Science Curriculum

	Autumn	Spring	Summer
Nursery Reception	FS1 and 2 Life cycles – butterflies and tadpoles Light Observing changes in Seasons Melting ice Growing seeds and plants Colour Magnets Ramps and slopes		
Year 1	**Materials** -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. **Seasonal Changes** - Observe changes across the four seasons. - Observe and describe weather associated with the seasons and how day length varies.	**Animals including humans** -Identify and name a variety of common animals including fish, birds, mammals, reptiles and amphibians. -Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) -Identify and name a variety of common animals that are carnivores, herbivores and omnivores. -Identify, name, draw and label the basic parts of the human body. -Identify which part of the body is associated with each sense. **Seasonal Changes** - Observe changes across the four seasons. - Observe and describe weather associated with the seasons and how day length varies.	**Plants** Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees. **Seasonal Changes** - Observe changes across the four seasons. - Observe and describe weather associated with the seasons and how day length varies.

Year 2	**Animals, including humans** Pupils should be taught to: • notice that animals, including humans, have offspring which grow into adults • find out about 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.	**Use of Everyday Materials** • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**Living things and their habitats** • explore and compare the differences between things that are living, dead, and things 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 microhabitats • 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. **Plants** • 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.
Year 3	**Light** • recognise that we need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by a solid object • find patterns in the way that the size of shadows change. • Play mirror games to help them answer questions about how light behave.	**Rocks and Soils** • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • Recognise that soils are made from rocks and organic matter. * We are learning about sedimentary, metamorphic and igneous rock types. * Investigating how hard and absorbent different rocks are. * Examining different soil types.	**Animals, including humans** • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • Identify that humans and some other animals have skeletons and muscles for support, protection and movement. • To learn about the importance of nutrition. • Introduction to main body parts associated with the skeleton and muscles. • Finding out how different parts of the body have special functions. • Identify and group animals.

	• Measure shadows and find out how they are formed and how they change. **Plants** * identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant investigate the way in which water is transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. ***** Comparing the effects of different factors on plant growth. *Discovering how seeds are formed.		• Explore diets of different animals. • * Research different food groups. **Forces and Magnets** • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing. • Covering different magnets. • Comparing how different things move on different surfaces. • How the properties of magnets make them useful in everyday items.
Year 4	**States of matter** • Difference between solids, liquids and gases • Materials change state when heated or cooled and can be reversible or irreversible. • Temperature is measured in degrees Celsius. • Know temperature water freezes at 0° and boils at 100° • Know different materials change state at different temperatures. • Understand evaporation and condensation and the part they play in the water cycle.	**Living things and their habitats** • Recognise that living things can be grouped in a variety of ways • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognise that environments can change and that this can sometimes pose dangers to living things. • Construct and interpret a variety of food chains, identifying producers, predators and prey. • Use the local environment throughout to raise and answer questions that help to identify and study plants and animals in their habitat.	**Sound** • Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases.

	Animals including humans • Describe the simple functions of the basic parts of the digestive system in humans • Identify the different types of teeth in humans and their simple functions • Know the main body parts associated with the digestive system and their functions. Investigate what damages teeth and how to look after them.	• Identify how the habitat changes throughout the year. • Explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. • Explore examples of human impact (both positive and negative) on environments. • Work scientifically using and making simple guides or keys to explore and identify local plants and animals.	**Electricity** • Identify common appliances that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Identify whether or not a lamp will light in a simple series circuit, based on whether or 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 insulators, and associate metals with being good conductors.
Year 5	**Materials - changes** ▪ Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets ▪ Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution ▪ Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating ▪ Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic ▪ Demonstrate that dissolving, mixing and changes of state are reversible changes ▪ Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	**Earth and space** ▪ Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. ▪ Describe the movement of the Moon relative to the Earth. ▪ Describe the Sun, Earth and Moon as approximately spherical bodies ▪ Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. ▪ Be introduced to a model of the Sun and Earth that enables them to explain day and night. Learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. They should understand that a moon is a celestial body that orbits a planet. ▪ Find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model	**Living things and their habitats** ▪ Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. ▪ Describe the life process of reproduction in some plants and animals. ▪ Study and raise questions about their local environment throughout the year. Observe life-cycle changes in a variety of living things: plants in the vegetable garden or flower border, and animals in the local environment. ▪ Find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall. ▪ Find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals. ▪ Observe and compare the life cycles of plants and animals in their local

	▪ Explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes. Explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. Find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.	**Forces** ▪ Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. ▪ Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. ▪ Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. ▪ Explore falling objects and raise questions about the effects of air resistance. ▪ Explore the effects of air resistance by observing how different fall. Experience forces that make things begin to move, get faster or slow down. ▪ Explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel. ▪ Investigate the effects of levers, pulleys and simple machines on movement. Find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.	environment with other plants and animals around the world. **Animals, including humans** ▪ Describe the changes as humans develop to old age. ▪ Draw a timeline to indicate stages in the growth and development of humans. ▪ Learn about the changes experienced in puberty.
Year 6	**Light** ▪ Light - recognise that light appears to travel in straight lines ▪ use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye	**Living things and habitats** ▪ describe how living things are classified into broad groups according to common observable *characteristics and based on similarities and differe*nces, including micro-organisms, plants and animals give reasons for classifying plants and animals based on specific characteristics.	**Animals including humans** ▪ identify and name the main parts of the human circulatory system, and describe the functions 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 within animals, including humans.

	▪ explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **Electricity** ▪ associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the 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 use recognised symbols when representing a simple circuit in a diagram.	**Evolution and inheritance** ▪ recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago ▪ recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	