Science Long Term Plan

School Organisation

Pupils are currently organised within the following classes:

Class 1 EYFS – Nursery and Reception

Class 2 Year 1 and Year 2

Class 3 Year 3 and Year 4

Class 4 Year 5 and Year 6

EYFS Curriculum

Our Early Years Curriculum offers a wide variety of rich activities and experiences which is crucial to child development. The Science element lies within 'Understanding the World' Educational Programme, although we acknowledge that all areas of learning and development in EYFS are inter-connected, understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them.

The curriculum across EYFS is based on the progression of skills from 2-5 years. Themes are adapted based on children's interests.

KS1 and KS2 Curriculum

Curriculum planning has been designed carefully to ensure that the curriculum in Key Stages 1 and 2 meets the expectations of the National Curriculum. Subject Leaders have rigorously planned the curriculum cycles so that all pupils are taught the curriculum, in a sequence which ensures that learning builds on prior learning, no matter how pupils travel through the school.

Medium Term Planning

Staff use unit planning from 'Developing Experts' to support in their planning and teaching, ensuring that they are covering the National Curriculum objectives identified in the long term planning.

SCIENCE LONG TERM PLAN – EYFS

Early Learning Goals:
Communication and Language: Make comments about what they have heard and ask questions to clarify understanding
Personal, Social and Emotional Development: Manage own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices
Understanding the World: Explore the natural world around them, making observations and drawing pictures of animals and plants; know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

SCIENCE LONG TERM PLAN – YEAR 1/2

Cycle	Autumn Term	Spring Term	Summer Term
	Working Scientifically • ask simple questions and recognise that they can be answered in different ways • observe closely, using simple equipment • perform simple tests • gather and record data to help in answering questions • sort using different criteria • identify and classify • use their observations and ideas to suggest answers to questions. • know and use scientific terms more confidently		
A	**Everyday materials** • distinguish between an object and the material it is made from. • explain the materials that an object is made from. • identify and name a range of materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard. • suggest why a material might or might not be used for a specific job.	**Animals, including humans** • name a variety of animals including fish, amphibians, reptiles birds and mammals. • classify and name animals by what they eat (carnivore, herbivore and omnivore). • sort animals into categories (including fish, amphibians, reptiles, birds and mammals). • sort living and non-living things. • name the parts of the human body that we can see. • link the correct part of the human body to each sense.	**Plants** • name a variety of common wild and garden plants. • name the petals, stem, leaf and root of a plant. • name the roots, trunk, branches and leaves of a tree.
B	**Animals, including humans** • explain the basic stages in a life cycle for animals, including humans. • describe what animals and humans need to survive. • describe why exercise, a balanced diet and good hygiene are important for humans **Animals, including humans** • create a timeline to indicate stages of growth in humans.	**Uses of everyday materials** • identify and name a range of materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard. • describe the properties of everyday materials. group objects based on the materials they are made from. • explore how shapes can be changed by squashing, bending, twisting and stretching	**Plants** • describe how seeds and bulbs grow into plants. • describe what plants need in order to grow and stay healthy (water, light & suitable temperature). **Living things and their habitats** • identify things that are living, dead and never lived. • describe how a specific habitat provides for the basic needs of things living there (plants and animals). • identify and name plants and animals in a range of habitats. • match living things to their habitat. • describe how animals find their food. • name some different sources of food for animals. • explain a simple food chain.

SCIENCE LONG TERM PLAN – YEAR 3/4

Cycle	Autumn Term	Spring Term	Summer Term
	Working scientifically • ask relevant questions and use different types of scientific enquiries to answer them • set up simple practical enquiries, comparative and fair tests • make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • gather, record, classify and present data in a variety of ways to help in answering questions • identify differences, similarities or changes related to simple scientific ideas and processes • report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • use straightforward scientific evidence to answer questions or to support their findings • use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • use increasingly more complex scientific vocabulary		

A	**<u>Rocks</u>** • compare and group rocks based on their appearance and physical properties, giving a reason. • describe how fossils are formed. • describe how soil is made. **<u>Animals, including humans</u>** • explain the importance of a nutritious, balanced diet. • explain how nutrients, water and oxygen are transported within animals and humans. • describe and explain the skeletal system of a human. • describe and explain the muscular system of a human. • describe the purpose of the skeleton in humans and animals.	**<u>Forces and magnets</u>** • explore and describe how objects move on different surfaces • notice that some forces require contact and some do not, giving examples. • explore how magnets attract and repel each other and attract some materials and not others • predict whether objects will be magnetic and carry out an enquiry to test this out • Identify some magnetic materials • predict whether two magnets will attract or repel each other and give a reason.	**<u>Light</u>** • recognise that darkness is the absence of light • recognise that light is needed in order to see • notice that light is reflected from a surface • explain and demonstrate how a shadow is formed. • explore shadow size and explain • understand the danger of direct sunlight and describe how to keep protected **<u>Plants</u>** • describe the function of different parts of flowing plants and trees. • explore and describe the needs of different plants for survival. • explore and describe how water is transported within plants. • describe the plant life cycle, especially the importance of flowers.
B	**<u>Animals, including humans</u>** • identify and name the parts of the human digestive system. • describe the functions of the organs in the human digestive system. • identify and describe the different types of teeth in humans. • describe the functions of different human teeth. • use food chains to identify producers, predators and prey. • construct food chains to identify producers, predators and prey. **<u>Sound</u>** • identify how sound is made. • explain how sound travels from a source to our ears • recognise that vibrations from sounds travel through a medium to the ear. • explore the correlation between pitch of a sound and the object producing the sound. • explore the correlation between the volume of a sound and the strength of the vibrations that produced it. • describe what happens to a sound as it travels away from its source	**<u>Electricity</u>** • identify appliances that require electricity to function • construct a simple series electrical circuit • identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers). • draw a circuit diagram. • identify whether or not a lamp will light in a simple series circuit based on whether of not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulates and associate metals with being good conductors	**<u>Living things and their habitats</u>** • group living things in different ways. • use classification keys to group, identify and name living things. • create classification keys to group, identify and name living things (for others to use). • describe how changes to an environment could endanger living things. **<u>States of matter</u>** • group materials based on their state of matter (solid, liquid, gas) • observe how some materials can change state when heated or cooled. • measure the temperature at which materials change state • describe the water cycle including the term evaporation and condensation.

SCIENCE LONG TERM PLAN – YEAR 5/6			
Cycle	**Autumn Term**	**Spring Term**	**Summer Term**
	<u>Working Scientifically</u> • plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • identify scientific evidence that has been used to support or refute ideas or arguments • report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • use test results to make predictions to set up further comparative and fair tests • use complex scientific vocabulary confidently in explanations and discussions		
A	**<u>Properties and changes of materials</u>** • compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets). • describe how a material dissolves to form a solution; explaining the process of	**<u>Earth and space</u>** • describe and explain the movement of the Earth and other planets relative to the Sun • describe and explain the movement of the Moon relative to the Earth • use the idea of the earth's rotation to explain day and night and the apparent	**<u>Living things and their habitats</u>** • describe the life cycle of different living things, e.g. mammal, amphibian, insect bird. • describe the differences between different life cycles. • describe the process of reproduction in plants.

	dissolving • describe and show how to recover a substance from a solution • describe how some materials can be separated (e.g. through filtering, sieving and evaporating). • demonstrate that some changes are reversible and some are not. • explain how some changes result in the formation of a new material and that this is usually irreversible • discuss reversible and irreversible changes	movement of the sun across the sky • describe the Sun, Earth and Moon as approximately spherical bodies **Forces** • explain what gravity is and its impact on our lives. • identify and explain the effect of air resistance, water resistance and friction that act between moving surfaces • recognise how levers, pulleys and gears allow a smaller force to have a greater effect	• describe the process of reproduction in animals. **Animals, including humans** • describe the changes as humans develop to old age. (to include puberty)
B	**Evolution and inheritance** • describe how the earth and living things have changed over time. • explain how fossils can be used to find out about the past. • explain about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) • explain how animals and plants are adapted to suit their environment. • link adaptation over time to evolution. • explain evolution. **Electricity** • explain how the number & voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer. • compare and give reasons for why components work and do not work in a circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • draw circuit diagrams using correct symbols	**Light** • explain that light travels in straight lines • explain and demonstrate how we see objects • explain why shadows have the same shape as the object that casts them. • explore how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.	**Animals, including humans** • identify and name the main parts of the human circulatory system. • describe the function of the heart, blood vessels and blood. • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported in animals, including humans. **Living things and their habitats** • describe how living things have been classified. • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics.