

Combined Science KS3- KS4 Department

2023-2024

	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11
TERM 1	<p>Lab Skills Focus on lab safety and developing procedural knowledge such as taking measurements and drawing graphs</p> <p>Cells Tissues & Organs Students learn about cells being the building blocks of every organism</p>	<p>Light Students learn about how light is refracted and reflected, why we see colour and how lenses in a camera and our eyes work.</p> <p>Plant reproduction Students develop their understanding of sexual reproduction with plants and learn about the importance of plants for survival of all other organisms on our planet.</p> <p>The periodic table Students develop their understanding of elements to learn</p>	<p>States of matter Students learn how to conduct separation techniques to purify substances, for example, distillation.</p> <p>Conservation of energy Students learn how energy is transferred and how to use energy efficiently.</p> <p>Review Students are to review topics from term 1 to prepare for their assessment in term 2.</p>	<p>Genetics Students build on their understanding of DNA as a polymer and learn how to predict outcomes of inherited phenotypes and genotypes using genetic diagrams</p> <p>Heat energy changes in chemical reactions Students look deeper into exothermic and endothermic reactions with examples, looking at temperature changes and energy changes during the reactions.</p> <p>Motion and forces Students learn how to apply Newtons laws of motion and how to calculate momentum of moving objects as well as learning about how factors can influence the stopping distances.</p>	<p>Ecosystems and material cycles Students learn about biodiversity and how this can be maintained and protected. They also look at nitrogen, water and carbon cycles and the processes involved.</p> <p>Acids and alkalis Students revisit acids and alkalis, looking at the nature of acidic and alkali solutions and investigating their most important reactions properties and uses.</p>

		about their positioning on the periodic table due to their properties.			
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TERM 2	<p>The particle model Students learn that particles determine the behaviour of matter (solids, liquids and gasses).</p> <p>Sexual Reproduction Students develop their understanding from PSHE on puberty and the science behind sexual reproduction.</p> <p>Forces Students learn how forces are applied to everyday life, for example friction between tyres on the road.</p> <p>Stem</p> <p>Review</p>	<p>Sexual Reproduction Students develop their understanding from PSHE on puberty and the science behind sexual reproduction.</p> <p>Combustion Students to learn about the science behind burning and what is needed for the process of combustion to take place.</p> <p>Breathing and respiration Students learn about the respiratory system in more depth and the importance of respiration in cells</p>	<p>Health and disease Students learn about different types of pathogens, how they impact us and how we defend our bodies against them.</p> <p>Atomic Structure Students learn about the structure of the atom including the sub atomic particles, relevance of mass number and atomic number.</p> <p>The periodic table Students develop their understanding of the structure of the atom and how they are arranged due to their properties in the periodic table</p> <p>Biology key concepts A Students develop their understanding of the structure of animal, plant and bacterial cells.</p>	<p>Natural selection and genetic modification Students learn about the principles of natural selection, understand evidence to support this fundamental principal including the fossils, the pentadactyl limb and antibiotic resistance. Finishing the module looking at selective breeding and genetic modification.</p> <p>Radioactivity Students deepen their understanding of radioactive substances and learn about the differences in ionisation and material penetration for alpha, beta and gamma radiation as well as learning how to calculate half-lives for radioactive materials from data.</p> <p>Fuels and the atmosphere</p>	<p>Particles, forces and matter Students review key concepts such as density, stretching and pressure and practice using calculations related to these</p> <p>Electrolytic processes, obtaining and using metals and reversible reactions and equilibria. Students learn more about reactions, including some of the reactions involved in the extraction and purification of metals from their ores.</p>

	Students to review term 1 and 2 topics.	Review Students to review term 1 and 2 topics.		Students learn about hydrocarbons and are introduced to the hydrocarbon homologous series alkanes and alkenes and how the burning of hydrocarbons has impacted on the composition of the atmosphere over time.	
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TERM 3	<p>Elements and Molecules Students learn that all matter is made up of atoms, elements and molecules and build their understanding into how these lead to chemical reactions.</p> <p>Muscles and Bones Students learn about the structure of the human body and the key roles of muscles and the skeleton.</p> <p>Energy Students learn that energy cannot be created or destroyed</p>	<p>Energy transfer Students learn about how energy is transferred from one type into another and the importance of energy efficiency.</p> <p>Metals and their uses Students develop their understanding of matter by learning about the physical and chemical properties of materials.</p> <p>Unicellular organisms Students develop an understanding of</p>	<p>Rates Students learn about collision theory and the factors that affect collision theory and how it affects the rate of reaction. Also including the practical's involved in collecting data.</p> <p>Biology key concepts B Students learn that metabolic processes are catalysed by enzymes and the importance of their structure in different environmental conditions</p> <p>Waves Students learn about the differences between transverse and longitudinal waves and how light is refracted.</p>	<p>Plant structures Students learn about the importance of photosynthesis and the limiting factors. They will also further understand how substances are transported in a plant.</p> <p>Electrolytic processes, obtaining and using metals and reversible reactions and equilibria. Students learn more about reactions, including some of the reactions involved in the extraction and purification of metals from their ores.</p>	<p>Biology revision Students review key concepts in biology, linking sub cellular organelles to whole organism physiology, review the theory underpinning core practicals and work on developing biology exam technique.</p> <p>Chemistry revision Students review and practice calculations in chemistry and how observations in chemistry can be used to determine they type of reaction occurring as well as reviewing the theory underpinning core practicals and work on developing chemistry exam technique</p> <p>Physics revision Students review how fundamental concepts such as force and energy can be used</p>

	<p>but transferred or stored.</p> <p>Review Students to review the content from term 1 and 2.</p>	<p>single celled organisms and their importance in food production.</p> <p>Review Students to review term 1, 2 and 3 topics</p>	<p>Light and the EM spectrum Students learn about the different waves in the electromagnetic spectrum, as well as their uses and dangers, e.g., gamma rays.</p>		<p>to describe properties of the physical worlds as well as reviewing theory underpinning core practical's and developing physics exam technique</p>
	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11
TERM 4	<p>Mixtures & separation Students learn separation techniques and the difference between a mixture and a pure substance.</p> <p>Sound Students learn about how sound travels in waves as well as how the ear works.</p> <p>Acids and Alkalis Students learn about the difference between acid and alkali substances, their</p>	<p>Fluids Students learn the difference between the microscopic (particles) and the macroscopic</p> <p>Rocks Students learn about the different types of rock and the effect of physical and chemical weathering.</p> <p>Current & electricity Students learn how electrical circuits work and how to build them.</p>	<p>Review Students are to review topics from term 1,2 and 3.</p> <p>Bonding and types of substance Students learn how atoms bond to form compounds, whether ionic, covalent or metallic bonding dependent on the element.</p> <p>Cells and control Students learn about how cells divide by mitosis and how this is important in growth. In addition to how the nervous system works.</p>	<p>Energy and forces Students learn how to calculate power and work done as well as how force diagrams can be used to represent how physical objects influence each other and how forces acting on an object can be represented using vector diagrams</p> <p>Revise end of year assessments Biology paper 1, chemistry paper 2 and physics paper 1 revision for year 10 mocks. Topics that are in these assessments to be revised</p>	<p>Exam technique</p> <p>Core practical review</p>

Brooke Weston Faculty Curriculum Summary



	hazards and their uses. Review	Review Students to review term 1,2, 3 and 4 topics to prepare for the end of year exam		including exam technique and application.	
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TERM 5	<p>Food and Nutrition Students further develop their understanding of the digestive system and learn that food is a chemical store of energy.</p> <p>Ecosystems Students learn about ecosystems and the factors that affect them including the impact of human activity and the importance of biodiversity.</p> <p>Earth and Space Students learn about how the Earth orbits the Sun and its magnetic field.</p> <p>STEM research project Students complete a STEM based research project where they research applications of STEM in driving change in the world.</p>	<p>Genetics and Evolution Students develop their understanding of how DNA is inherited and learn about how organisms evolved over time.</p> <p>Reactivity Students learn the importance of the reactivity series and how we utilise it.</p> <p>Forces and motion Students learn about the importance of forces acting on objects.</p>	<p>Review Students are to review topics from the academic year to prepare for their end of year exam.</p> <p>Forces & Motion Students learn about the differences between vector and scalar quantities and Newtons 3 laws, including how to calculate momentum.</p> <p>Lab skills and feedback Students are to further their understanding of working in the laboratories in preparation for GCSE. Students will also be provided direct feedback on their end of year exam.</p>	<p>Hormones Students learn about how hormones provide homeostasis within the body by negative feedback, e.g. glucose levels in the blood.</p> <p>Electricity Students build on their understanding of circuit components and how energy is transferred in a circuit. Students learn how to apply ohms law to calculate resistance, current and voltage.</p> <p>Particles, forces and matter Students review key concepts such as density, stretching and pressure and practice using calculations related to these</p>	

