as interpreting images to calculate the phases of mitosis that cells are undergoing.</p>	<p><b>C3.1 The Periodic table</b></p> <p>This unit builds on the pupil's foundation of knowledge about atomic structure. Students begin to learn how atoms of the same element can be different by understanding how to interpret the periodic table of elements. Students are also taught the historical element of the periodic table, including contributions made from Mendeleev.</p>
Autumn 2	<p><b>P3.1 Acceleration</b></p> <p>This unit builds upon prior knowledge of forces and motion from earlier in KS3. Students are introduced to scalar and vectors, and Newton's first and third laws. Students are given ample opportunity to develop their mathematics skills as they develop their ability in using formulae.</p>	

Spring 1	<p style="text-align: center;"><b>B3.2 Human interaction</b></p> <p>This module encompasses all of the pupil's prior knowledge about how humans interact with other organisms and their environment. They will build on concepts such as biodiversity, global warming and food security. Students are given a great opportunity to voice their opinions as part of class discussions around relevant key issues.</p>	<p style="text-align: center;"><b>C3.2 Introduction to quantitative chemistry</b></p> <p>This unit introduces students to state symbols in chemical equations, as well as developing their mathematics skills. In particular, this unit seeks to build pupil's confidence in rearranging and balancing chemical equations. Students will use their mathematics skills from this unit to produce a chemical solution.</p>
Spring 2	<p style="text-align: center;"><b>P3.2 Heating</b></p> <p>This unit builds on prior knowledge of how heat is stored as energy, by introducing students to heat capacity. Students will apply their knowledge to the idea of energy transfers, bridging the link between pressure, temperature and volume.</p>	<p style="text-align: center;"><b>B3.3 Genetics</b></p> <p>In this module, students will build upon their knowledge of the cell cycle and mitosis as they are introduced to meiosis. Students will compare the advantages and disadvantages of sexual and asexual reproduction in different organisms. Pupils are taught the structure of DNA, as well as some history about key geneticists, such as Watson and Crick. Pupils are taught how DNA controls our characteristics and learn how to use Punnett squares to predict the genotype of offspring.</p>



<p>Summer 1</p>	<p><b>C3.3 Using resources</b></p> <p>This unit reviews pupil's knowledge of metals, before introducing them to reactivity series and how to obtain potable water. Students investigate how humans rely on certain natural resources for survival and how we impact the ecosystems when extracting resources.</p>	<p><b>P3.3 Sounds and waves</b></p> <p>This unit begins by outlining the basic features and types of waves. Students are given the opportunity to investigate waves using a ripple tank, as well as develop their mathematics skills by rearranging formulae to calculate velocity.</p>
<p>Summer 2</p>	<p><b>P3.4 Home electricity</b></p> <p>This unit introduces the concept of electricity running through mains and appliances in the home. Students will look at the power of different appliances and how the cost of electricity is calculated. From here, students zoom out and look at how electricity is delivered to homes, via transformers. Students link the idea of static electricity to their existing knowledge of atomic structure.</p>	<p><b>The final half term is dedicated to assessment, revision, reteaching and solidifying understanding of the content covered in this academic year.</b></p>

<b>Year 10 Combined science</b>	<b>Biology</b>	<b>Chemistry</b>	<b>Physics</b>
Autumn 1	<p data-bbox="495 411 891 504"><b>CB1 Key Biological concepts</b></p> <p data-bbox="465 560 925 1487">In this unit, pupils will develop their knowledge of microscopes, practising using light microscopes to view cells. Students will build on their prior knowledge of animal, plant and bacterial cells, whilst solidifying their understanding of specialised cells. Students are taught the mode of action of enzymes, as well as how conditions can affect their efficiency. Students are given ample opportunities to</p>	<p data-bbox="1025 411 1444 451"><b>CC1 States of matter</b></p> <p data-bbox="958 507 1509 994">Students will draw on their previous knowledge to explain in further detail the arrangement, movement and relative energy of particles. This development of knowledge will lead to a better understanding of the differences between chemical and physical changes.</p> <p data-bbox="1025 1050 1444 1142"><b>CC2 Separating and purifying substances</b></p> <p data-bbox="958 1198 1509 1487">Students are introduced to a range of separation methods including filtration, crystallisation, chromatography and distillation. Students are given</p>	<p data-bbox="1720 411 1951 451"><b>CP4 Waves</b></p> <p data-bbox="1563 507 2114 1385">Students will learn how to describe the difference between longitudinal and transverse waves by referring to sound, electromagnetic, seismic and water waves. Students investigate the suitability of equipment to measure the speed/frequency/wavelength of a wave in a solid and a fluid. Students look at the structure of the ear and how waves are converted to sound. Students see the link to medical careers, as they explore the uses of ultrasound.</p>

	carry out practical work to investigate enzymes.	ample opportunities to carry out practical work using these methods.	
Autumn 2	<p><b>CB2 Cells and control</b></p> <p>This module teaches students about how different cells are responsible for controlling different areas of the body and plant functions. Students debate the ethics of using stem cells for medical purposes, as well as learning how the nervous system works. Students practise their mathematics skills in this unit by learning how to interpret percentiles charts.</p>	<p><b>CC3 Atomic structure/ /CC4 The Periodic table</b></p> <p>Building on their prior knowledge of atomic structure, pupils learn how to use the numbers on the periodic table of elements to identify elements. The history of the periodic table is discussed, as well as the concept of how electron configuration affects the properties of atoms. Isotopes are introduced, along calculating abundance of particular elements.</p>	<p><b>CP5 Light and the electromagnetic spectrum</b></p> <p>This module draws on students previous learning about light. Scientific skills are developed as students learn how to use ray diagrams to represent the movement of light through different mediums. The properties and uses of electromagnetic waves are explored, including radiation.</p> <p><b>CP12 Particle model</b></p> <p>This module solidifies pupils knowledge of physical changes of state. Pupils undertake an investigation into the densities of solids and liquids, as well as looking at how temperature affects stored energy. Heat capacity</p>

			is introduced and this concept is used to develop their practical skills further. The relationship between gas temperature and pressure is taught.
Spring 1	<p><b>CB3 Genetics</b></p> <p>In this module, students are introduced to the process of meiosis, building on their understanding of the cell cycle and mitosis. Students delve deeper into the structure of DNA and how characteristics are inherited. Concepts such as gene mutations are introduced, which builds on pupils' prior knowledge of variation. Students develop their scientific skills through the use of Punnett squares to predict genotype.</p>	<p><b>CC5/6 Ionic and covalent bonding</b></p> <p>In this module, students will learn how to explain the formation of ions in ionic compounds from their atoms, limited to compounds of groups 1,2,6 and 7. Mathematics skills are increased as students learn how to deduce the formulae of ionic compounds including oxides, halides and carbonates. Students will also learn how the properties of ionic compounds affect their composition.</p> <p><b>CC7 Types of substance</b></p>	<p><b>CP9 Electricity and circuits</b></p> <p>Students will use prior knowledge of elements, and circuits to calculate current and potential difference. The concept of Coulombs is introduced, along with the equation to calculate current and charge in a circuit. Pupils are introduced to the idea of resistance. Students will investigate the importance of electrical safety.</p>

**CB7 Animal coordination, control and homeostasis**

Chemical substances called hormones are introduced to pupils in this module, alongside how controlling them affects metabolic rate. This knowledge is then applied to systems such as the menstrual cycle, diabetes, osmoregulation, thermoregulation, and homeostasis. Students will develop their knowledge of anatomy and physiology as they learn to identify key glands. Mathematics is developed as students learn how to calculate BMI.

Pupils learn how the formation of simple molecular, covalent substances by using dot and cross diagrams. Polythene is investigated as a basis for understanding the concept of polymers. Students learn how the structure and bonding affects the properties of particular substances such carbon bonding. Chemical and physical properties of metals are discussed, alongside learning why and how elements can be classified.

Spring 2	X	<p><b>CC8 Acids and Alkalis</b></p> <p>Students build on their prior learning of pH to understand how ions contribute to substances being acids and alkalis. Mathematics is developed as students understand how to use logarithmic scale to calculate pH. This knowledge will form the basis of pupils' understanding about neutralisation reactions, titration and metal carbonate reactions. Practical skills are developed by using a burette and suitable indicator to calculate the concentration of an unknown substance.</p>	<p><b>CP9 Electricity and circuits</b></p> <p>Students will use prior knowledge of elements, and circuits to calculate current and potential difference. The concept of Coulombs is introduced, along with the equation to calculate current and charge in a circuit. Pupils are introduced to the idea of resistance. Students will investigate the importance of electrical safety.</p> <p><b>CP1 Motion</b></p> <p>In this module, students learn the differences between vectors and scalars. Data analysing skills are developed as students learn how to interpret distance time graphs and velocity time. Mathematics skills are developed as students learn how to calculate acceleration.</p>
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			<p>Pupils are introduced to new numerical symbols.</p> <p><b>CP2 Forces and motion</b></p> <p>This module is heavily based in the understanding of Newton's first, second and third laws. Mathematics skills are further developed by using equations and formulae to calculate mass, weight, force, stopping distance and braking distance. Students also investigate hazards on roads that can affect braking distance.</p>
Summer 1	<p><b>CB9 Ecosystems and material cycles</b></p> <p>This unit further develops pupils' knowledge of ecosystems and communities. Interdependence and energy transfers provide students with the</p>	<p><b>CC8 Acids and Alkalis</b></p> <p>Students build on their prior learning of pH to understand how ions contribute to substances being acids and alkalis. Mathematics is developed as students understand how to use logarithmic scale to calculate pH. This knowledge will form</p>	<p><b>CP2 Forces and motion</b></p> <p>This module is heavily based in the understanding of Newton's first, second and third laws. Mathematics skills are further developed by using equations and formulae to calculate mass, weight, force, stopping distance and braking distance. Students also</p>

	<p>opportunity to calculate the efficiency of energy transfers and biomass, whilst learning how to use quadrats and transect belts to measure distribution across a given area. Students are introduced to concepts such as biotic factors, abiotic factors, parasitism and mutualism. They use this new knowledge to explain the positive and negative interactions humans have with the environment. This then leads to a greater understanding of how biodiversity can be maintained through preservation of the water, carbon and nitrogen cycle.</p>	<p>the basis of pupils' understanding about neutralisation reactions, titration and metal carbonate reactions. Practical skills are developed by using a burette and suitable indicator to calculate the concentration of an unknown substance.</p> <p><b>CC9 Calculations involving masses</b></p> <p>This unit heavily develops pupils' mathematics skills as they explore how to calculate relative formula mass, empirical formulae, conservation of mass and moles from chemical reactions.</p>	<p>investigate hazards on roads that can affect braking distance.</p>
<p>Summer 2</p>	<p><b>CB9 Ecosystems and cycles continued.</b></p>	<p>x</p>	<p><b>CP7 Energy – forces doing work / CP8 Forces and their effects</b></p>



See above.  
**AO3 – practical skills**

In this module, pupils investigate work and power, investigating how changes in energy are caused by changing work and power. Pupils build on their knowledge of contact and non-contact forces to determine how objects affect one another. Mathematics skills increase as pupils use vector diagrams to represent forces.

### **CP13 Forces and matter**

In this unit, pupils look at how elastic objects can be bent and stretched. Students use springs to investigate these new concepts, as well as using a range of equations and develop their graph drawing skills.

<b>Year 10 Separate science</b>	<b>Biology</b>	<b>Chemistry</b>	<b>Physics</b>
Autumn 1	<p><b>SB1 Key Biological concepts</b></p> <p>In this unit, pupils will develop their knowledge of microscopes, practising using light microscopes to view cells. Students will build on their prior knowledge of animal, plant and bacterial cells, whilst solidifying their understanding of specialised cells. Students are taught the mode of action of enzymes, as well as how conditions can affect their efficiency. Students are given</p>	<p><b>SC1 States of matter</b></p> <p>Students will draw on their previous knowledge to explain in further detail the arrangement, movement and relative energy of particles. This development of knowledge will lead to a better understanding of the differences between chemical and physical changes.</p> <p><b>SC2 Separating and purifying substances</b></p> <p>Students are introduced to a range of separation methods including filtration, crystallisation, chromatography and</p>	<p><b>SP1 Motion</b></p> <p>In this module, students learn the differences between vectors and scalars. Data analysing skills are developed as students learn how to interpret distance time graphs and velocity time. Mathematics skills are developed as students learn how to calculate acceleration. Pupils are introduced to new numerical symbols.</p> <p><b>SP2 Forces and motion</b></p> <p>This module is heavily based in the understanding of Newton's first, second and third laws. Mathematics skills</p>

	<p>ample opportunities to carry out practical work to investigate enzymes.</p>	<p>distillation. Students are given ample opportunities to carry out practical work using these methods.</p> <p><b>CC3 Atomic structure/CC4 The Periodic table</b></p> <p>Building on their prior knowledge of atomic structure, pupils learn how to use the numbers on the periodic table of elements to identify elements. The history of the periodic table is discussed, as well as the concept of how electron configuration affects the properties of atoms. Isotopes are introduced, along calculating abundance of particular elements.</p>	<p>are further developed by using equations and formulae to calculate mass, weight, force, stopping distance and braking distance. Students also investigate hazards on roads that can affect braking distance.</p>
Autumn 2	<p><b>SB4 Natural selection and genetic modification</b></p> <p>This module allows students to explore</p>	<p><b>CC5/6 Ionic and covalent bonding</b></p> <p>In this module, students will learn how to explain the formation of ions in ionic</p>	<p><b>SP4 Waves</b></p> <p>Students will learn how to describe the difference between longitudinal and transverse waves by referring</p>

evidence for human evolution by looking at various evolutionary theories. Students are introduced to concepts such as classification, as well as developing their understanding of breeds and species. Students also discuss how genes are used for medicinal and agricultural purposes.

compounds from their atoms, limited to compounds of groups 1,2,6 and 7. Mathematics skills are increased as students learn how to deduce the formulae of ionic compounds including oxides, halides and carbonates. Students will also learn how the properties of ionic compounds affect their composition.

### **CC7 Types of substance**

Pupils learn how the formation of simple molecular, covalent substances by using dot and cross diagrams. Polythene is investigated as a basis for understanding the concept of polymers. Students learn how the structure and bonding affects the properties of particular substances such as carbon bonding. Chemical and physical properties of

to sound, electromagnetic, seismic and water waves. Students investigate the suitability of equipment to measure the speed/frequency/wavelength of a wave in a solid and a fluid. Students look at the structure of the ear and how waves are converted to sound. Students see the link to medical careers, as they explore the uses of ultrasound.

### **CP5 Light and the electromagnetic spectrum**

This module draws on students previous learning about light. Scientific skills are developed as students learn how to use ray diagrams to represent the movement of light through different mediums. The properties and uses of electromagnetic

		metals are discussed, alongside learning why and how elements can be classified.	waves are explored, including radiation.
Spring 1	<p><b>SB2 Cells and control</b></p> <p>This module teaches students about how different cells are responsible for controlling different areas of the body and plant functions. Students debate the ethics of using stem cells for medical purposes, as well as learning how the nervous system works. Students practise their mathematics skills in this unit by learning how to interpret percentiles charts.</p>	<p><b>SC9 Calculations involving masses</b></p> <p>This unit heavily develops pupils' mathematics skills as they explore how to calculate relative formula mass, empirical formulae, conservation of mass and moles from chemical reactions.</p> <p><b>SC25 Quantitative analysis: tests for ions</b></p> <p><b>SC26: Bulk and surface properties of matter including nanoparticles</b></p>	<p><b>CP5 Light and the electromagnetic spectrum</b></p> <p>This module draws on students' previous learning about light. Scientific skills are developed as students learn how to use ray diagrams to represent the movement of light through different mediums. The properties and uses of electromagnetic waves are explored, including radiation.</p> <p><b>SP10 Electricity and circuits</b></p> <p>Students will use prior knowledge of elements, and circuits to calculate current and potential difference. The concept of Coulombs is introduced, along with the</p>

	<p style="text-align: center;"><b>SB7 Animal coordination, control and homeostasis</b></p> <p>Chemical substances called hormones are introduced to pupils in this module, alongside how controlling them affects metabolic rate. This knowledge is then applied to systems such as the menstrual cycle, diabetes, osmoregulation, thermoregulation, and homeostasis. Students will develop their knowledge of anatomy and physiology as they learn to identify key glands. Mathematics is developed as students learn how to calculate BMI.</p>		<p>equation to calculate current and charge in a circuit. Pupils are introduced to the idea of resistance. Students will investigate the importance of electrical safety.</p>
Spring 2	<p style="text-align: center;"><b>SB7 Animal coordination, control and homeostasis</b></p>	<p style="text-align: center;"><b>SC8 Acids and Alkalis</b></p>	<p style="text-align: center;"><b>SP10 Electricity and circuits</b></p>

Chemical substances called hormones are introduced to pupils in this module, alongside how controlling them affects metabolic rate. This knowledge is then applied to systems such as the menstrual cycle, diabetes, osmoregulation, thermoregulation, and homeostasis. Students will develop their knowledge of anatomy and physiology as they learn to identify key glands. Mathematics is developed as students learn how to calculate BMI.

### **SB3 Genetics**

In this module, students are introduced to the process of meiosis,

Students build on their prior learning of pH to understand how ions contribute to substances being acids and alkalis. Mathematics is developed as students understand how to use logarithmic scale to calculate pH. This knowledge will form the basis of pupils' understanding about neutralisation reactions, titration and metal carbonate reactions. Practical skills are developed by using a burette and suitable indicator to calculate the concentration of an unknown substance.

Students will use prior knowledge of elements, and circuits to calculate current and potential difference. The concept of Coulombs is introduced, along with the equation to calculate current and charge in a circuit. Pupils are introduced to the idea of resistance. Students will investigate the importance of electrical safety.

### **SP11 Static electricity**

	<p>building on their understanding of the cell cycle and mitosis. Students delve deeper into the structure of DNA and how characteristics are inherited. Concepts such as gene mutations are introduced, which builds on pupils' prior knowledge of variation. Students develop their scientific skills through the use of Punnett squares to predict genotype.</p>		
<p>Summer 1</p>	<p><b>SB3 Genetics continued.</b></p> <p><b>Revision and assessment.</b></p>	<p><b>SC14 Quantitative analysis</b></p> <p>Students develop their mathematics skills in this unit by learning how to calculate percentage yields and the concentrations of solutions. This knowledge is then applied to a range of concepts, such as atom economy, titration, molar</p>	<p><b>SP8 Energy forces doing work/SP9 Forces and their effects</b></p> <p>In this module, pupils investigate work and power, investigating how changes in energy are caused by changing work and power. Pupils build on their knowledge of contact and</p>



volume of gases, fertilisers, the Haber process and equilibrium.

### **SC17 Groups/periodic table**

This unit develops pupils ability to interpret the periodic table. They will learn how to describe and explain patterns in the periodic table, as well as identify reactivity of particular elements. A series of practical investigations allow pupils to look at the effects of changing conditions of a reaction, as well as observing changes in chemical reactions.

### **SC18 Rates of reaction/SC19 Heat energy changes**

Using exothermic and endothermic principles, students will learn how heat energy changes during a reaction, as well as draw

non-contact forces to determine how objects affect one another. Mathematics skills increase as pupils use vector diagrams to represent forces.

### **SP14 Particle model**

This module solidifies pupils knowledge of physical changes of state. Pupils undertake an investigation into the densities of solids and liquids, as well as looking at how temperature affects stored energy. Heat capacity is introduced and this concept is used to develop their practical skills further. The relationship between gas temperature and pressure is taught.

		reaction profiles and calculate energy changes using energy bonds.	
Summer 2	<p><b>SB6 Plant structures and their functions</b></p> <p>Students build on their knowledge of plant cells and photosynthesis by investigating how factors affect the efficiency of this process, such as temperature, pH and concentration. The absorption of water and minerals from the soil is discussed in greater detail as students are introduced to new concepts, such as transpiration and translocation.</p>	<p><b>SC20 Fuels/SC21 Earth and atmospheric science</b></p> <p>This unit builds on prior knowledge, teaching students how to apply their skills to explain what hydrocarbons are used for, how they are separated using fractional distillation, the differences between complete and incomplete combustion and what a homologous series is. Students are also given the opportunity to develop their understanding of how impurities cause pollutant gases, as well as explaining how human activity has caused a change to the Earth's atmosphere over time.</p>	<p><b>SP14 Particle model</b></p> <p>This module solidifies pupils knowledge of physical changes of state. Pupils undertake an investigation into the densities of solids and liquids, as well as looking at how temperature affects stored energy. Heat capacity is introduced and this concept is used to develop their practical skills further. The relationship between gas temperature and pressure is taught.</p>

<b>Year 11 Combined science</b>	<b>Biology</b> <b>Content order on rotation due to subject specialisms and availability of practical equipment</b>	<b>Chemistry</b> <b>Content order on rotation due to subject specialisms and availability of practical equipment</b>	<b>Physics</b> <b>Content order on rotation due to subject specialisms and availability of practical equipment</b>
Autumn 1	<p data-bbox="479 504 913 639"> <b>CB7 Animal coordination, control and homeostasis</b> </p> <p data-bbox="479 699 927 1473">           Chemical substances called hormones are introduced to pupils in this module, alongside how controlling them affects metabolic rate. This knowledge is then applied to systems such as the menstrual cycle, diabetes, osmoregulation, thermoregulation, and homeostasis. Students will develop their knowledge of anatomy and physiology as they         </p>	<p data-bbox="1010 504 1464 544"> <b>CC8 Acids and Alkalis</b> </p> <p data-bbox="965 600 1518 1473">           Students build on their prior learning of pH to understand how ions contribute to substances being acids and alkalis. Mathematics is developed as students understand how to use logarithmic scale to calculate pH. This knowledge will form the basis of pupils' understanding about neutralisation reactions, titration and metal carbonate reactions. Practical skills are developed by using a burette and suitable indicator to calculate the concentration of an unknown substance.         </p>	<p data-bbox="1563 504 2116 544"> <b>CP9 Electricity and circuits</b> </p> <p data-bbox="1563 600 2123 1182">           Students will use prior knowledge of elements, and circuits to calculate current and potential difference. The concept of Coulombs is introduced, along with the equation to calculate current and charge in a circuit. Pupils are introduced to the idea of resistance. Students will investigate the importance of electrical safety.         </p>

	<p>learn to identify key glands. Mathematics is developed as students learn how to calculate BMI.</p>	<p><b>CC9 Calculations involving masses</b></p> <p>This unit heavily develops pupils' mathematics skills as they explore how to calculate relative formula mass, empirical formulae, conservation of mass and moles from chemical reactions.</p>	
Autumn 2	X	<p><b>CC13 Groups in the periodic table/CC14 Rates of a reaction/CC15 Heat energy changes in chemical reactions</b></p> <p>These modules combine to develop pupils' ability to interpret the periodic table. They will learn how to describe and explain patterns in the periodic table, as well as identify reactivity of particular elements. A series of practical investigations allow pupils to look at the</p>	<p><b>CP9 Electricity and circuits</b></p> <p>Students will use prior knowledge of elements, and circuits to calculate current and potential difference. The concept of Coulombs is introduced, along with the equation to calculate current and charge in a circuit. Pupils are introduced to the idea of resistance. Students will investigate the importance of electrical safety.</p> <p><b>CP1 Motion</b></p>

effects of changing conditions of a reaction, as well as observing changes in chemical reactions. Using exothermic and endothermic principles, students will learn how heat energy changes during a reaction, as well as draw reaction profiles and calculate energy changes using energy bonds.

In this module, students learn the differences between vectors and scalars. Data analysing skills are developed as students learn how to interpret distance time graphs and velocity time.

Mathematics skills are developed as students learn how to calculate acceleration. Pupils are introduced to new numerical symbols.

### **CP2 Forces and motion**

This module is heavily based in the understanding of Newton's first, second and third laws. Mathematics skills are further developed by using equations and formulae to calculate mass, weight, force, stopping distance and braking distance. Students also investigate hazards on roads that can affect braking distance.

<p>Spring 1</p>	<p><b>CB9 Ecosystems and material cycles</b></p> <p>This unit further develops pupils' knowledge of ecosystems and communities.</p> <p>Interdependence and energy transfers provide students with the opportunity to calculate the efficiency of energy transfers and biomass, whilst learning how to use quadrats and transect belts to measure distribution across a given area. Students are introduced to concepts such as biotic factors, abiotic factors, parasitism and mutualism. They use this new knowledge to explain the positive and negative interactions humans have with the</p>	<p><b>X</b></p>	<p><b>CP7 Energy – forces doing work / CP8 Forces and their effects</b></p> <p>In this module, pupils investigate work and power, investigating how changes in energy are caused by changing work and power. Pupils build on their knowledge of contact and non-contact forces to determine how objects affect one another. Mathematics skills increase as pupils use vector diagrams to represent forces.</p> <p><b>CP13 Forces and matter</b></p> <p>In this unit, pupils look at how elastic objects can be bent and stretched. Students use springs to investigate these new concepts, as well as using a range of equations and develop their graph drawing skills</p>
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environment. This then leads to a greater understanding of how biodiversity can be maintained through preservation of the water, carbon and nitrogen cycles.

### **CB6 Plant structures and their functions**

Students build on their knowledge of plant cells and photosynthesis by investigating how factors affect the efficiency of this process, such as temperature, pH and concentration. The absorption of water and minerals from the soil is discussed in greater detail as students are introduced to new concepts, such as

### **CP6 Radioactivity**

This module builds on pupils' prior knowledge of atomic structure by introducing them to the plum pudding model. They develop their knowledge of electron orbits to gain an understanding of background radiation, radiation types, radiation decay and the uses and dangers associated with radiation. This module also teaches students about nuclear energy, fission and fusion.

	transpiration and translocation.		
Spring 2	<p><b>CB4 Natural selection and genetic modification</b></p> <p>This module allows students to explore evidence for human evolution by looking at various evolutionary theories. Students are introduced to concepts such as classification, as well as developing their understanding of breeds and species. Students also discuss how genes are used for medicinal and agricultural purposes.</p>	<p><b>CC10 Electrolytic processes/ C11 Obtaining and using metals/ CC12 Reversible reaction and equilibria</b></p> <p>This module teaches students about the processes involved in obtaining and processing materials, such as metals. This includes a demonstration of electrolysis, new concepts such as oxidation and reduction and equilibrium. Students will apply this knowledge to recycling, uses of alloys and electroplating.</p>	<p><b>CP3 Conservation of energy</b></p> <p>This module teaches pupils about the Law of Conservation of Energy through a series of lessons exploring energy stores and transfers. This includes energy efficiency and keeping warm, how energy is stored, as well as looking into renewable and non-renewable fuels and energy.</p> <p><b>CP10 Magnetism and the motor effect/CP11 Electromagnetic induction</b></p> <p>In this unit, pupils will combine their knowledge of electricity and magnetism to learn about electromagnets. They will learn how to plot magnetic and electrical fields and explore the relationship between the two using Flemings left hand rule.</p>



			Students will also look at how transformers are used to deliver large amounts of electricity to homes around the country.
Summer 1	<p><b>CB8 Exchange and transport in animals</b></p> <p>This module looks at the efficient transport and exchange of substances in the body. In particular, pupils will study the circulatory system, the heart and take a closer look at the two types of cellular respiration they have learned about in KS3.</p> <p><b>CB5 Health disease and the development of medicines</b></p> <p>This unit helps pupils to understand and define disease and health. Students are introduced</p>	<p><b>CC16 Fuels/ CC17 Earth and atmospheric science</b></p> <p>Building upon prior knowledge, this unit reinforces key concepts such as global warming, pollution and climate change through a variety of new concepts, such as hydrocarbon uses, fractional distillation, fuels and cracking. Students discuss how humans impact the Earth's climate and how the use of renewable and non renewable fuels has changed over time.</p>	<b>REVISION AND ASSESSMENT</b>

	<p>to the concept of communicable and non-communicable diseases. Specific diseases are studied such as cardiovascular disease, alongside treatment options. Other pathogens are investigated, such as viruses. Immune pathways are introduced, alongside the mode of action of antibiotics.</p>		
Summer 2	<b>REVISION AND ASSESSMENT</b>	<b>REVISION AND ASSESSMENT</b>	<b>REVISION AND ASSESSMENT</b>

<b>Year 11 Separate science</b>	<b>Biology</b>	<b>Chemistry</b>	<b>Physics</b>
Autumn 1	<p data-bbox="555 427 835 467"><b>SB3 Genetics</b></p> <p data-bbox="472 528 925 1407">In this module, students are introduced to the process of meiosis, building on their understanding of the cell cycle and mitosis. Students delve deeper into the structure of DNA and how characteristics are inherited. Concepts such as gene mutations are introduced, which builds on pupils' prior knowledge of variation. Students develop their scientific skills through the use of Punnett</p>	<p data-bbox="958 427 1514 762"><b>SC10 Electrolytic processes/ SC11 Obtaining and using metals/ SC12 Reversible reaction and equilibria/SC13 Transition metals, alloys and corrosion</b></p> <p data-bbox="958 823 1514 1361">This module teaches students about the processes involved in obtaining and processing materials, such as metals. This includes a demonstration of electrolysis, new concepts such as oxidation and reduction and equilibrium. Students will apply this knowledge to recycling, uses of alloys and electroplating.</p>	<p data-bbox="1570 427 2107 568"><b>SP8 Energy forces doing work/SP9 Forces and their effects</b></p> <p data-bbox="1570 628 2107 1257">In this module, pupils investigate work and power, investigating how changes in energy are caused by changing work and power. Pupils build on their knowledge of contact and non-contact forces to determine how objects affect one another. Mathematics skills increase as pupils use vector diagrams to represent forces.</p> <p data-bbox="1630 1318 2047 1358"><b>SP14 Particle model</b></p>

	<p>squares to predict genotype.</p> <p><b>SB6 Plant structures and their functions</b></p> <p>Students build on their knowledge of plant cells and photosynthesis by investigating how factors affect the efficiency of this process, such as temperature, pH and concentration. The absorption of water and minerals from the soil is discussed in greater detail as students are introduced to new concepts, such as transpiration and translocation.</p>		<p>This module solidifies pupils knowledge of physical changes of state. Pupils undertake an investigation into the densities of solids and liquids, as well as looking at how temperature affects stored energy. Heat capacity is introduced and this concept is used to develop their practical skills further. The relationship between gas temperature and pressure is taught.</p>
Autumn 2	<b>SB6 Plant structures and their functions continued.</b>	<p><b>SC17 Groups/periodic table</b></p> <p>This unit develops pupils ability to interpret the periodic</p>	<p><b>SP15 Forces and Matter</b></p> <p><b>SP7 Astronomy</b></p>

**SB5 Health disease and the development of medicines**

This unit helps pupils to understand and define disease and health. Students are introduced to the concept of communicable and non-communicable diseases. Specific diseases are studied such as cardiovascular disease, alongside treatment options. Other pathogens are investigated, such as viruses. Immune pathways are introduced, alongside the mode of action of antibiotics.

table. They will learn how to describe and explain patterns in the periodic table, as well as identify reactivity of particular elements. A series of practical investigations allow pupils to look at the effects of changing conditions of a reaction, as well as observing changes in chemical reactions.

**SC18 Rates of reaction/SC19 Heat energy changes**

Using exothermic and endothermic principles, students will learn how heat energy changes during a reaction, as well as draw reaction profiles and calculate energy changes using energy bonds.

**SC20 Fuels/SC21 Earth and atmospheric science**

This unit encourages pupils to reach for the stars and beyond, as they broaden their knowledge of the universe. Pupils will look more closely at the solar system, orbits, gravity, the life cycle of stars and red shift.

**SP3 Conservation of energy**

This module teaches pupils about the Law of Conservation of Energy through a series of lessons exploring energy stores and transfers. This includes energy efficiency and keeping warm, how energy is stored, as well as looking into renewable and non-renewable fuels and energy.

		<p>This unit builds on prior knowledge, teaching students how to apply their skills to explain what hydrocarbons are used for, how they are separated using fractional distillation, the differences between complete and incomplete combustion and what a homologous series is. Students are also given the opportunity to develop their understanding of how impurities cause pollutant gases, as well as explaining how human activity has caused a change to the Earth's atmosphere over time.</p>	
Spring 1	<p><b>CB8 Exchange and transport in animals</b></p> <p>This module looks at the efficient transport and exchange of substances in the body. In particular, pupils will</p>	<p><b>SC14 Quantitative analysis</b> <b>SC15 The Haber Process</b></p> <p>Students develop their mathematics skills in this unit by learning how to calculate percentage yields and the concentrations of solutions.</p>	<p><b>SP6 Radioactivity</b></p> <p>This module builds on pupils' prior knowledge of atomic structure by introducing them to the plum pudding model. They develop their knowledge of electron orbits to gain an</p>

	<p>study the circulatory system, the heart and take a closer look at the two types of cellular respiration they have learned about in KS3.</p>	<p>This knowledge is then applied to a range of concepts, such as atom economy, titration, molar volume of gases, fertilisers, the Haber process and equilibrium.</p> <p><b>SC16 Chemical cells and fuel cells</b></p>	<p>understanding of background radiation, radiation types, radiation decay and the uses and dangers associated with radiation. This module also teaches students about nuclear energy, fission and fusion.</p>
Spring 2	<p><b>CB9 Ecosystems and material cycles</b></p> <p>This unit further develops pupils' knowledge of ecosystems and communities. Interdependence and energy transfers provide students with the opportunity to calculate the efficiency of energy transfers and biomass, whilst learning how to use quadrats and transect belts to measure distribution</p>	<p><b>SC22 Hydrocarbons/SC23 Alcohols and carboxylic acids/SC24 Polymers</b></p> <p>This unit develops pupils' understanding of the relationship between chemicals and substances to create hydrocarbons, alcohols and polymers.</p>	<p><b>SP6 Radioactivity continued</b></p> <p><b>SP12 SP13 Magnetism and Electromagnetic conduction</b></p>

	<p>across a given area. Students are introduced to concepts such as biotic factors, abiotic factors, parasitism and mutualism. They use this new knowledge to explain the positive and negative interactions humans have with the environment. This then leads to a greater understanding of how biodiversity can be maintained through preservation of the water, carbon and nitrogen cycle.</p>		
Summer 1	<b>Revision and assessment</b>	<b>Revision and assessment</b>	<b>Revision and assessment</b>
Summer 2	<b>Revision and assessment</b>	<b>Revision and assessment</b>	<b>Revision and assessment</b>