CURIOSITY COMPASSION COURAGE

Curriculum overview

Subject	Science	Year group	8
Vision statement:	At Landau Forte our curriculum exists to ensure all students regardless of background and ability have the opportunity to unlock their potential. We are committed to students being challenged from their previous key stage learning experiences. Our broad and balanced curriculum is ambitious, coherently planned and sequenced, and will provide the platform for preparing students with the foundations for examination success. Our Curriculum Intent has been informed by a wide variety of researchers and is steeped in evidence based research. Christine Counsell summarises the aspiration of our curriculum to empower all learners creating a pathway to success in university, their career and life: *'A curriculum exists to change the pupil, to give the pupil new power. One acid test for a curriculum is whether it enables even lower attaining or disadvantaged pupils to clamber into the discourse and practices of educated people, so that they gain powers of the powerful.'* As well as excellent academic success we aim to ensure our students leave us as polite and well-rounded young adults. Our new core values of Compassion, Courage and Curiosity are currently being embedded throughout our curriculum offer to ensure we continue to meet our social, emotional, spiritual and moral obligations.		
Curriculum intent:	In line with the Academy's vision to enhance students' understanding of the world by ensuring an educational journey guided with care and compassion the Science department at Landau Forte Academy QEMS aim to deliver a curriculum that not only develops students' knowledge and understanding of the subject but inspires them to succeed far beyond their education at the academy. The science curriculum aims to be; ○ Aspirational ○ Ambitious ○ Coherent both in planning and sequence ○ Adapted successfully to suit all needs and abilities ○ Broad - covering not only aspects of the subject but how this can be taken into the outside world In delivering the knowledge based curriculum students will be able to not only achieve the best they can academically but also link theory to reason, understand why they learn about specific concepts, grasp how this fits into the world of careers and ultimately develop the skills and reasoning needed to become well rounded individuals. The curriculum aims to give students a range of opportunities within the classroom and beyond allowing them to become confident and articulate in their scientific ideas. Consistently high expectations of both students and teaching staff ensures that every individual in Science has access to the highest quality of teaching and learning possible and working with key stakeholders ensures that our students have every opportunity to achieve. In summary the Science curriculum is developed and tailored for each specific year group taking into account the demographic of our students. The intention of which is to allow students to think deeper and use knowledge based skills within their learning both in science and throughout their lives.		

Threshold Concepts (TCs):	1. *Health and lifestyle* 2. *Motion and pressure* 3. *The Periodic Table* 4. *Adaptation and Inheritance* 5. *Separating Techniques* 6. *Energy* 7. *Respiration* 8. *Earth Structure* 9. *Photosynthesis* 10. *Metals and their Reactions* 11. *Electricity and Electromagnetism*
KS2 National Curriculum summary:	The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. **Working scientifically** During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments **Topics covered:**

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	Animals Including Humans, Everyday Materials (Properties and Changes of Materials), Living Things and their Habitats, Light, Forces and Magnets, Electricity, Earth and Space, Evolution.					
Learner skills:	Critical thinking 	Organisation 	Collaboration 	Adaptability 	Oracy 	Self-quizzing 
	Term 1 Aug-Oct	Term 2 Nov-Dec	Term 3 Jan-Feb	Term 4 Mar-Apr	Term 5 Apr-May	Term 6 Jun-Jul
The Big Question	**What is science?**					
Big picture questions:	**How do I know if my diet is healthy?** **How can I work out properties of an element?** **Can we explore the bottom of the ocean?**	**Why do I have blue eyes if my parents have brown?** **How do I separate mixtures?**	**Does everything use the same amount of energy?** **Where does my energy come from?**	**If I keep digging what would I get to?** **How do plants get glucose?**	**Do all metals react in the same way?**	**Does all electricity come from a plug socket?**
Content (Linked to TCs):	Health and lifestyle • Food groups • Diet • Enzymes • Drugs and smoking The Periodic table • The periodic table • Group 1 • Group 7 • Group 0 Motion and pressure	Adaptation and inheritance • Inheritance • Types of variation • Natural selection • Biodiversity Separating techniques • Mixtures • Solubility • Filtration and evaporation	Energy • Efficiency • Work Done • Temperature Respiration • Respiration • Anaerobic and Aerobic • Fermentation	Earth structure • The earth • The rock cycle • Types of rock • The carbon cycle Photosynthesis • Photosynthesis • Plant structure • Rate of photosynthesis • Food webs	Metals and their reactions • Metals + water • Burning metals • The reactivity series • Displacement reactions	Electricity and electromagnetism • Static electricity • Current electricity • Resistance • Magnetism • Electromagnets

	• Pressure • Gas pressure • Moments • Motion	• Distillation • Chromatography				
Vocabulary Instruction:	Carbohydrates Lipids Protein Enzyme Drug Stimulant Depressant Periodic table Metal Non metal Alkali Metal Halogen Noble Gas Pressure Newton Surface area Moments	Gene Chromosome Inheritance Variation Natural selection Biodiversity Habitat Ecosystem Mixture Soluble Insoluble Filtration Crystallisation Distillation Chromatography	Efficiency Energy Joules Work done Force Temperature Thermal energy Respiration Aerobic Anaerobic Fatigue Fermentation Ethanol	Igneous Metamorphic Sedimentary Deposition Respiration Photosynthesis Carbon Palisade cell Chloroplast Stomata Xylem Transpiration Rate of reaction Food web Producer Consumer Primary Secondary Tertiary predator	Metal Reaction Effervescence Burning Reactivity Reactivity series Extraction Displacement	Electricity Static Charge Positive Negative Current Voltage Electron Resistance Magnetism Pole Attract Repel Electromagnet Solenoid
Assessment:	Key Learning task for all topics	Key Learning task for all topics	Key Learning task for all topics	Key Learning task for all topics	Key Learning task for all topics	Key Learning task for all topics
Key/Historical misconceptions in this unit:	Health and lifestyle misconception: Dairy is a food group Reality: dairy products contain both carbohydrates and lipids	Adaptation and inheritance misconception: All characteristics are either inherited or environmental	Energy misconception: Energy can be created or produced Reality: The law of conservation states that energy cannot be	Earth structure misconception: All rocks are the same Reality: Rocks can be categorised as	Metals and their reactions misconception: All metals are reactive Reality: Some metals are more reactive than	Electricity misconceptions: The same sides of a magnet attract. Reality: Opposites attract, like repel.

	The periodic table misconception: the periodic table is a list of elements and compounds Reality: the periodic table contains groups and period that help us recognise trends in elements. Motion and pressure misconception: larger object means higher pressure Reality: surface area contact and force define pressure	Reality: Often characteristics can fall into both computers. Separating techniques misconception: A solute can be separated using filtration Reality: You use crystallisation to obtain a dissolved substance	created or destroyed only transferred Respiration misconception: Respiration and breathing are the same thing. Reality: Respiration is a chemical reaction, breathing is a mechanical process	sedimentary, metamorphic or igneous Photosynthesis misconception: Plants make their own food Reality: Plants make glucose to carry out respiration	others and some are unreactive.	
Sequencing:	The year 8 curriculum picks up the concepts taught within year 7 and builds on these to give students a deeper awareness of the three disciplines. For example in year 7 students were taught about plant and animal cells, year 8 goes deeper into key biological reactions that occur within these cells. Year 7 energy leads students into the Energy year 8 topic adding to the already laid foundations.					
Values	**This scheme of work promotes the school values of Compassion, Curiosity and Courage by:** **Compassion –** Acceptance of differing scientific models. Support of peers during feedback process' **Curiosity –** Asking scientific questions and focus on scientific investigations **Courage –** Review of prior learning and acting on feedback to bridge gaps within knowledge					
National Curriculum plus:	In addition to teaching the statutory elements of the national curriculum, we also include careers based investigations with every topic to promote science aspirations within the year 8 cohort. Students are given insight into careers relevant to the demographic and local area to allow them to see the wider uses of science, avoiding the misconception of its only for Doctors, nurses and vets.					