Science in KS1

Essential Characteristics

• The ability to think independently and raise questions about working scientifically and the knowledge and skills that it brings.

• Confidence and competence in the full range of practical skills, taking the initiative in, for example, planning and carrying out scientific investigations.

• Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings.

• High levels of originality, imagination or innovation in the application of skills.

• The ability to undertake practical work in a variety of contexts, including fieldwork.

• A passion for science and its application in past, present and future technologies.

Breadth of Study

Working scientifically
Across all year groups scientific knowledge and skills should be learned by working scientifically.

Biology

Plants
• Identify, classify and describe their basic structure.
• Observe and describe growth and conditions for growth.

Habitats
• Look at the suitability of environments and at food chains.

Animals and humans
• Identify, classify and observe.
• Look at growth, basic needs, exercise, food and hygiene.

All living things
• Investigate differences.

Chemistry

Materials
• Identify, name, describe, classify, compare properties and changes.
• Look at the practical uses of everyday materials.

Physics

Light
• Look at sources and reflections.

Sound
• Look at sources.

Electricity
• Look at appliances and circuits.

Forces
• Describe basic movements.

Earth and space
• Observe seasonal changes.

Threshold Concepts

Work Scientifically
This concept involves learning the methodologies of the discipline of science.

Biology

Understand Plants
This concept involves becoming familiar with different types of plants, their structure and reproduction.
Understand Animals and Humans
This concept involves becoming familiar with different types of animals, humans and the life processes they share.
Investigate Living Things
This concept involves becoming familiar with a wider range of living things, including insects and understanding life processes.
Understand Evolution and Inheritance
This concept involves understanding that organisms come into existence, adapt, change and evolve and become extinct.

Chemistry

Investigate Materials
This concept involves becoming familiar with a range of materials, their properties, uses and how they may be altered or changed.

Physics

Understand Movement, Forces and Magnets
This concept involves understanding what causes motion.

Understand the Earth's Movement in Space
This concept involves understanding what causes seasonal changes, day and night.

Investigate Light and Seeing
This concept involves understanding how light and reflection affect sight.

Investigate Sound and Hearing
This concept involves understanding how sound is produced, how it travels and how it is heard.

Understand Electrical Circuits
This concept involves understanding circuits and their role in electrical applications.

Milestone 1 ~ End of Year 2

Work Scientifically	This concept involves learning the methodologies of the discipline of science.	• Ask simple questions. • Observe closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.
Biology	**Understand Plants** This concept involves becoming familiar with different types of plants, their structure and reproduction.	• Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers. • Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
	Understand Animals and Humans This concept involves becoming familiar with different types of animals, humans and the life processes they share.	• Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets). • Identify name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. • Notice that animals, including humans, have offspring which grow into adults. • Investigate and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.
	Investigate Living Things This concept involves becoming familiar with a wider range of living things, including insects and understanding life processes.	• Explore and compare the differences between things that are living, that are dead and that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including micro-habitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.
	Understand Evolution and Inheritance This concept involves understanding that organisms come into existence, adapt, change and evolve and become extinct.	• Identify how humans resemble their parents in many features.

Chemistry	**Investigate Materials** This concept involves becoming familiar with a range of materials, their properties, uses and how they may be altered or changed.	• Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.
Physics	**Understand Movement, Forces and Magnets** This concept involves understanding what causes motion.	• Notice and describe how things move, using simple comparisons such as faster and slower. • Compare how different things move.
	Understand the Earth's Movement in Space This concept involves understanding what causes seasonal changes, day and night.	• Observe the apparent movement of the Sun during the day. • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.
	Investigate Light and Seeing This concept involves understanding how light and reflection affect sight.	• Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes.
	Investigate Sound and Hearing This concept involves understanding how sound is produced, how it travels and how it is heard.	• Observe and name a variety of sources of sound, noticing that we hear with our ears.
	Understand Electrical Circuits This concept involves understanding circuits and their role in electrical applications.	• Identify common appliances that run on electricity. • Construct a simple series electrical circuit.