Year 8 Science Curriculum Outline

The science department at Linslade School delivers a broad and diverse curriculum that instils awe and wonder, a sense of excitement and curiosity about natural phenomena and a window into the wider science world. We plan our schemes to provide a bridge from Lower to Upper School equipping them with knowledge to use across a range of subjects at GCSE and beyond, including how to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. Pupils will develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
Through the delivery of practical and theory lessons, we develop creative and curious learners and encourage aspirations and an understanding of the future careers that are open to them. Our learners today have an inspirational knowledge base to be our scientific leaders of tomorrow that is vital to the world's future prosperity.

Topic	Digestion Breathing Electromagnets	Energy and thermal transfer Carbon cycle and global warming	Matter - Elements and Periodic table Forces - Contact forces and Pressure	Reactions - Types of reactions and chemical energy Genes - Evolution and Inheritance	Waves - Wave effects and wave properties	Ecosystems - Respiration and Photosynthesis
Key Skills	To describe the content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed. To be able to calculate the energy requirements in a healthy daily diet. To explain the consequences of imbalances in the diet,	To link particle movement to energy transfer. To describe the different types of energy and their transfers. To describe how energy resources can be used.	To describe what elements and atoms are. To describe the periodic table and know some of the elements. To describe the properties of metals and non-metals and	Describe the properties of metals and non-metals. Relate the uses of different elements to their chemical properties. Recall some reactions that happen slowly and some that happen quickly. Describe how catalysts affect the speed or rate of a reaction.	Describe the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface. To use the ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and	To understand feeding relationships and food chains. To explain how food chains can be disrupted. To describe food webs.

	including obesity, starvation and deficiency diseases. To describe the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts). To describe the importance of bacteria in the human digestive system. To understand that plants make carbohydrates in their leaves by photosynthesis and gain mineral nutrients and water from the soil via their roots. Describe how breathing rate and heart rate are affected by exercise. Describe the functions of the organs in the human gaseous exchange system and what happens during gas exchange. Describe the structure of the lungs. Recall what happens in respiration (in terms of needing oxygen to release energy from food and producing carbon dioxide). Describe how asthma, emphysema and tobacco tar can reduce gas exchange Students can describe a magnetic field and describe how magnets interact. They can explain how the Earth has a magnetic field and how this helps navigation. They can use an electromagnet and can	State the meaning of hydrocarbon Describe the combustion of hydrocarbons (in terms of reactants and products). Describe the test for hydrogen. Recall examples of non-metal oxide pollutants caused by burning fossil fuels and their impurities. Describe how sulfur dioxide forms acid rain. Describe the overall impact of the Greenhouse Effect and Global Warming.	how they react and form compounds. To describe what molecules and compounds are. To identify reactions and describe how to test for gases. Describe the properties of metals and non-metals. Relate the uses of different elements to their chemical properties. Describe how catalysts affect the speed or rate of a reaction. Model simple reactions using symbol equations. Describe what alloys are. Identify a pure substance from its melting or boiling point. Identify and explain the products formed by the reactions of metals with water and with oxygen. Understand and explain how particles behave to cause pressure, diffusion and forces within fluids. Understand resistance forces in fluids, such as aerodynamics and hydrodynamics and to understand how upthrust relates to particle movement.	Model simple reactions using symbol equations. Describe what alloys are. Identify a pure substance from its melting or boiling point. Identify and explain the products formed by the reactions of metals with water and with oxygen. Recall the life processes Recap cell structure and function Understand the role of the nucleus in reproduction and how DNA passes characteristics onto offspring. To carry out punnet square activities and collect data using quadrats.	action of convex lenses in focusing; the human eye. Describe colours and the different frequencies of light, white light and prisms. Describe how we see colour.	To understand how interdependence works. To describe sexual reproduction in plants, including naming the part of the flower required for this. To describe asexual reproduction and why this can be beneficial. To compare the differences between asexual and sexual reproduction in plants

	draw a diagram to show how it works. Students can describe how the electromagnet works and how to change the strength. Students can design and carry out an experiment on electromagnets, collecting valid data. They can write a valid conclusion, using the correct scientific terminology, grammar and punctuation.					
Previous learning and next steps links	KS2 introduces digestion and plant life cycles. KS4 has a specific focus on enzyme activity, absorption and nutrition;.	Energy is introduced in Year 7 and built upon in Year 8. The focus is on how energy is transferred. KS4 builds upon this further. This links to Yr 7 Energy. KS4 physics is developed from this topic – energy efficiency etc	Elements and compounds are introduced in yr 7. Both these topics feed into the demands of GCSE chemistry and set the foundations for this. KS4 physics and chemistry KS2 introduces states of matter and all materials being made up of particles. KS4 focusses specifically on patterns and reactivity within the periodic table.	KS2 students learn about life cycles. KS3 students learn the biology behind reproduction and how genes are passed on, showing traits in inheritance. KS4 Biology further develops the role of the nucleus and chromosomes, inheritance, variation, competition etc.	KS2 sound Light and how we see is introduced at UKS2, where the concept of reflection and straight lines is explored. KS4 develops the knowledge of light waves and explores frequency and transmission further. KS4 physics	Photosynthesis and respiration are specific to KS3/4 in terms of the equations and processes that are involved. We introduce students to the reactions and describe the process. At KS4, they develop the knowledge of the complexities of these processes and an understanding of the cycles involved in each.
Numeracy Opportunities	Data, tally, bar charts, pie charts, thermometers, line graphs, tables of results, timing, measuring etc.					

Literacy opportunities	Experimental write ups and recording of information. Key vocabulary, reading text linked to each topic