



## Curriculum Overview 2024 2025

### Science Department

### Combined Science

Department	Science Department
Head of Department	Mr Rathje-Morris – Head of Science faculty Mrs Easton-White – Head of Chemistry Miss Spinola – Head of Biology Mrs Hewitt – Head of Physics
Department Members	Mr Taylor Mrs Martin Mr Lawore Mrs Thompson Miss Nwama Mr Abbott Mr Mason
Accommodation and Resources	The Science department is situated in G and R block and consists of a combination of 8 practical Science labs and 2 classrooms as well as a small intervention room. We also have a dedicated preparation room which is staffed by our committed and experienced Lab Technicians who are responsible for the maintenance and preparation of our practical equipment. As a department we have a mobile IPAD facility allowing the use of ICT in any classroom.

<b><u>Curriculum Intent</u></b>	In Science our aim is to foster an environment of discovery and curiosity. Science is everything from how our own bodies work to the formation of the universe and everything in between. The science curriculum is not only designed to give students a basic scientific literacy in the three specific disciplines of Biology, Chemistry and Physics but to also give students the tools to be able to answer the questions they have not even thought of yet. While we will of course prepare our students for external examinations, more importantly we want them to be able to understand the changing world around them so they are better prepared to look after themselves and their planet.
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### Curriculum Implementation

#### **Key Stage 4:**

#### **What my child will learn in Year 10**



Combined Biology	Previous knowledge recalled		New Knowledge	
	Term 1	B4 Organising animals and plants		B4 Organising animals and plants
Students need to recall blood components and functions, types of blood vessels and their roles, basic heart anatomy and function, lung structure and gas exchange, types of plant tissues and their functions, and the processes of transpiration and transport in plants via xylem and phloem.		Students will learn about blood components, blood clotting, blood vessel functions, the heart's structure and problems, breathing and gas exchange, plant tissues and organs, xylem and phloem functions, and factors affecting transpiration. They will also explore treatments for heart issues and the importance of the double circulatory system.		
Key Knowledge Assessment		Links to literacy and numeracy		
B4 Organising animals and plants		B4 Organising animals and plants		
All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 1 this will focus on the B3 unit but will also include content from B1 & B2.		Students will enhance literacy skills through scientific terminology, explanations, and structured writing tasks. Numeracy skills will be developed by calculating heart rates, interpreting data, performing rate calculations for blood flow and transpiration, using microscopes for measurements, and analysing graphical data on transpiration and heart functions.		
Term 2	Previous knowledge recalled		New Knowledge	
	B5 Communicable disease		B5 Communicable disease	
	Students need to recall the basics of blood components, blood vessels, heart structure and function, lung structure and gas exchange, plant tissues and organs, and processes like transpiration and transport in plants.		Students will learn about the causes and prevention of communicable diseases, the roles of bacteria, viruses, fungi, and protists in disease, human and plant defense mechanisms, methods to prevent disease spread, and the impact of vaccination. They'll also conduct practical investigations on the effects of disinfectants and antibiotics.	
	Key Knowledge Assessment		Links to literacy and numeracy	
	B5 Communicable disease		B5 Communicable disease	
All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 2 this will focus on the B4 unit but will also include content from B1-B3.		Students will develop literacy by using scientific terminology, explaining disease processes, and creating public health campaigns. Numeracy skills are reinforced through interpreting health data, constructing graphs, calculating rates of infection, and analysing patterns in disease spread, helping them understand the relationships between variables and health outcomes.		
Term 3	Previous knowledge recalled		New Knowledge	
	B6 Preventing & treating disease	B7 Non-communicable disease	B6 Preventing & treating disease	B7 Non-communicable disease
	Students need to recall how the immune system works, including the role of antigens and antibodies, the basics of how vaccines function, the concept of herd immunity, and prior knowledge of how drugs like painkillers and antibiotics treat diseases.	Students need to recall knowledge of the cell cycle and mitosis, the impact of smoking on health, including the roles of nicotine, carbon monoxide, and tar, the effects of alcohol on the brain and liver, and the basics of diet and exercise on health.	Students will learn about disease prevention through vaccination, the role of the immune system, how vaccines and herd immunity work, and the treatment of diseases using painkillers and antibiotics. They will also study the discovery and development of drugs,	Students will learn about non-communicable diseases, including cancer, the effects of smoking, diet, exercise, alcohol, and carcinogens on health. They'll understand risk factors, correlations, and causal mechanisms, explore the impact of lifestyle



			including clinical trials, and the challenges of antibiotic resistance.	choices on disease, and analyse data to link behaviours with health outcomes, such as cancer and cardiovascular disease.
<b>Key Knowledge Assessment</b>		<b>Links to literacy and numeracy</b>		
B6 Preventing & treating disease	B7 Non-communicable disease	B6 Preventing & treating disease	B7 Non-communicable disease	
All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term.		Students will enhance literacy skills by interpreting scientific texts, explaining vaccination and drug processes, and engaging in ethical debates. Numeracy skills are developed through analysing data on drug efficacy, understanding graphs related to antibiotic resistance, and interpreting results from clinical trials and epidemiological studies.	Students will develop literacy skills by interpreting scientific texts, discussing the impact of lifestyle choices, and explaining complex concepts like cancer and risk factors. Numeracy skills will be reinforced through analysing graphs, interpreting data on disease correlations, understanding risk factors, and using statistical methods to identify causal links.	
<b>Term 4</b>	<b>Previous knowledge recalled</b>		<b>New Knowledge</b>	
B8 Photosynthesis	B9 Respiration	B8 Photosynthesis	B9 Respiration	
Students need to recall the basics of photosynthesis, including the word equation, the role of chlorophyll, and the general structure of plant cells. They should also remember concepts related to plant tissues, the importance of light, water, and carbon dioxide, and how plants use glucose for growth and energy storage.	Students need to recall the basics of photosynthesis, including the equations and factors affecting the rate, plant cell structure, particularly mitochondria, and previous work on active transport and plant tissues. They should also remember the role of glucose in plants, linking it to processes like respiration and metabolism.	Students will learn about the process of photosynthesis, including the chemical and symbol equations, and how factors like light, temperature, and CO <sub>2</sub> affect the rate. They will explore leaf adaptations, the concept of limiting factors, glucose usage in plants, and the economics of optimizing photosynthesis in greenhouses.	Students will learn about aerobic and anaerobic respiration, including the word and symbol equations, and the role of mitochondria. They will explore the body's response to exercise, the concept of oxygen debt, and the economic importance of fermentation. Additionally, they'll study metabolism and the liver's role in processing lactic acid.	
<b>Key Knowledge Assessment</b>		<b>Links to literacy and numeracy</b>		
B8 Photosynthesis		B8 Photosynthesis	B9 Respiration	
All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 4 this will focus on the B8&9 unit but will also include content from B1-B7		Students will develop literacy skills by interpreting scientific texts, explaining the photosynthesis process, and analysing data on plant growth. Numeracy skills are enhanced through plotting and interpreting graphs of photosynthesis rates, calculating light intensity using the inverse square	Students will enhance literacy by interpreting scientific texts, explaining complex processes like respiration and metabolism, and engaging in discussions on exercise effects. Numeracy skills are developed through plotting and analysing graphs of respiration rates, calculating	



		law, and evaluating the cost-effectiveness of greenhouse enhancements.	oxygen debt, comparing energy outputs, and using equations to describe biochemical reactions.
Term 5	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>	
	B16 Adaptations	B16 Adaptations	
	Students need to recall key ecological terms such as community, population, habitat, ecosystem, abiotic and biotic factors. They should remember how organisms adapt to their environments, the effects of abiotic and biotic factors on populations, and the concepts of competition and interdependence among species.	Students will learn about the importance of ecosystems, including levels of organization, interdependence, and competition. They'll explore how abiotic and biotic factors affect populations, study adaptations in animals and plants, understand the concept of extremophiles, and conduct practical investigations on species distribution and population size using quadrats and transects.	
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>	
	B16 Adaptations	B16 Adaptations	
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 5 students will complete a PPE assessment that is a full paper 1 that will cover units B1-B9	Students will develop literacy skills by interpreting ecological texts, explaining complex relationships in ecosystems, and discussing adaptations and competition. Numeracy skills are reinforced through analysing data on species distribution, calculating population sizes, interpreting graphs related to abiotic and biotic factors, and using statistical methods to draw ecological conclusions.	
Term 6	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>	
	B10 Nervous System	B10 Nervous System	
	Students need to recall the principles of homeostasis, the structure and function of the human nervous system, the concept of reflex arcs, and synaptic transmission. They should understand how receptors detect stimuli and how electrical impulses travel through the nervous system, linking this with prior knowledge of enzymes and cell specialization.	Students will learn about the nervous system, including the structure and function of neurons, the pathway of nerve impulses, and how reflex actions protect the body. They'll explore the role of synapses, the importance of reaction times, and how homeostasis maintains internal conditions through nervous and hormonal responses.	
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>	
	B10 Nervous System	B10 Nervous System	
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 5 this will focus on the B10	Students will develop literacy skills by explaining nervous system processes, describing reflex actions, and interpreting scientific texts. Numeracy skills are enhanced through measuring and analysing reaction times, interpreting data from experiments, plotting graphs, and calculating averages to understand the precision and accuracy of their results in practical investigations.	

<b>Combined Chemistry</b>	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
Term 1	C3 Structure and bonding	C3 Structure and bonding
	Students need to recall basic atomic structure, including protons, neutrons, and electrons, and how these relate to	Students will learn about different types of bonding—ionic, covalent, and metallic—how these bonds affect the



	<p>bonding. They should also remember concepts of ionic, covalent, and metallic bonds, and the general properties of solids, liquids, and gases. Prior understanding of the periodic table's organization is also essential.</p>	<p>properties of substances, and the structure of giant lattices, simple molecules, and polymers. They will explore the properties of metals, alloys, fullerenes, and graphene, and understand the impact of intermolecular forces on state changes.</p>
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	C3 Structure and bonding	C3 Structure and bonding
	<p>All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 2 this will focus on the C3 unit but will also include content from C1 &amp; C2.</p>	<p>Students will enhance literacy skills by explaining complex bonding concepts and comparing different types of materials. Numeracy skills will be developed through interpreting data on melting and boiling points, plotting cooling curves, drawing dot and cross diagrams, and predicting properties based on molecular models and bonding types.</p>
Term 2	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	C5 Chemical changes	C5 Chemical changes
	<p>Students need to recall the basics of the reactivity series, the properties of metals and non-metals, and how acids and bases interact. They should also understand basic chemical equations, the concepts of oxidation and reduction, and prior knowledge of the pH scale and neutralization reactions.</p>	<p>Students will learn about the reactivity series in detail, including displacement reactions and metal extraction processes. They will explore how salts are formed, the difference between strong and weak acids, and how to prepare salts through various reactions. Additionally, they will study the pH scale and the concept of neutralization.</p>
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	C5 Chemical changes	C5 Chemical changes
	<p>All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 3 this will focus on the C5 unit but will also include content from C1-C3</p>	<p>Students will enhance literacy by explaining chemical processes, writing balanced chemical equations, and discussing the implications of reactivity and acid strength. Numeracy skills will be developed through calculating pH, analysing experimental data on reactivity and displacement, and interpreting results from salt preparation and titration experiments.</p>
Term 3	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	C6 Electrolysis	C6 Electrolysis
	<p>Students need to recall the basics of ionic bonding, how ions form and behave, and the properties of ionic compounds. They should also understand the principles of electricity, particularly how charged particles move in circuits, and have a foundational understanding of chemical reactions, including oxidation and reduction.</p>	<p>Students will learn about electrolysis, including the movement of ions in molten and aqueous solutions and the reactions occurring at electrodes. They will explore the extraction of metals, such as aluminium, through electrolysis, predict products of electrolysis, and higher-tier students will learn to write and balance half-equations for electrode reactions.</p>
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	C6 Electrolysis	C6 Electrolysis
	<p>All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term.</p>	<p>Students will enhance literacy by explaining electrolysis processes, writing balanced chemical equations, and using scientific terminology like oxidation and reduction. Numeracy skills will be developed through calculating quantities related to electrolysis, predicting electrode</p>



		products based on reactivity, and analysing data from electrolysis experiments, including interpreting half-equations and charge movements.		
Term 4	Previous knowledge recalled		New Knowledge	
	C7 Energy changes		C7 Energy changes	
	Students need to recall basic concepts of energy conservation, types of chemical reactions, and the principles of the reactivity series. They should also understand how energy is transferred in reactions and be familiar with concepts like exothermic and endothermic processes, having previously studied simple reactions and their effects on temperature.		Students will learn about energy changes in chemical reactions, distinguishing between exothermic and endothermic reactions. They will explore reaction profiles, calculate bond energies to determine overall energy changes, and apply this understanding to practical applications like chemical cells and fuel cells. Higher-tier students will also learn to evaluate energy changes quantitatively.	
	Key Knowledge Assessment		Links to literacy and numeracy	
	C7 Energy changes		C7 Energy changes	
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 5 students will complete a PPE assessment. This will be similar to a full paper 1 minus the content not yet covered. This will include the C1-C3, C5-C6.		Students will enhance literacy by explaining energy transfers and reaction profiles and discussing practical uses of exothermic and endothermic reactions. Numeracy skills will be developed through calculating bond energies, interpreting reaction profiles, plotting and analysing temperature changes in experiments, and using data to classify and compare chemical reactions based on their energy changes.	
Term 5	Previous knowledge recalled		New Knowledge	
	C9 Crude Oil	C12 Chemical analysis	C9 Crude Oil	C12 Chemical analysis
	Students need to recall the basics of hydrocarbons, the structure and naming of simple alkanes, and the principles of combustion reactions. They should also understand the concept of molecular formulas and the differences between complete and incomplete combustion, as well as having a basic understanding of crude oil and its uses.	Students need to recall the basic principles of mixtures and pure substances, including how to separate mixtures using methods like chromatography. They should also remember the concept of solubility and how to identify substances through simple chemical tests. Prior knowledge of states of matter and molecular structure is also essential.	Students will learn about the composition of crude oil, the process of fractional distillation, and how hydrocarbon properties like boiling point, viscosity, and flammability vary with molecular size. They will also explore the chemical processes of cracking hydrocarbons and how to balance equations for combustion and cracking reactions.	Students will learn about the differences between pure substances, mixtures, and formulations. They will explore chromatography in detail, including calculating R <sub>f</sub> values, and learn about various gas tests for hydrogen, oxygen, carbon dioxide, and chlorine. Additionally, they will develop skills in analysing chromatograms both qualitatively and quantitatively.
	Key Knowledge Assessment		Links to literacy and numeracy	
	C9 Crude Oil	C12 Chemical analysis	C9 Crude Oil	C12 Chemical analysis
All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted	Students will develop literacy skills by explaining the processes of fractional distillation and cracking, describing hydrocarbon properties, and writing balanced chemical	Students will enhance literacy by describing chromatography processes, explaining gas tests, and discussing the purity of substances. Numeracy skills will be reinforced through	Students will enhance literacy by describing chromatography processes, explaining gas tests, and discussing the purity of substances. Numeracy skills will be reinforced through	



	each term. In term 6 this will focus on the C9 & C12 unit but will also include content from C1-C7.	equations. Numeracy skills will be enhanced through analysing trends in hydrocarbon properties, interpreting bar charts of boiling points, and calculating reactants and products in combustion and cracking reactions.	calculating Rf values, interpreting chromatograms, analysing melting and boiling point data to assess purity, and using significant figures in quantitative analysis of experimental results.	calculating Rf values, interpreting chromatograms, analysing melting and boiling point data to assess purity, and using significant figures in quantitative analysis of experimental results.
Term 6	Previous knowledge recalled		New Knowledge	
	C4 Chemical calculations		C4 Chemical calculations	
	Students need to recall the structure of atoms, including protons, neutrons, and electrons, and the concept of relative atomic mass. They should understand how to use the periodic table to find atomic masses and have prior knowledge of chemical symbols, formulas, and simple chemical equations.		Students will learn about relative formula mass, the concept of the mole, and Avogadro's constant. They will explore how to calculate moles, balance chemical equations using moles, and determine reacting masses. Additionally, students will learn to calculate solution concentrations and understand the relationship between moles, mass, and volume.	
	Key Knowledge Assessment		Links to literacy and numeracy	
	C4 Chemical calculations		C4 Chemical calculations	
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 1 this will focus on the C4 unit but will also include content from C1-C3.		Students will enhance literacy by explaining chemical calculations, interpreting equations, and describing the mole concept. Numeracy skills will be reinforced through calculating relative formula masses, performing mole conversions, balancing equations, and determining concentrations. They will also apply algebraic methods to solve problems involving chemical quantities and reacting masses.	

Combined Physics	Previous knowledge recalled	New Knowledge
Term 1	P4 Electrical circuits	P4 Electrical circuits
	Students need to recall basic atomic structure, including the behaviour of charged particles and how electrons can be transferred to create ions. They should understand simple circuit components, the concept of electric current as charge flow, and have experience with basic circuit construction and symbols.	Students will learn about electric fields, the behavior of charged particles in fields, and how friction can lead to static electricity. They will explore resistance, potential difference, and the relationships between current, voltage, and resistance in circuits. Additionally, they will investigate series and parallel circuits, and the characteristics of different components.
	Key Knowledge Assessment	Links to literacy and numeracy
	P4 Electrical circuits	P4 Electrical circuits
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 1 this will focus on the P4 unit but will also include content from P1-P3.	Students will enhance literacy by describing electrical concepts, explaining experiments, and using correct circuit terminology. Numeracy skills will be reinforced through calculations involving Ohm's law, interpreting current-voltage graphs, analysing data from practical investigations, and solving problems related to series and parallel circuits,



		including resistance and current distribution.
Term 2	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	P5 Electricity in the home	P5 Electricity in the home
	Students need to recall basic concepts of electric circuits, including current, potential difference, and resistance. They should understand how electricity flows in a circuit and be familiar with the function of basic circuit components. Prior knowledge of energy transfer and the power equation is also essential.	Students will learn about alternating and direct current, the structure and safety features of mains electricity, and how to calculate electrical power and energy transfer. They will explore the efficiency of electrical appliances, the role of fuses, and how to assess energy use and cost in household devices.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	P5 Electricity in the home	P5 Electricity in the home
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 2 this will focus on the P5 unit but will also include content from P1-P4	Students will enhance literacy by explaining electrical concepts, describing the function of circuit components, and discussing safety in mains electricity. Numeracy skills will be developed through calculating power, energy transfer, and efficiency, analysing oscilloscope traces, and converting between units like kilowatts and joules for practical applications.
Term 3	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	P6 Molecules and Matter	P6 Molecules and Matter
	Students need to recall the basics of states of matter, including the properties of solids, liquids, and gases. They should understand concepts like density, temperature changes, and the conservation of mass during physical changes. Prior knowledge of particle theory and simple calculations involving mass, volume, and temperature is essential.	Students will learn about the concept of density, including measuring and calculating the density of different materials. They will explore the particle model in detail, understand internal energy, specific heat capacity, and specific latent heat, and investigate the relationships between temperature, pressure, and volume in gases, applying these concepts through practical experiments.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	P6 Molecules and Matter	P6 Molecules and Matter
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 2 this will focus on the P5 unit but will also include content from P1-P4	Students will enhance literacy by explaining concepts like internal energy, changes of state, and gas behaviour using scientific terminology. Numeracy skills will be developed through calculating density, specific heat capacity, and latent heat, analysing temperature-time graphs, and interpreting data from experiments on gas pressure and temperature relationships.
Term 4	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	P7 Radiation	P7 Radiation
	Students need to recall basic atomic structure, including protons, neutrons, and electrons, and understand the concept of isotopes. They should also remember prior knowledge of electromagnetic radiation and basic principles of energy transfer. A general understanding of safety around radioactive materials is also essential.	Students will learn about the discovery of the nucleus, the development of atomic models, and the process of radioactive decay, including alpha, beta, and gamma radiation. They will explore half-life, nuclear equations, and the applications and safety measures related to radioactivity, including the use of radioisotopes in medicine and industry.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>



	P7 Radiation	P7 Radiation
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 3 this will focus on the P6 unit but will also include content from P1-P5.	Students will enhance literacy by explaining atomic models, describing nuclear decay processes, and discussing the risks and benefits of radioactivity. Numeracy skills will be developed through calculating half-lives, interpreting decay curves, balancing nuclear equations, and analysing data from experiments involving radioactive materials to understand patterns and predict outcomes.
Term 5	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	P8 Forces in balance	P8 Forces in balance
	Students need to recall the basics of forces, including the difference between contact and non-contact forces, and how to represent forces as vectors. They should also understand the concepts of balanced and unbalanced forces and have a basic understanding of Newton's laws of motion, particularly the first and third laws.	Students will learn about scalar and vector quantities, the concept of resultant forces, and how to represent forces using free-body diagrams. They will explore moments and the centre of mass, the parallelogram of forces, and how to resolve forces into components, applying these concepts to real-world situations and mechanical systems.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	P8 Forces in balance	P8 Forces in balance
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 4 this will focus on the P7 unit but will also include content from P1-P6.	Students will develop literacy skills by describing forces, explaining vector diagrams, and discussing equilibrium and moments. Numeracy skills will be reinforced through calculating resultant forces, resolving forces into components, using scale diagrams, and applying mathematical equations to determine moments and the conditions for equilibrium in various systems.
Term 6	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	P9 Motion	P9 Motion
	Students need to recall the basics of speed, distance, and time relationships, including the equation $\text{speed} = \frac{\text{distance}}{\text{time}}$ . They should understand how to interpret simple distance-time graphs and have a basic understanding of velocity as speed with a direction, distinguishing it from scalar quantities like speed.	Students will learn how to analyse motion using distance-time and velocity-time graphs, calculate acceleration, and understand the concept of deceleration. They will explore the relationships between speed, velocity, and acceleration, including determining acceleration from velocity-time graphs and using equations of motion to solve problems involving changing velocities.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	P9 Motion	P9 Motion
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 5 students will sit a PPE which will be similar to a full paper 1 and will cover units P1 – P7.	Students will develop literacy skills by explaining motion graphs, describing changes in velocity and acceleration, and using correct scientific terminology. Numeracy skills will be enhanced through calculating speed, distance, time, and acceleration, analysing gradients and areas under graphs, and applying equations of motion to solve real-world problems involving moving objects.



Combined Biology	Previous knowledge recalled	New Knowledge		
Term 1	B10 Nervous System	B11 Hormonal Control	B10 Nervous System	B11 Hormonal Control
	Students need to recall the principles of homeostasis, the structure and function of the human nervous system, the concept of reflex arcs, and synaptic transmission. They should understand how receptors detect stimuli and how electrical impulses travel through the nervous system, linking this with prior knowledge of enzymes and cell specialization.	Students need to recall the basics of hormonal control and the endocrine system, including the role of key hormones like insulin, oestrogen, and testosterone. They should remember the processes involved in glucose regulation, the menstrual cycle, and the principles of negative feedback, as well as the causes and treatments of diabetes.	Students will learn about the nervous system, including the structure and function of neurons, the pathway of nerve impulses, and how reflex actions protect the body. They'll explore the role of synapses, the importance of reaction times, and how homeostasis maintains internal conditions through nervous and hormonal responses.	Students will learn about the endocrine system, including the functions of various glands and hormones, blood glucose regulation, the role of insulin and glucagon, and diabetes management. They'll explore hormonal control of reproduction, fertility treatments, and the mechanisms of contraception, with a focus on hormonal interactions and negative feedback.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>		
	B10 Nervous System	B11 Hormonal Control	B10 Nervous System	B11 Hormonal Control
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term.	Students will develop literacy skills by explaining nervous system processes, describing reflex actions, and interpreting scientific texts. Numeracy skills are enhanced through measuring and analysing reaction times, interpreting data from experiments, plotting graphs, and calculating averages to understand the precision and accuracy of their results in practical investigations.	Students will enhance literacy skills by interpreting scientific texts, explaining hormonal processes, and discussing ethical issues around fertility treatments. Numeracy skills are reinforced through analysing data on blood glucose levels, plotting hormone fluctuation graphs, calculating insulin dosage, and interpreting statistical data related to diabetes and reproductive health.	
Term 2	Previous knowledge recalled	New Knowledge		
	B13 Reproduction	B13 Reproduction		
	Students need to recall the basics of cell division, including mitosis and meiosis, the role of chromosomes, and the structure and function of DNA. They should also remember concepts	Students will learn about sexual and asexual reproduction, the processes of meiosis and fertilization, DNA structure and the human genome, and the principles of inheritance. They'll explore genetic disorders, genetic crosses, and the ethical considerations of genetic screening, enhancing their understanding of heredity and genetic variation.		



	related to inheritance, such as genes, alleles, and Punnett squares, and have a foundational understanding of genetic variation and how traits are passed from parents to offspring.			
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>		
	B13 Reproduction	B13 Reproduction		
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 2 students will sit a 2 <sup>nd</sup> PPE. This again will replicate a full paper 1 covering units B1-B9.	Students will enhance literacy skills by explaining complex concepts like reproduction and inheritance, debating ethical issues in genetic screening, and interpreting scientific texts. Numeracy skills are developed through calculating probabilities in genetic crosses, using Punnett squares, analysing ratios, and interpreting data from genetic studies to predict inheritance patterns.		
Term 3	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>		
	B14 Variation and evolution	B15 Genetics and evolution	B14 Variation and evolution	B15 Genetics and evolution
	Students need to recall the basics of genetic variation, the processes of meiosis and fertilization, and the role of mutations in creating variation. They should also remember the principles of natural selection and selective breeding, along with an understanding of DNA, genes, and the basics of inheritance from previous lessons on genetics.	Students need to recall evidence for evolution, such as the fossil record, the concept of natural selection, and antibiotic resistance in bacteria. They should also remember the classification systems developed by Linnaeus, the basics of binomial nomenclature, and prior knowledge of eukaryotic and prokaryotic cells.	Students will learn about the causes and types of variation, the process of evolution by natural selection, the principles of selective breeding, and genetic engineering. They'll explore how mutations contribute to evolution, the benefits and risks of genetic technologies, and the ethical implications of genetic modification and cloning.	Students will learn about the fossil record as evidence for evolution, the causes and consequences of extinction, and the development of antibiotic-resistant bacteria. They will explore the modern classification system, including the three-domain system, and learn how evolutionary trees show relationships among species based on genetic and fossil evidence.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>		
	B14 Variation and evolution	B15 Genetics and evolution	B14 Variation and evolution	B15 Genetics and evolution
	All students will be	Students will enhance	Students will develop literacy skills by interpreting	



	receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 3 this will focus on the B13 unit but will also include content from B10-B12.	literacy skills by discussing and debating ethical issues in genetic engineering, explaining the processes of evolution and variation, and interpreting scientific texts. Numeracy skills are developed through analysing data on genetic crosses, calculating probabilities of inherited traits, and interpreting graphs related to variation and natural selection.	scientific texts, explaining evolutionary theories, and discussing the implications of antibiotic resistance. Numeracy skills are reinforced through analysing fossil timelines, calculating bacterial growth rates, interpreting evolutionary trees, and understanding classification systems and their changes over time through data analysis.	
Term 4	Previous knowledge recalled	New Knowledge		
	B17 Organising and ecosystem	B18 Biodiversity and ecosystems	B17 Organising and ecosystem	B18 Biodiversity and ecosystems
	Students need to recall the basics of photosynthesis, the structure of food chains, the role of producers, and how energy flows through an ecosystem. They should also remember the water and carbon cycles, the concept of predator-prey relationships, and the importance of decomposers in recycling nutrients.	Students need to recall the basics of biodiversity, including the importance of diverse species in ecosystems, the impact of human activities such as deforestation and pollution, and the carbon cycle. They should also understand how global warming and pollution affect ecosystems and the basic principles of food chains and trophic levels.	Students will learn about the organization of ecosystems, including the roles of producers, consumers, and decomposers in food chains and webs. They will explore the importance of material cycles, such as the carbon and water cycles, and understand how energy is transferred and recycled within ecosystems.	Students will learn about the impact of human activities on biodiversity, including pollution, deforestation, and global warming. They will explore concepts like the greenhouse effect, trophic levels, and sustainable practices to maintain ecosystems. Additionally, they will study the consequences of reduced biodiversity and the importance of conservation efforts.
	Key Knowledge Assessment	Links to literacy and numeracy		
	B17 Organising and ecosystem	B18 Biodiversity and ecosystems	B17 Organising and ecosystem	B18 Biodiversity and ecosystems
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 4 students will sit a 3 <sup>rd</sup> PPE and this will replicate a full paper 2 covering units B10 – B18.	Students will develop literacy skills by explaining food chains, material cycles, and ecological relationships in written tasks. Numeracy skills are reinforced through interpreting and plotting predator-prey graphs, analysing data on population changes, calculating energy	Students will enhance literacy skills by discussing the effects of human activities on ecosystems, explaining the importance of biodiversity, and engaging in debates on conservation strategies. Numeracy skills are reinforced through analysing data on pollution, calculating the impact of human activities on carbon emissions, and interpreting graphs related to biodiversity and climate change.	



		transfers in food chains, and understanding the rates of decay and material cycling within ecosystems.	
Term 5	<b>Revision for GCSEs covering content from all topics based on performance in EOTT and PPEs</b>		
	<b>GCSEs begin</b>		
Term 6	<b>GCSEs finish</b>		

Combined Chemistry	Previous knowledge recalled	New Knowledge
Term 1	C4 Chemical calculations	C4 Chemical calculations
	Students need to recall the structure of atoms, including protons, neutrons, and electrons, and the concept of relative atomic mass. They should understand how to use the periodic table to find atomic masses and have prior knowledge of chemical symbols, formulas, and simple chemical equations.	Students will learn about relative formula mass, the concept of the mole, and Avogadro's constant. They will explore how to calculate moles, balance chemical equations using moles, and determine reacting masses. Additionally, students will learn to calculate solution concentrations and understand the relationship between moles, mass, and volume.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	C4 Chemical calculations	C4 Chemical calculations
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 1 this will focus on the C4 unit but will also include content from C1-C3.	Students will enhance literacy by explaining chemical calculations, interpreting equations, and describing the mole concept. Numeracy skills will be reinforced through calculating relative formula masses, performing mole conversions, balancing equations, and determining concentrations. They will also apply algebraic methods to solve problems involving chemical quantities and reacting masses.
Term 2	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	C8 Rates of reactions	C8 Rates of reactions
	Students need to recall basic concepts of chemical reactions, including reactants, products, and balancing equations. They should understand the impact of temperature and concentration on reaction rates, the idea of reversible reactions, and the concepts of exothermic and endothermic reactions from previous lessons.	Students will learn about factors affecting reaction rates, such as temperature, surface area, concentration, and catalysts, using collision theory. They will explore reversible reactions and dynamic equilibrium, applying Le Châtelier's principle to predict the effects of changing conditions like temperature and pressure on equilibrium systems.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	C8 Rates of reactions	C8 Rates of reactions
All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 2 students will sit a 2 <sup>nd</sup> PPE which will replicate a paper 1 covering units C1-C6	Students will enhance literacy by explaining collision theory, describing factors influencing reaction rates, and discussing equilibrium concepts. Numeracy skills will be reinforced through calculating reaction rates, interpreting graphs, using algebraic expressions for rate equations, and applying mathematical principles to predict changes in	



		equilibrium positions under varying conditions.
Term 3	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	C14 The earth's resources	C14 The earth's resources
	Students need to recall the basic concepts of natural resources, including the differences between renewable and finite resources. They should understand the principles of metal extraction, water purification, and the environmental impact of resource use. Prior knowledge of sustainability and basic chemical processes is also essential.	Students will learn about sustainable resource management, including the importance of reducing, reusing, and recycling materials. They will explore water treatment processes, metal extraction techniques like phytomining and bioleaching, and how to conduct Life Cycle Assessments (LCAs) to evaluate the environmental impact of products from production to disposal.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	C14 The earth's resources	C14 The earth's resources
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 4 students will sit a 3 <sup>rd</sup> PPE and this will replicate a full paper 2 covering units C8 – C14.	Students will enhance literacy by explaining processes like water treatment and metal extraction, discussing sustainability, and evaluating environmental impacts using LCAs. Numeracy skills will be reinforced through analysing data from LCAs, calculating resource use and efficiency, interpreting graphs and charts related to resource management, and applying mathematical methods to assess environmental impacts.
Term 4	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	C13 The earth's atmosphere	C13 The earth's atmosphere
	Students need to recall the basics of the Earth's structure, including the formation of rocks and the carbon cycle. They should understand basic concepts of chemical reactions, especially combustion, and have a foundational understanding of the role of carbon dioxide and oxygen in maintaining Earth's atmosphere.	Students will learn about the history and evolution of Earth's atmosphere, including the volcanic activity theory. They will explore the impact of human activities on the atmosphere, such as global warming and pollution, understand the greenhouse effect, and study the causes and consequences of atmospheric pollutants like carbon monoxide and sulphur dioxide.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	C13 The earth's atmosphere	C13 The earth's atmosphere
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 4 students will sit a 3 <sup>rd</sup> PPE and this will replicate a full paper 2 covering units C8 – C14.	Students will enhance literacy by explaining atmospheric changes, evaluating scientific theories, and discussing the environmental impact of pollution. Numeracy skills will be reinforced through interpreting data on gas compositions, analysing trends in climate change, calculating carbon footprints, and balancing chemical equations related to atmospheric reactions and pollutant formation.
Term 5	<b>Revision for GCSEs covering content from all topics based on performance in EOTT and PPEs</b>	
	<b>GCSEs begin</b>	
Term 6	<b>GCSEs finish</b>	

Combined Physics	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
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Term 1	P10 Forces and motion	P10 Forces and motion
	Students need to recall basic principles of forces, including Newton's laws of motion, and the relationship between mass, force, and acceleration. They should understand concepts of weight and gravitational force, the difference between mass and weight, and have prior experience with basic calculations involving speed and acceleration.	Students will learn about Newton's second law in detail, including calculating force, mass, and acceleration, and the concept of inertial mass. They will explore terminal velocity, stopping distances, and momentum, understanding the effects of forces during motion. Additionally, they will study Hooke's law and the elasticity of materials.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	P10 Forces and motion	P10 Forces and motion
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 3 this will focus on the P8 – P10 unit but will also include content from P1-P7	Students will enhance literacy by explaining forces and motion, discussing real-world applications like car safety, and describing the principles of momentum and elasticity. Numeracy skills will be reinforced through calculations involving force, acceleration, and momentum, interpreting motion graphs, applying Hooke's law, and analysing data from practical investigations related to forces.
Term 2	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	P12 Wave Properties	P12 Wave Properties
	Speed Calculations: Simple speed calculations, including using correct units for speed, distance, and time.  Properties of Light: Basic facts and properties of light.  Reflection of Light: Simple light reflection experiments.	Students will learn about the properties of mechanical and electromagnetic waves, including their types (transverse and longitudinal) and how they transfer energy without transferring matter. They'll explore wave characteristics like wavelength, amplitude, period, and frequency, and the relationships between them, as well as investigate reflection and refraction of waves.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	P12 Wave Properties	P12 Wave Properties
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 3 this will focus on the P12 unit but will also include content from P1-P0	Literacy links involve describing wave phenomena like longitudinal and transverse waves, explaining concepts such as reflection and refraction, and discussing experimental observations. Numeracy skills focus on calculations involving wave properties: period from frequency, wave speed from frequency and wavelength, and interpreting data from experiments.
Term 3	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	P13 Electromagnetic waves	P13 Electromagnetic waves
	Students need to recall the basics of wave properties, including wavelength, frequency, and the speed of waves, along with the wave equation $v=f\lambda$ . They should also understand the nature of transverse waves and have a foundational understanding of how light and other electromagnetic waves behave.	Students will learn about the electromagnetic spectrum, including the characteristics and uses of different types of electromagnetic waves. They will explore how electromagnetic waves interact with matter, the relationship between wavelength, frequency, and energy, and the practical applications and dangers of electromagnetic radiation, such as X-rays and gamma rays.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	P13 Electromagnetic waves	P13 Electromagnetic waves



	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 3 this will focus on the P8 – P10 unit but will also include content from P1-P7	Students will enhance literacy by explaining the electromagnetic spectrum, discussing the effects of radiation on health, and describing wave interactions with matter. Numeracy skills will be reinforced through calculations involving the wave equation, converting between wavelength and frequency, interpreting data related to radiation dose, and analysing wave properties using mathematical models.
Term 4	<b>Previous knowledge recalled</b>	<b>New Knowledge</b>
	P15 Electromagnetism	P15 Electromagnetism
	Students need to recall the basics of magnetism, including the properties of magnets, magnetic fields, and the concept of magnetic poles. They should understand the idea of induced magnetism and have prior knowledge of how electric currents can create magnetic fields, particularly around a straight wire.	Students will learn about the magnetic fields produced by electric currents, including the shape and strength of fields around wires and solenoids. They will explore the motor effect, using Fleming's left-hand rule to determine the direction of force, and investigate how electric motors operate using these principles.
	<b>Key Knowledge Assessment</b>	<b>Links to literacy and numeracy</b>
	P15 Electromagnetism	P15 Electromagnetism
	All students will be receiving in class assessments including retrieval practice, low stakes testing and exam practice. End of topic tests covering both prior and new learning will be conducted each term. In term 4 students will sit a 3 <sup>rd</sup> PPE and this will replicate a full paper 2 covering units P8 – P15	Students will enhance literacy by explaining the concepts of electromagnetism, describing the operation of electric motors, and using technical vocabulary like "magnetic flux density." Numeracy skills will be reinforced through calculating forces using $F=Bil$ , applying Fleming's left-hand rule, and interpreting data from experiments on magnetic fields and motor effects.
Term 5	<b>Revision for GCSEs covering content from all topics based on performance in EOTT and PPEs</b>	
	<b>GCSEs begin</b>	
Term 6	<b>GCSEs finish</b>	

Extra-Curricular opportunities	<p>Online Activities</p> <p>1. FutureLearn Courses</p> <p>Students can take free online courses that cover various science topics, enhancing their understanding of biology, chemistry, and physics.</p> <p><a href="https://www.futurelearn.com/subjects/science-engineering-and-maths-courses">https://www.futurelearn.com/subjects/science-engineering-and-maths-courses</a></p> <p>2. Royal Society of Chemistry's Interactive Experiments</p> <p>Online interactive experiments and activities to deepen understanding of chemical concepts.</p> <p><a href="https://edu.rsc.org/resources">https://edu.rsc.org/resources</a></p> <p>Activities in Kent</p> <p>1. Canterbury Christ Church University Science Outreach</p>
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Participate in workshops and science events aimed at secondary school students.

<https://www.canterbury.ac.uk/study-here/why-choose-us/outreach-and-widening-participation>

2. Betteshanger Sustainable Parks

Explore practical environmental science programs focusing on sustainability and ecological studies.

Betteshanger Parks][<https://betteshanger-park.co.uk/education/>

Activities in London

1. Science Museum, London

Engage with interactive exhibits and workshops that cover a wide range of scientific topics, from physics to chemistry and biology.

<https://www.sciencemuseum.org.uk/see-and-do/educators>

2. The Royal Institution

Participate in masterclasses and youth events that explore deep scientific topics and hands-on experiments.

<https://www.rigb.org/education/masterclasses>

3. Linnean Society of London Workshops

Workshops focusing on biology and evolution, providing students with a chance to learn about biological sciences outside the classroom.

<https://www.linnean.org/learning>

Links to careers/ aspirations

1. Biomedical Scientist

Working in healthcare to diagnose diseases and evaluate the effectiveness of treatments.

<https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/biomedical-science/biomedical-scientist>

2. Environmental Scientist

Studying and resolving environmental problems to improve global health.

<https://www.prospects.ac.uk/job-profiles/environmental-scientist>

3. Chemical Engineer

Designing and developing chemical manufacturing processes.

<https://www.prospects.ac.uk/job-profiles/chemical-engineer>

4. Forensic Scientist

Analysing criminal evidence such as fibres, glass, and body fluids.

<https://www.prospects.ac.uk/job-profiles/forensic-scientist>

5. Meteorologist

Forecasting the weather and studying atmospheric conditions.

<https://www.metoffice.gov.uk/about-us/careers>

6. Pharmacist

Providing prescription medications and health advice to patients.



<https://www.healthcareers.nhs.uk/explore-roles/pharmacy>

7.Science Teacher

Educating the next generation of scientists in secondary schools.

<https://getintoteaching.education.gov.uk/explore-my-options/teacher-training-routes/school-led-training/school-direct>

8.Renewable Energy Engineer

Developing technologies to harness solar, wind, and other renewable energy sources.

<https://www.renewableuk.com/page/CareersInRenewables>

Links to our Fulston FAMILY values

Fortitude

Resilience in Learning: Science often presents challenging concepts and experiments. Students learn to persevere through these challenges, embodying fortitude as they tackle difficult topics and practical experiments.

Adapting to Failure: Encouraging a scientific mindset where trial, error, and failure are seen as part of the learning process, helping students build resilience.

Ambition

Career Aspirations: The broad scope of science taught opens numerous career paths, inspiring students to aim high in various fields such as medicine, environmental science, and engineering.

Pursuit of Excellence: By setting high academic standards and providing a comprehensive understanding of scientific principles, the curriculum encourages students to strive for excellence.

Mindfulness

Environmental Awareness: Teaching topics like ecology and the human impact on the environment fosters mindfulness about one's actions and their repercussions on the planet.

Ethical Considerations: Discussions around the ethical implications of scientific developments, such as genetic modification and energy consumption, enhance students' thoughtful consideration of science and technology.

Integrity

Honest Scientific Practice: Students learn the importance of accurate data collection, honest analysis, and ethical reporting in experiments.

Critical Thinking: The development of critical thinking skills encourages integrity in evaluating scientific information and claims.

Leadership

Group Projects and Presentations: Opportunities for students to lead projects, experiments, or group discussions cultivate leadership skills.

Mentorship Roles: Older or more experienced students can take on mentorship roles, helping peers in laboratory settings or study groups.

Young Citizens

Community Engagement: Encouraging participation in community science projects and events, like local clean-up days




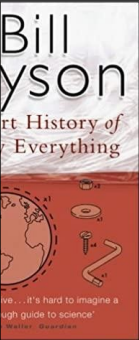
or science fairs, fosters a sense of civic responsibility.

Global Perspective: Learning about global challenges such as climate change, renewable energy, and conservation efforts prepares students to be informed global citizens, aware of worldwide issues and ready to contribute solutions.

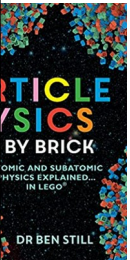


## Opportunities for Key Stage 4/5

	Listen	Watch	Explore and visit
<p>panse (Novel Series). Science</p> 	<p>The Infinite Monkey Cage episode “Exoplanets”  <a href="https://www.bbc.co.uk/programmes/p0dcn51y">https://www.bbc.co.uk/programmes/p0dcn51y</a></p>	<p>(Completing an Egg Drop from Space – Mark Rober)  <a href="https://www.youtube.com/watch?v=BYVZh5kqaFg">https://www.youtube.com/watch?v=BYVZh5kqaFg</a></p> <p>Listen to this podcast on the mystery of gravity.  <a href="https://www.brainson.org/episode/2015/01/09/the-mystery-of-gravity">https://www.brainson.org/episode/2015/01/09/the-mystery-of-gravity</a></p>	<p>Visit the mattress factory i            apply your understanding</p>
<p>his journal about getting energy            ur waste – can we create a greener            nment to live in?</p> <p><a href="http://www.sciencejournalforkids.org/waste-to-energy-how-can-we-get-most-from-our-waste/">www.sciencejournalforkids.org/waste-to-energy-how-can-we-get-most-from-our-waste/</a></p>	<p>Listen to the following podcast about heat transfer: Energy: Stop Faking It! Energy, Heat, and Heat Transfer: Thermal  <a href="https://my.nsta.org/resource/11525/podcast-energy-stop-faking-it-energy-heat-and-heat-transfer-thermal-energy">https://my.nsta.org/resource/11525/podcast-energy-stop-faking-it-energy-heat-and-heat-transfer-thermal-energy</a></p> <p>Watch The Fascinating Truth About Energy With Professor Jim Al-Khalili  <a href="https://www.youtube.com/watch?v=aeaQpuYPsy8">https://www.youtube.com/watch?v=aeaQpuYPsy8</a></p>	<p>(How Cell Service Actually Works – Wendover Productions)  <a href="https://www.youtube.com/watch?v=0faCad2kKeg">https://www.youtube.com/watch?v=0faCad2kKeg</a></p> <p>(British Plugs are Better than All Other Plugs, and Here’s Why – Tom Scott) <a href="https://www.youtube.com/watch?v=UEfP1OKKz_Q">https://www.youtube.com/watch?v=UEfP1OKKz_Q</a></p> <p>(How Australia’s Most Remote Phone Booths Work – Julian O’Shea)  <a href="https://www.youtube.com/watch?v=dU7PBXYmyXg">https://www.youtube.com/watch?v=dU7PBXYmyXg</a></p> <p>Shock and Awe – BBC Horizons  <a href="https://www.youtube.com/watch?v=Gtp51eZkwol">https://www.youtube.com/watch?v=Gtp51eZkwol</a></p>	<p>Investigate the kinetic and energy transferring in a sk  <a href="https://phet.colorado.edu/skate-park/latest/energy-park_en.html">https://phet.colorado.edu/skate-park/latest/energy-park_en.html</a></p>
<p>history of nearly everything</p>	<p>Listen to Melvyn Bragg and guests discuss the science of matter and the states in which it can exist on BBC4.</p>	<p>(World’s Lightest Solid! – Veritasium)  <a href="https://www.youtube.com/watch?v=AeJ9q45Pfd0">https://www.youtube.com/watch?v=AeJ9q45Pfd0</a></p>	<p>The Science Museum – Lo            Visit a Chemistry exhibitio</p>



Physics – Brick by brick



<https://www.bbc.co.uk/programmes/b03zdb4>

Read this journal about how we can make water safe to drink.

<https://www.sciencejournalforkids.org/articles/heavy-metal-pollution-how-can-we-make-water-safe-to-drink/>

(Let's Travel to the Most Extreme Place in the Universe – Kurzgesagt – In A Nutshell) <https://www.youtube.com/watch?v=FfWtIaDtfYk>

(All About Mercury, the Liquid Metal – NileRed)

<https://www.youtube.com/watch?v=ZiWlthrtneU>



<https://ed.ted.com/lessons/solid-liquid-gas-and-plasma-michael-murillo>



<https://www.youtube.com/watch?v=q8Ent5CXhfY>

Watch this video that investigates the periodic table to life.

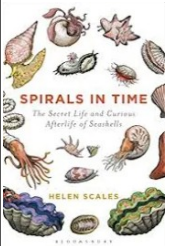
<https://www.youtube.com/watch?v=kqe9tEcZkno>

Museum

<https://www.sciencemuseum.org.uk/objects-and-stories/chemistry>



in Time by Helen Scales (Speak to her to borrow)



Small Screen Science

<https://podcasts.apple.com/gb/podcast/small-screen-science/id1511181067>

Listen to 'The Science of Your Favourite Foods' with Rob Dunn

<https://radiopublic.com/tumble-science-podcast-for-kids-G4wko8/s1!ef666>

The Poop Collector with Lawrence David

<https://radiopublic.com/tumble-science-podcast-for-kids-G4wko8/s1!02d02>

Watch 'The Hidden Kingdom' The Story of the biological cell, where Adam Rutherford explores how centuries of scientific and religious dogma were overturned by the discovery of the cell.

<https://www.bbc.co.uk/programmes/b00m425d>

Watch a TedEd Talk about the brain

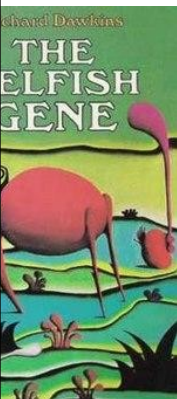
[https://www.ted.com/playlists/576/fascinating\\_ted\\_ed\\_lessons\\_about\\_the\\_brain](https://www.ted.com/playlists/576/fascinating_ted_ed_lessons_about_the_brain)

Find out what creatures have in your local area using the <https://records.nbnatlas.org/area>

Use a dichotomous key to identify insects you have seen/collected. <https://www.amentsoc.org/bug-is-this/adult-key.html>

The Sea Life Centre – Visit <https://bodyworlds.com/>

Selfish Gene



Unnatural selection - Netflix series about genetic engineering.

<https://www.netflix.com/title/80208910>

(Why 90% of Asians are Lactose Intolerant – Half As Interesting) <https://www.youtube.com/watch?v=jrhVfwPIB0A>

Unnatural selection - Netflix series about genetic engineering.

<https://www.netflix.com/title/80208910>

Join DNA Dan on his Genetics and Genomics podcast

<https://www.scuhs.edu/announcements/introducing-dna-dan-a-genetics-and-genomics-podcast/>

The Natural History Museum Visit the Science Museum <https://www.sciencemuseum.org.uk/objects-and-stories/epidemics>