



CURIOSITY

COMPASSION

COURAGE



Curriculum overview

Subject	Science	Year group	7
<p>Vision statement:</p>	<p>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.</p> <p>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:</p> <p><i>'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.'</i></p> <p>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.</p>		
<p>Curriculum intent:</p>	<p>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.</p> <p>The science curriculum aims to be;</p> <ul style="list-style-type: none"> ○ 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 <p>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.</p> <p>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.</p>		



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Threshold Concepts (TCs):	<ol style="list-style-type: none">1. <i>Cells</i>2. <i>Particles and their Behaviour</i>3. <i>Atoms, Elements and Compounds</i>4. <i>Forces</i>5. <i>The Body</i>6. <i>Energy</i>7. <i>Types of Reactions</i>8. <i>Human and Plant Reproduction</i>9. <i>Light and Sound</i>10. <i>Space</i>
KS2 National Curriculum summary:	<p>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.</p> <p>Pupils should read, spell and pronounce scientific vocabulary correctly.</p> <p>Working scientifically</p> <p>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:</p> <ul style="list-style-type: none">• 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 <p>Topics covered:</p>



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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



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:

What is science
What makes a living organism?
What makes up everything?

What makes up everything?
How do objects move?

What happens in my body?
Can energy be made?

What are reactions?
How are new organisms made?

Are chemicals different?
How can we see and hear?

What is in space?

Content (Linked to TCs):

Science skills

- *What is science*
- *How to be safe*
- *Equipment*
- *Measuring*
- *Variables*
- *Recording data*
- *Graphs*
- *Conclusions and evaluations*

Cells

- *Cells*
- *Plant and animal cells*
- *Specialised cells*

Atoms, elements and compounds

- *Atoms*
- *Elements*
- *Compounds*
- *Mixtures*
- *Pure substances*

Forces

- *Forces*
- *Balanced and unbalanced forces*
- *Friction*

The Body

- *Body structure*
- *Circulatory system*
- *Digestion*
- *Gas exchange system*

Energy

- *Energy transfers*
- *Efficiency*
- *Renewable/non renewable*

Types of reactions

- *Reactions*
- *Types of reaction*
- *Combustion*
- *Conservation of mass*

Human and plant reproduction

- *Systems*
- *Puberty and the menstrual cycle*
- *Fertilisation*
- *Pregnancy*
- *Flowers*

Acids and Alkalis

- *pH*
- *Acids*
- *Alkalis*
- *Neutralisation*

Light and Sound

- *Waves*
- *Light*
- *Colours*
- *Sound*

Space

- *The Earth*
- *The Moon*
- *The Planets*
- *The Universe*



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	<ul style="list-style-type: none"> • <i>Multicellular and unicellular</i> • <i>Diffusion</i> Particles and their behaviour <ul style="list-style-type: none"> • <i>States of matter</i> • <i>Properties</i> • <i>Changes of state</i> 			<ul style="list-style-type: none"> • <i>Pollination</i> • <i>Seed dispersal</i> 		
Vocabulary Instruction:	Cell Organelle Diffusion Multicellular Unicellular Particle Solid Liquid Gas Evaporate Freeze Condense Melting	Atom Element Compound Mixture Pure Force Friction Newton Action/reaction	Circulation Digestion Gas exchange Physical Chemical Heart Muscles Antagonistic Energy Joules Transfer Efficiency Renewable	Physical Chemical Combustion Conservation Fuel Oxidation Thermal decomposition Reproduction Puberty Menstrual cycle Fertilisation Pollen Sperm	pH Acid Alkali Indicator Neutralisation Wave Amplitude Frequency Light Sound Vibration	Planet Orbit Solar system Universe Star Satellite
Assessment:	Key Learning Tasks for all topics	Key Learning Tasks for all topics	Key Learning Tasks for all topics Summative	Key Learning Tasks for all topics	Key Learning Tasks for all topics	Key Learning Tasks for all topics Summative
Key/Historical misconceptions in this unit:	Cells misconception: Plant and animal cells are the same Reality: Plant cells have a cell wall animal cells do not Particles misconception: Particles can move in solids liquids and gases. Reality: Particles can vibrate within a solid,	Atoms misconception: mixtures are just made of compounds Reality: Mixtures can be made of compounds and elements, they can just be separated. Forces misconception: Mass and weight are the same Reality: Mass is the amount of matter in an	The Body misconception: Digestion releases energy from food Reality: Respiration releases energy from food, digestion breaks food groups down. Energy misconception: Energy can be created or produced Reality: The law of conservation states that	Reactions misconception: Combustion needs air to take place. Reality: Combustion needs the oxygen from the air to take place Reproduction misconception: Reproduction always needs 2 parents	Acids misconception: Only acids can be dangerous. Reality: Both acids and alkalis can be corrosive. Light and sound misconception: Light and sound travel at the same speed Reality: Light travels faster than sound – think	Space misconception: The only planet that has a moon is the Earth. Reality: Moons are natural satellites meaning that other planets have moons orbiting them.



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	flow in a liquid and move freely in a gas	object measured in Kg, Weight is the force of gravity acting on a mass measured in N	energy cannot be created or destroyed only transferred.	Reality: There are two types of reproduction, sexual which requires 2 'parents' and asexual which requires 1.	about thunder and lightning.	
Sequencing:	The year 7 science curriculum aims to build on concepts from KS1-2 to allow students to have a base knowledge across the three disciplines. By starting with Science Skills, Cells, Particles, Atoms, Forces and Energy students then have a platform to base any future scientific learning on.					
Values	<p>This scheme of work promotes the school values of Compassion, Curiosity and Courage by:</p> <p>Compassion – Acceptance of differing scientific models. Support of peers during feedback process'</p> <p>Curiosity – Asking scientific questions and focus on scientific investigations</p> <p>Courage – Review of prior learning and acting on feedback to bridge gaps within knowledge</p>					
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 7 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.					