

		AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
YEAR 9 & YEAR 10 & YEAR 11 UPPER SCHOOL- PREPARING FOR ADULTHOOD	<b>Themes</b>	<b>MAKING AND KEEPING FRIENDS</b>  <b>Biology</b>	<b>LOOKING AFTER AND IMPROVING MY HOME (INCLUDING PETS AND PLANTS)</b>  <b>Biology</b>	<b>HOBBIES AND COMMUNITY</b>  <b>Chemistry</b>	<b>MAKING DECISIONS</b>  <b>Chemistry</b>	<b>MAKING AND SELLING A PRODUCT</b>  <b>Physics</b>	<b>LOOKING FOR WORK</b>  <b>Physics</b>
	<b>Lower theme learners can:</b>	<ul style="list-style-type: none"> <li>➤ identify and describe animals and plants on a food web</li> <li>➤ Identify and describe behaviours of herbivores, carnivores, omnivores</li> <li>➤ Identify principles of good animal care</li> <li>➤ Identify and describe animal and human relationships (e.g., pets, livestock, working animals)</li> <li>➤ Identify needs of older and younger pets</li> </ul>	<ul style="list-style-type: none"> <li>➤ identify things that plants need (food /soil, water, light).</li> <li>➤ Visit Polytunnel and observe routines for plant care/ observe chickens &amp; interview carers</li> <li>➤ Identify what animals need</li> <li>➤ Identify rules to keep plants or pets healthy and ways to get help</li> <li>➤ Choose one plant and one pet and describe necessary care in detail</li> </ul>	<ul style="list-style-type: none"> <li>➤ Identify features of different rocks and sort by colour, size, texture</li> <li>➤ Observe and identify changes to materials when heated /cooled or physically changed by other processes (e.g., erosion, decay)</li> <li>➤ Identify states of matter, with examples (solid, liquid, gas)</li> <li>➤ Predict what temperature changes will do to substances</li> </ul>	<ul style="list-style-type: none"> <li>➤ Identify properties of different materials (e.g. hard, wet, smooth) and explore their state, and changing states (e.g. heating or cooling something, watching something melt)</li> <li>➤ Identify organic (has carbon) and inorganic materials. Explore naturally occurring materials, including rocks, sand, soil (how strong, flexible, warm or cold feeling etc.)</li> <li>➤ Identify features of fossils: organic or not? Human-made or not? Describe different types of dinosaurs and identify ways fossils can teach us about them</li> <li>➤ Identify suitable materials to make different items: bags, clothes, plates, cups, chairs, houses, cars, spaceships. Give reasons for those decisions.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Identify features of furniture that make it useful (strong, easily cleaned, balanced). Suggest forces at work, focus on gravity and weight)</li> <li>➤ Compare furniture online and make a table</li> <li>➤ Design own furniture item, identify materials draw diagram, make model</li> <li>➤ investigate different musical instruments or items that make sound, identify materials used, size and shape, how loud</li> <li>➤ Describe different sounds using the following words: pitch, tone, volume, and touch /investigate musical instruments or items to experience sound as a vibration (e.g., drum)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Identify features of electrical circuits and describe how one would be used in at least one electrical appliance. Explain safe use of an electrical appliance. Use a torch to investigate light and shadows.</li> <li>➤ identify forces affecting or used by an electrical appliance</li> <li>➤ Identify forces affecting or used by a rocket</li> <li>➤ Describe a rocket journey to Mars (what would be seen, how long it might take, distance involved, forces that would affect the rocket)</li> </ul>

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	<b>Higher theme learners can:</b>	<ul style="list-style-type: none"> <li>➤ Explain relationships (friends and enemies!) in a food web</li> <li>➤ explain how herbivores, carnivores, and omnivores have adapted to suit their environment and ecosystem (plants eaten, shelter /landscape, climate)</li> <li>➤ Explain the different needs of different domestic animals (natural types of food (why different animals have different needs)</li> <li>➤ Explain different needs of different domestic animals, including reference to life cycles, and changing needs over time (e.g., an older pet dog will need less walking, and more easily digested food... perhaps a coat!)</li> </ul>	<ul style="list-style-type: none"> <li>➤ explain how plants use light (photosynthesis), water, soil nutrients. Begin growing plants in polytunnel, and sensory garden, and compare later.</li> <li>➤ explain different animals needs (e.g. different food /environment)</li> <li>➤ Explain reasons for plant /pet care rules and when we need a vet</li> <li>➤ Choose one plant and one pet and explain necessary care in detail, including possible signs of health and ill health</li> </ul>	<ul style="list-style-type: none"> <li>➤ Organise rocks by different properties, and suggest uses</li> <li>➤ describe changes causes by temperature (melting, freezing)</li> <li>➤ Explain differences between diluting a substance and dissolving</li> <li>➤ experiment: test effects of heat or water on different substances</li> </ul>	<ul style="list-style-type: none"> <li>➤ Compare materials (e.g., stone, wood, paper, fabric, plastic, sand, soil) and manipulate or experiment with materials (e.g., stirring, mixing, shaking)</li> <li>➤ Describe examples of organic and inorganic materials /define 'organic'</li> <li>➤ describe the process by which fossils are formed, referring to pressure and time. Compare different types of dinosaur and suggest why they went extinct</li> <li>➤ Explain why materials are /are not suitable for making different items</li> </ul>	<ul style="list-style-type: none"> <li>➤ describe suitable /unsuitable materials for making furniture (e.g., wood, paper!) and experiment with making mini tables and chairs of different shapes from folded /rolled rough paper: which shapes are strongest or have the best balance? Explain in terms of forces. compare furniture at home (e.g., sofa, beds), list advantages &amp; disadvantages</li> <li>➤ compare furniture online and suggest why some items are more expensive. Design (and build?) product as above, explain why this item is better than other things on the market. Review forces (gravity/ weight) and their relevance</li> <li>➤ suggest which instruments /items people might most enjoy playing and explain</li> <li>➤ explain sound waves as vibrations and suggest what happens if a sound is made very far away or through an obstacle like a wall.. Suggest how to 'sound proof a room'.</li> </ul>	<ul style="list-style-type: none"> <li>➤ explain how one electrical appliance uses an electrical circuit, including battery, switch, light/bulb / diode etc., as appropriate (e.g., kettle, torch)</li> <li>➤ explain energy efficiency in terms of different forces at work</li> <li>➤ suggest how rockets could be designed efficiently</li> <li>➤ Explain energy transfer involved in launching a rocket (design and launch own rockets in playground!)</li> </ul>

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YEAR 9 UPPER SCHOOL - EXAMS	<b>Lower learners can:</b>	<ul style="list-style-type: none"> <li>➤ identify and describe features of a cell including function of each part</li> <li>➤ order cells, tissues, organs, and systems in terms of size, and describe examples</li> <li>➤ Identify and describe the role of human skeleton, joints, and muscles</li> <li>➤ Identify and describe processes involved in breathing</li> <li>➤ Identify and describe processes involved in breathing</li> <li>➤ Describe parts and functions of the digestive system</li> <li>➤ Exploring the effects of disease and lifestyle</li> <li>➤ Describe a healthy diet and list the effects of an unbalanced diet</li> <li>➤ practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Describe photosynthesis and identify the stages.</li> <li>➤ Describe food chains /webs</li> <li>➤ Describe the effects of toxins in the environment and how they pass along the food chain</li> <li>➤ Describe natural selection and importance of biodiversity</li> <li>➤ Describe the nature of genetic material (role and structure of DNA, chromosomes, and genes)</li> <li>➤ Describe variation and genetic disorders</li> <li>➤ practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Describe solids, liquids and gases in terms of the particle model. Recognise differences between states of matter and properties of solids, liquids and gases.</li> <li>➤ Identify features of the periodic table and describe how it is organised.</li> <li>➤ Identify metals and non-metals in the periodic table. Describe the physical properties and patterns of reactions in Group 1 metals and halogens.</li> <li>➤ Explain what is meant by a compound and recognise how compounds are formed and named. Describe properties of elements and the compound that they form.</li> <li>➤ Describe what a polymer is, using examples. Identify polymers' properties and uses.</li> <li>➤ practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Describe acids and alkali properties and explain methods used to identify them.</li> <li>➤ Describe neutralisation reaction.</li> <li>➤ Describe the composition of the atmosphere and identify which gases are greenhouse gases.</li> <li>➤ Describe carbon cycle</li> <li>➤ Describe effects of human activities on planet (e.g. fuel burning, cattle farming)</li> <li>➤ practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Identify and describe energy transfers by fuels and food.</li> <li>➤ Describe energy stores and transfers</li> <li>➤ Describe forces (push and pull and non-contact)</li> <li>➤ Identify the factors involved in defining speed. Calculate the speed using the speed formula.</li> <li>➤ Practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Describe and draw electrical circuits diagrams. Define current, amps and voltage, in context of an electrical circuit</li> <li>➤ Compare series and parallel circuits</li> <li>➤ Describe the laws of magnetic attraction</li> <li>➤ Describe what an electromagnet is and explain the factors that affect the strength of an electromagnet</li> <li>➤ Identify how sounds are made and how sound waves transfer energy.</li> <li>➤ Identify properties of light and describe reflection and refraction.</li> <li>➤ Practical</li> </ul>

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	<b>Higher learners can:</b>	<ul style="list-style-type: none"> <li>➤ Explain features of a cell and how this varies for different types of cells</li> <li>➤ Explain the functions of major organs, and which systems they are part of</li> <li>➤ Identify and describe problems with the skeletal system</li> <li>➤ Explain gas exchange in humans, including chemical reactions that occur, and impact of lifestyle</li> <li>➤ Explain gas exchange in humans, including chemical reactions that occur, and impact of lifestyle</li> <li>➤ Explain functions of each organ in digestive system in detail</li> <li>➤ Explain in detail the effects of disease and lifestyle on the breathing system</li> <li>➤ Explain the links between diet and obesity and discuss its impact on health</li> <li>➤ Practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Explain photosynthesis and the role of the sun</li> <li>➤ Explain how ecosystems rely on producers and micro-organisms.</li> <li>➤ Explain in detail effects of toxins in environment on animals and plants</li> <li>➤ Explain the evolution evidence in detail</li> <li>➤ Explain in detail the link between chromosomes, genes, and DNA</li> <li>➤ Explain and discuss inherited disorders</li> <li>➤ practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Discuss in detail different properties of solids</li> <li>➤ Explain in detail organisation of elements on the periodic table.</li> <li>➤ Use data to predict the reactivity of metals and non-metals.</li> <li>➤ Compare and describe in detail the properties of elements with the properties of the compounds that they form</li> <li>➤ explain why structures of polymers make them useful to us.</li> <li>➤ practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Explain in detail properties of acids and alkalis</li> <li>➤ Investigate and explain neutralisation reaction in detail</li> <li>➤ Explain how carbon dioxide is released from the burning of fossil fuels</li> <li>➤ Explain processes involved in carbon cycle</li> <li>➤ Explain how human activity is changing Earth's atmosphere and thus climate.</li> <li>➤ practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Explain in detail energy transfers by fuels and food.</li> <li>➤ Explain energy storage, transfer and wastage</li> <li>➤ Explain in detail different types of forces</li> <li>➤ Explain the factors involved in defining speed.</li> <li>➤ Practical</li> </ul>	<ul style="list-style-type: none"> <li>➤ Explain measurement of electrical flow around a circuit</li> <li>➤ Explain current and voltage in series and parallel circuits</li> <li>➤ Describe magnetic forces, including explanation of the term non-contact force</li> <li>➤ Compare the use of electromagnets in different applications</li> <li>➤ Describe in detail how sound waves transfer energy.</li> <li>➤ Explain reflection and refraction in detail.</li> <li>➤ practical</li> </ul>

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YEAR 10 & YEAR 11 UPPER SCHOOL- EXAMS	<b>No Theme</b>	<b>Biology:</b> Plan for Human Body	<b>Biology:</b> Plan for Human Body  <b>Chemistry:</b> Chemistry in Our World	<b>Chemistry:</b> Chemistry in Our World  <b>Physics:</b> Physics, Electricity, Magnetism and Waves	<b>Physics:</b> Physics, Electricity, Magnetism and Waves	<b>Chemistry:</b> Chemistry in Our World	<b>Enrichment</b>
	<b>Lower learners can:</b>	<b>Biology</b> <ul style="list-style-type: none"> <li>➤ Identify and describe features of a cell including their function</li> <li>➤ Order cells, tissues, organs, and systems in terms of size, and describe examples</li> <li>➤ Describe parts and functions of the digestive system</li> <li>➤ Identify respiration process</li> <li>➤ Identify and describe types of pathogens, and types of infectious disease</li> <li>➤ Describe the processes involved in the immune response, and vaccination</li> </ul> <p>Describe effects of medical drugs on the human body</p>	<b>Biology</b> <ul style="list-style-type: none"> <li>➤ Identify and describe features of human nervous system, including reflexes</li> <li>➤ Identify examples of hormones and their functions</li> <li>➤ Identify effects of contraceptive pill on menstrual hormones</li> </ul> <b>Chemistry</b> <ul style="list-style-type: none"> <li>➤ Describe how acids react with salts /metals. Do word equations, and describe reactions between acids and alkalis with examples</li> <li>➤ Identify &amp; describe types of reactions (combustion, oxidation, neutralisation, including related temperature changes and factors affecting rates of reaction</li> <li>➤ Identify changes to Earth's atmosphere over the last billion years. identify chemicals in Earth's current atmosphere and locked in rocks/ fossils</li> </ul>	<b>Chemistry</b> <ul style="list-style-type: none"> <li>➤ Describe how carbon was locked into fossil fuels and how atmosphere developed</li> <li>➤ Describe crude oil, including where it comes from and what its' uses are. Also Identify substances released when fossil fuels burn, and effects on organisms</li> <li>➤ Describe effects of human activities (e.g. fuel burning, cattle farming) on planet. Also Describe the composition of safe drinking water</li> </ul> <b>Physics</b> <ul style="list-style-type: none"> <li>➤ Define current, amps, resistance, voltage, in context of an electrical circuit</li> <li>➤ Describe a complete electrical circuit, and an alternating circuit</li> <li>➤ Describe components of a plug, and wire a plug</li> </ul>	<b>Physics</b> <ul style="list-style-type: none"> <li>➤ Recap on plugs, then explain energy transfer in everyday electrical appliances</li> <li>➤ Describe the forces exerted by bar magnets including how poles repel or attract</li> <li>➤ Explain the creation of a magnetic force by passing a current through a wire</li> <li>➤ Describe features of transverse and longitudinal waves and identify from diagram</li> <li>➤ Identify wavelength and frequency on a wave diagram and calculate wave speed (frequency x wavelength)</li> <li>➤ Describe features of an electromagnetic waves (transverse, energy transferring) and describe: radio, microwave, infrared, visible light, ultraviolet, x-ray, gamma rays</li> </ul>	<b>Chemistry</b> <ul style="list-style-type: none"> <li>➤ Complete revision and prepare for final exam and TDA</li> <li>➤ Wrap-up, revision, experimentation</li> </ul> <b>Exams</b>	<ul style="list-style-type: none"> <li>➤ Design own science experiment</li> <li>➤ Class Science Fair</li> </ul>

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	<b>Higher learners can:</b>	<b>Biology</b> <ul style="list-style-type: none"> <li>➤ Explain features of a cell and how this varies for different types of cell</li> <li>➤ Explain the functions of major organs, and which systems they are part of</li> <li>➤ Explain functions of each organ in digestive system in detail</li> <li>➤ Identify and describe processes involved in respiration</li> <li>➤ Explain how different pathogens and diseases attack the human body</li> <li>➤ Explain the immune response and vaccination process in detail</li> <li>➤ Explain how drugs affect bodies, advantages /disadvantages of their use</li> </ul>	<ul style="list-style-type: none"> <li>➤ Explain structure of human nervous system and processes behind reflexes</li> <li>➤ Explain functions of different hormones, including those of the menstrual cycle</li> <li>➤ Explain and evaluate effects of contraceptive pill</li> </ul> <b>Chemistry</b> <ul style="list-style-type: none"> <li>➤ Explain hydrochloric acid produces chlorides, sulphuric acid produces sulphates, and how acids react with alkalis and carbonates, inc. substances produced</li> <li>➤ explain how chemical reactions create or take in energy, affecting temperature</li> <li>➤ explain chemical processes involved in changes to Earth's atmosphere</li> <li>➤ explain role of CO<sub>2</sub> in how atmosphere developed (dissolving, photosynthesis)</li> </ul>	<b>Chemistry</b> <ul style="list-style-type: none"> <li>➤ Explain process of carbon locking into fossils, and how atmosphere developed</li> <li>➤ Explain processes of crude oil being separated into different fuels. Also explain effects and implications of fossil fuel use for human health, and for Earth</li> <li>➤ Explain how human activity is changing Earth's atmosphere and thus climate. Also explain how drinking water can be produced (filtration, distillation, sterilisation)</li> </ul> <b>Physics</b> <ul style="list-style-type: none"> <li>➤ Explain measurement of electrical flow around a circuit</li> <li>➤ Explain why circuits must be complete, and why the UK has AC mains electricity</li> <li>➤ Explain functions of plug components, and fuses, wire a plug, select suitable fuse</li> </ul>	<b>Physics</b> <ul style="list-style-type: none"> <li>➤ Recap on plugs, then explain energy transfer dependency on power and use (energy = power x time)</li> <li>➤ Describe magnetic forces, including explanation of the term non-contact force</li> <li>➤ Explain how the current in a wire, distance from it, and shaping it affect magnetic force. Also describe an electromagnet (solenoid /coiled wire, plunger, and iron core)</li> <li>➤ Explain difference between transverse and longitudinal waves using the terms, perpendicular oscillation, parallel oscillation, direction of energy transfer, and give examples</li> <li>➤ Define the terms wavelength, amplitude, frequency, and calculate wave speed</li> <li>➤ Describe electromagnetic waves in terms of velocity, wavelength, frequency and order in wavelength and explain difference between types of waves</li> </ul>	<b>Chemistry</b> <ul style="list-style-type: none"> <li>➤ Complete revision and prepare for final exam and TDA</li> <li>➤ Wrap-up, revision, experimentation</li> </ul> <b>Exams</b>	<ul style="list-style-type: none"> <li>➤ Design own science experiment</li> <li>➤ Class Science Fair</li> </ul>