# Spring Gardens Primary School Science Curriculum Overview

| Early Years Foundation Stage | Key Stage 1 | Key Stage 2 |
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| Across the Early Years Foundation stage, children will develop confidence in exploring the world around them, using their senses.<br>They will develop language skills and vocabulary which enables them to talk in simple terms to talk about their experiences.<br>They will begin to explore the properties of different materials and use simple words to describe these.<br>They will begin to choose different materials for different purposes.<br>They will learn how living things, including themselves, grow and change and develop a respect for the natural world.<br>Through using simple construction kits, they will begin to explore mechanisms and forces. | During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:<br>asking simple questions and recognising that they can be answered in different ways<br>observing closely, using simple equipment<br>performing simple tests<br>identifying and classifying using their observations and ideas to suggest answers to questions<br>gathering and recording data to help in answering questions. | During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.<br>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests reporting and presenting 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 identifying scientific evidence that has been used to support or refute ideas or arguments. |

| Nursery | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Children will be taught and supported to:<br>**<u>Autumn 1</u>**<br>Actively collect and enjoy transporting materials.<br>Follow adult prompts to explore simple sensory processes of everyday materials and demonstrate engagement.<br>Explore a range of action and reaction toys.<br>Sustain interest in action and reaction toys.<br>Show interest in different occupations and take on a role during role play activities.<br>**<u>Autumn 2</u>**<br>Use some very simple adjectives to describe the textures and | Children will be taught and supported to:<br>**<u>Autumn 1</u>**<br>**Harvest**<br>Name and describe typical vegetables that are harvested.<br>Explore pumpkins. Make pumpkin soup.<br>**All About Me and My Home**<br>Know that children were babies in the past.<br>Describe how people change in the first four years of life.<br>Identify similarities and differences between babies and four year olds.<br><br>Know that adults were children in the past.<br>**<u>Autumn 2</u>**<br>**Celebrations.**<br>**Light and Dark**<br>**People who help us** | **Animals including humans**<br><br>Pupils should be taught to: identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals that are carnivores, herbivores and omnivores<br><br>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) identify, name, draw and label the basic parts of the human body and say which part of the body is | **Everyday materials**<br><br>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.<br>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. | **Rocks**<br>Children should be taught to:<br>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties<br>Describe in simple terms how fossils are formed when things that have lived are trapped within rock<br>Recognise that soils are made from rocks and organic matter | **What's that sound?**<br>Children should be taught to:<br>Identify how sounds are made, associating some of them with something vibrating<br>Recognise that vibrations from sounds travel through a medium to the ear<br>Find patterns between the pitch of a sound and features of the object that produced it<br>Find patterns between the volume of a sound and the strength of the vibrations that produced it<br>recognise that sounds get fainter as the distance from the sound source increases | **Properties /Changing States**<br>Children should be taught to:<br>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<br>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution<br>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating | **Electrifying**<br>Children should be taught to:<br>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit<br>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<br>Use recognised symbols when representing a simple circuit in a diagram |

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| properties of everyday materials.<br>Improve techniques in using a range of action and reaction toys.<br>Engage in joint attention with adults for short periods of time in respectful observations of living things.<br>Show interest in different occupations and take on a role during role play activities.<br>Understand the vocabulary associated with cause and effect. | Describe changes to trees and woodland plants in autumn.<br>(Collate photographs, leaf prints, drawings for floor books).<br>Name types of bulbs and demonstrate how to plant bulbs. Predict how they will grow.<br>Teach the roles of people in our local community (fire fighter, doctors, dentists and police).<br>Describe and explain changes of state with chocolate and when baking bread.<br>Explore changes of state with cement / clay. (Create a Diwali tea light pot).<br>Use ICT cameras to take photographs of the changing seasons. (Use video for T4W) | associated with each sense.<br><br>**<u>Materials</u>**<br><br>Distinguish between an object and the material from which it is made.<br>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.<br>Describe the simple physical properties of a variety of everyday materials .<br>Compare and group together a variety of everyday materials on the basis of their simple physical properties. | | | | 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 | |
| Children will be taught and supported to:<br>**<u>Spring 1</u>**<br>Understand and use vocabulary associated with cause and effect.<br>Collect particular materials for a purpose.<br>Respond appropriately to adult guidance to treat living things with care and compassion.<br>Use adjectives to describe and compare the textural properties of everyday materials.<br>Show interest in different occupations | Children will be taught and supported to:<br>**<u>Spring 1</u>**<br>**Where do we live?**<br>**Our local area**<br>Plant class bulb Amaryllis monitor changes and name parts of the plant (stem, stalk, leaf, flower, petal).<br>Measure and record growth.<br>Describe changes to trees and woodland plants in winter.<br>Describe and explain changes of state with water (ice, steam).<br>Use ICT cameras to take photographs of the | **Seasonal changes -**<br><br>**Winter**<br><br>Pupils should be taught to: observe changes across the four seasons: observe and describe weather associated with the seasons and how day length varies. | **Living Things**<br><br>Explore and compare the differences between things that are living, dead, and things that have never been alive.<br>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.<br>Identify and name a variety of plants and | **Food and Our bodies**<br>Children should be taught to:<br>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<br>Identify that humans and some other animals have skeletons and muscles for support, protection and movement | **Looking at States**<br>Children should be taught to:<br>Compare and group materials together, according to whether they are solids, liquids or gases<br>Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)<br>Identify the part played by evaporation and condensation in the | **Forces and machines**<br>Children should be taught to:<br>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object<br>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces<br>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect | **Staying Alive**<br>Children should be taught to:<br>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood<br>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function<br>Describe the ways in which nutrients and water are transported within animals, including humans |

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| and take on a role during role play activities.<br>Use the vocabulary of forces during play.<br>**Spring 2**<br>Collect materials for a particular purpose and explain their use.<br>Work alongside adults and show interest in their care for living things.<br>Give very simple explanations of why things happen and how things work.<br>Make mechanisms such as pegboard cogs and other simple construction kit components such as wheels and axles to work to a particular end.<br>Show interest in different occupations and take on a role during role play activities.<br>Understand what plants and vegetables need to grow and help in the cultivation of these.<br>Make and use cause and effect mechanisms to achieve a particular goal or end.<br>Use the vocabulary of forces during play. | changing seasons. Videos for T4W<br>Make healthy snacks<br>**Spring 2**<br>**Easter**<br>**Farm and the countryside**<br>Teach the features of farm and countryside. Name farm animals and offspring.<br>Name some crops and talk about how they are grown and harvested.<br>Sequence the life of a baby bird from eggs hatching to maturity.<br>Identify similarities and differences between four year olds and adults.<br>Describe how people grow up and change.<br>Computational thinking (Barefoot unit Look how we grow farm animals and people).<br>Tell the story of the life of David Attenborough.<br>Use ICT cameras to take photographs of the changing seasons. | | animals in their habitats, including microhabitats.<br>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. | | water cycle and associate the rate of evaporation with temperature | | |
| Children will be taught and supported to:<br>**Summer 1**<br>Demonstrate a range of actions with remote control toys.<br>Work alongside adults imitating their actions as they care for living things. | Children will be taught and supported to:<br>**Summer 1**<br>**Minibeasts**<br>Describe changes to trees and woodland plants in spring.<br>Know and demonstrate how to grow seeds and care for seedlings. | | **Healthy Eating**<br><br>Pupils should be taught to: find out about and describe the basic needs of humans, for survival (water, food and air) , describe the importance for humans of exercise, eating the right amounts | **Plants**<br>Children should be taught to:<br>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers | **Power it up**<br>Children should be taught to:<br>Identify common appliances that run on electricity<br>Construct a simple series electrical circuit, identifying and naming its basic parts, including | **Famous Scientists**<br><br>Children should be taught to:<br>Evaluate and research the effect a famous scientist has had on our world.<br>Understand the different ways | **Let it shine**<br>Children should be taught to:<br>Recognise that light appears to travel in straight lines<br>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 |

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| Narrate the way a growing plant or animal is changing.<br>Create own action and reaction games such as water flow structures and simple wheeled vehicles from construction kits and give very simple explanations of how they work.<br>Begin to identify similarities and differences between themselves. Develop positive attitudes.<br>Shows interest in different occupations and takes on a role during role play activities.<br>Uses the vocabulary of forces during play.<br><br>**Summer 2**<br>Actively explore the properties of everyday materials through spontaneous experimentation, narrating findings.<br>Answer closed and anticipatory questions in simple adult led experiments about the properties of materials.<br>Use remote control toys to a particular end and explain how to do it.<br>Demonstrate how to achieve a particular goal with pulley systems, ride on toys or digger toys.<br>Work alongside adults imitating and narrating their actions as they care for living things.<br>Narrate a stage at a time the way a growing | Describe and recall the transition from caterpillars into butterflies.<br>Name and investigate the habitats of mini beasts.<br>Investigate similarities and differences between mini beasts<br>Use ICT cameras to take photographs of the changing seasons.<br>**Summer 2**<br>**The Seashore environment**<br>Describe changes to trees and woodland plants in summer.<br>Know and demonstrate how to nurture edible plants.<br>Know the features of a beach environment.<br>Know animals that live in a beach environment.<br>Identify similarities and differences between the animals and plants in the beach environment and in the woodland environment.<br>Describe natural and manmade beach detritus and know the dangers to wildlife from manmade rubbish.<br>Use ICT cameras to take photographs of the changing seasons. | | of different types of food, and hygiene. | 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<br>Investigate the way in which water is transported within plants<br>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal | cells, wires, bulbs, switches and buzzers<br>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<br>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit<br>recognise some common conductors and insulators, and associate metals with being good conductors<br><br>**Animals including humans**<br>Describe the simple functions of the basic parts of the digestive system in humans.<br>Identify the different types of teeth in humans and their simple functions.<br>Construct and interpret a variety of food chains, identifying producers, p redators and prey. | scientists need to work to achieve their goals.<br>Take fingerprints to evaluate the perpetrator of a crime.<br>Study handwriting and written clues to uncover a kidnapper. | 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<br>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them |

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| plant or animal is changing.<br>Describe and enact some of the roles of community figures.<br>Shows interest in different occupations and takes on a role during role play activities.<br>Uses the vocabulary of forces during play. | | | | | | | |
| | | **Plants**<br><br>Pupils should be taught to: 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.<br><br>**Seasonal changes - Spring**<br><br>Pupils should be taught to: observe changes across the four seasons, observe and describe weather associated with the seasons and how day length varies. | **Plants and animals**<br><br>**Living things and habitats**<br><br>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. | **Magnetism**<br>Children should be taught to:<br>Compare how things move on different surfaces<br>Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance<br>Observe how magnets attract or repel each other and attract some materials and not others<br>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<br>Describe magnets as having 2 poles<br>Predict whether 2 magnets will attract or repel each other, depending on which poles are facing | **Brilliant bubbles**<br><br>Children should be taught to:<br><br>Recognise the factors that can influence a soap bubble.<br>Evaluate the influence warm water, bicarbonate of soda and glycerine might have on bubble size.<br>Create their own popping candy using citric acid, sugar and bicarbonate of soda.<br>Evaluate, using a peer survey, preferences in popping candy.<br>Create an advert extolling the virtues of their popping candy. | **Living things and habitats**<br>Children should be taught to:<br>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird<br>Describe the life process of reproduction in some plants and animals<br>Describe the changes as humans develop to old age | **We're Evolving**<br>Children should be taught to:<br>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago<br>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents<br>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution |
| | | **Animals including humans** (continued)<br><br>**Seasonal changes - Summer**<br><br>Pupils should be taught to: observe changes across the four seasons, observe and describe weather | | **Light**<br>Children should be taught to:<br>Recognise that they need light in order to see things and that dark is the absence of light<br>Notice that light is reflected from surfaces<br>Recognise that light from the sun can be dangerous | **Living Things**<br>Children should be taught to:<br>Recognise that living things can be grouped in a variety of ways<br>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment | **Earth and Space**<br>Children should be taught to:<br>Describe the movement of the Earth and other planets relative to the sun in the solar system<br>Describe the movement of the moon relative to the Earth<br>Describe the sun, Earth and moon as | **Classifying Critters**<br>Children should be taught to:<br>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals |

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| | | associated with the seasons and how day length varies. | | and that there are ways to protect their eyes<br>Recognise that shadows are formed when the light from a light source is blocked by an opaque object<br>Find patterns in the way that the size of shadows change | Recognise that environments can change and that this can sometimes pose dangers to living things | approximately spherical bodies<br>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky | Give reasons for classifying plants and animals based on specific characteristics |