



Science Rationale

We believe that pupils should have a solid foundation for understanding the world through the specific disciplines of biology, chemistry and physics. By doing so pupils will be ready to further their scientific knowledge, skills, methods and processes for their secondary education but also so they can build up an body of key foundational knowledge and concepts to develop a sense of excitement and curiosity about natural phenomena. Scientific knowledge and concepts will be developed and built upon so pupils can see the relationships within and between scientific disciplines and allow their knowledge and understanding to be applied to develop their knowledge of concepts across other subjects such as geography, history, art and design and technology.

	Biology 	Chemistry 	Physics 
Year 1	Animals, including humans Plants	Everyday materials	Seasonal Changes
Year 2	Animals, including humans Plants	Everyday materials	
Year 3	Animals, including humans Plants Living things and their habitats	Rocks	Forces and Magnets Light
Year 4	Animals, including humans Living things and their habitats	Everyday materials	Electricity Sound
Year 5	Animals, including humans Living things and their habitats	Everyday materials	Forces and Magnets Earth and Space
Year 6	Animals, including humans Living things and their habitats Evolution and Inheritance		Light Electricity



Biology is the study of living things. A biologist is a scientist who studies **biology**. Biologists try to understand the natural world and the things that live in it. These things include plants, animals, fungi, protozoa, algae, bacteria, and viruses. The study of **biology** covers many areas.



Chemistry is the branch of science that studies the properties of matter and how matter interacts with energy. **Chemistry** is considered a physical science and is closely related to physics. ... Scientists who specialize in **chemistry** are called chemists.



Physics is a branch of science that studies matter and its motion as well as how it interacts with energy and forces. **Physics** is a huge subject. ... **Physics** studies the smallest elementary particles and atoms as well as the largest stars and the universe. Scientists who are experts in **physics** are called physicists.

Matter - Anything that takes up space is called **matter**. Air, water, rocks, and even people are examples of **matter**. Different types of **matter** can be described by their mass. The mass of an object is the amount of material that makes up the object

Year	Biology			Chemistry	Physics		
	Plants	Living things and their habitats	Animals including humans	Materials	Forces	Energy	Earth and space
1	Structure of the plant and their names		Humans body and grouping animals	Everyday materials			Seasonal changes
2	Plant growth conditions and lifecycle	Habitats and food chains	Health and growth all animals, inc humans	Use of everyday materials			
3	Plant structure and functions of parts		Human skeleton and muscles	Rocks	Contact and non contact forces, magnetism	Light and shadows	
4		Changes in habitats and interdependence	Digestive system	States of matter	Non contact – electricity	Sound and states of matter	
5		Life cycle and reproduction	Growth and changes in humans	Reversible and irreversible changes	Forces: gravity, water and air resistance		The Solar System
6		Classification inc. Micro-organisms	Circulatory system		Electricity	Light	
	Evolution and inheritance						

Within each discipline of science, pupils will develop their knowledge and conceptual understanding of Working scientifically. Pupils are taught that working scientifically ensures they have a clear understanding of the nature, processes and methods of science and by developing their conceptual understanding and skills over time will allow them to learn systematic approaches to answer relevant scientific questions.

Pupils will learn to observe over time; pattern seek; identify, classify and group; comparative and fair test (controlled investigations); and research using secondary sources. Pupils will seek answers to questions through collecting, analysing and presenting data. Pupils will be able to apply their mathematical and computing skills to display data from these investigations. Working scientifically organisers are used in each year group to ensure the rigor and expectation outlined below are developed overtime.

- Y 1 and 2 Ask questions using simple secondary sources for an answer
Explore world around them to raise questions
Begin to recognise ways to answer questions
Use simple features to compare
With guidance decide how to sort groups
Observe changes overtime
With guidance notice patterns and relationships
Use simple measurements and equipment to gather data
Carry out simple test and record simple data
- Y 3 and 4 Raise own questions
Make own decisions about the most appropriate scientific enquiry
Carry out simple fair tests
Create criteria for grouping, sorting, classifying naturally occurring patterns and relationships
Decide what data to collect
Help make decisions on time frame, what to observe and the types of equipment needed
- Y5 and 6 Ask a range of questions and choose most appropriate
Recognise how to set up comparative and fair tests
Explain how variables are controlled and why
Create keys and information records to identify, classify and describe
Make own decisions about what and how to observe over time
Decide how to record data
Identify causal relationships in data and find evidence that refutes/ supports their idea
Identify when further test/ observations are needed
Recognise which secondary sources to research ideas and know fact from opinion
Use scientific language and illustrations to discuss
Communicate and justify scientific ideas and how they have developed overtime

Pupils will also have an opportunity to apply these skills to other areas of the curriculum and within each term, not only science, as the skills of working scientifically allow pupils to synthesis knowledge and understanding which allows deep learning.