

Science Curriculum

Curriculum Intent & Design

Purpose of the Subject

The purpose of the science curriculum at Nightingale Community Academy is to develop scientifically literate, curious and resilient learners who can understand and apply scientific knowledge in real-world contexts. Science is taught as both a body of knowledge and a way of thinking, enabling pupils to explain phenomena, make predictions, analyse evidence and solve problems.

The curriculum is designed to be inclusive, ambitious and highly structured, ensuring that all pupils—regardless of starting point, can access science meaningfully and make progress. This is achieved through three clearly defined pathways (Nurture, Create and Accelerate) and the explicit teaching of the 3 Rs: Reading, Remembering and Resilience .

Science also plays a key role in personal development by promoting curiosity, independence, self-regulation and resilience through enquiry, practical work and collaborative learning.

End Points

End of Primary (End of Key Stage 2)

By the end of KS2, pupils will:

- Develop secure foundational knowledge of key concepts in Biology, Chemistry and Physics, appropriate to the national curriculum.
- Ask relevant scientific questions and recognise that they can be answered in different ways.
- Plan and carry out simple investigations, including fair tests, using appropriate equipment safely.
- Take accurate measurements using standard units and record results using tables, diagrams and simple graphs.
- Use scientific vocabulary to explain observations and findings verbally and in writing.
- Draw simple conclusions, identify patterns and begin to use evidence to support explanations.
- Demonstrate curiosity, independence and resilience when exploring scientific ideas.

Pupils will leave primary education with the foundational knowledge, vocabulary and enquiry skills necessary to access the KS3 science curriculum confidently, regardless of pathway.

End of Key Stage 3

By the end of KS3, pupils will:

- Have secure foundational knowledge in Biology, Chemistry and Physics, appropriate to their pathway.
- Use scientific vocabulary accurately when speaking and writing.
- Apply enquiry skills: observing, planning investigations, recording results and drawing conclusions.
- Demonstrate improved reading comprehension of scientific texts and diagrams.

- Be confidently placed on one of the three pathways in preparation for KS4.

Pupils following Nurture (Entry Level 1/2) and Create (Entry Level 3) will be prepared for progression to GCSE through structured exposure to key concepts and skills, while pupils on Accelerate will be GCSE-ready by the end of KS3.

End of Key Stage 4

By the end of KS4, pupils will:

- Complete an appropriate qualification:
 - Entry Level (EL1/2 or EL3) or
 - GCSE Combined Science (Accelerate pathway).
- Demonstrate the ability to apply scientific knowledge to unfamiliar contexts.
- Produce extended written responses using correct scientific terminology.
- Show resilience in tackling complex problems and examinations.
- Be prepared for post-16 education, training or employment pathways.

The curriculum is deliberately sequenced so that pupils following Entry Level pathways can access GCSE content over a five-year model, supporting sustained progress and confidence.

Rationale for Sequencing and Curriculum Choices

The science curriculum is carefully sequenced from KS1 to KS4 to ensure cumulative knowledge and skills development.

- **Primary (KS1–KS2)** introduces core concepts in biology, chemistry and physics through observation, practical exploration and scientific talk, ensuring pupils arrive in KS3 with a shared foundation.
- **KS3** revisits and deepens these concepts while explicitly teaching scientific vocabulary, enquiry methods and reasoning skills.
- **KS4** builds on this foundation, increasing conceptual depth, independence and exam readiness.

Sequencing is guided by:

- Progression from concrete to abstract concepts.
- Repeated exposure and retrieval to support Remembering.
- Increasing complexity of reading, writing and practical tasks.
- Gradual removal of scaffolds to build Resilience.

The three-pathway model ensures curriculum ambition while remaining responsive to pupils' needs:

- Nurture (EL1/2): high support, practical focus, language development.
- Create (EL3): structured independence, application of knowledge, extended writing.
- Accelerate (GCSE): depth, analytical thinking and exam preparation.

Across all pathways, Reading, Remembering and Resilience are embedded into lesson design, assessment and feedback, ensuring consistency and coherence across the curriculum.