

Science Curriculum Overview

Biology	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Chemistry						
Physics						
EYFS Knowledge and Understanding of the World	What do I know about me? I will be learning to... <ul style="list-style-type: none"> • talk about similarities and differences between my friends • discuss the different parts of the body and how to look after ourselves • use my five senses to investigate • find out about the different parts of the body • talk about the weather each day and what they see outside 	I wonder if everything has a shadow? I will be learning to... <ul style="list-style-type: none"> • think about where light comes from • investigate shadows and exploring how shadows are formed • use the internet to explore topics • use my five senses to investigate • Enjoy science experiments to create an 'explosion' 	Why is the sky blue? I will be learning to... <ul style="list-style-type: none"> • Discuss the environment and changes in the weather • Discuss hibernation, migration and how to care for animals in winter. Making bird feeders • Watch the weather forecast daily • Exploring freezing and melting • Photographing the changes in the weather. • Winter walk 	Does everything grow? I will be learning to... <ul style="list-style-type: none"> • Label the parts of a plant- stem, bulb, root, shoot, flower, and petal. • Discuss any new life- shoots coming through, buds on the trees, etc • Discuss what a seed needs to grow and planting seeds. • Thinking about litter and the impact on our environment and the vital importance of recycling. • Look at the impact of rubbish on the environment • Exploring questions about growing. How have we changed? What can we do now that we couldn't do as a baby. 	Is it an insect? I will be learning to... <ul style="list-style-type: none"> • Label the parts of a plant- stem, bulb, root, shoot, flower, and petal. • Discuss any new life- shoots coming through, buds on the trees, etc • Discuss what a seed needs to grow and planting seeds. • Exploring questions about minibeasts. • classify the minibeasts- is it an insect or not? • discuss the different habitats of various minibeasts found and explore the Bug Hotels in the school grounds. • go on minibeast /insect hunts in our garden, the school grounds • discussing how to care for the small creatures we find. 	Journeys – Where will you go? I will be learning to... <ul style="list-style-type: none"> • STEM Week • Creating vehicles with wheels that turn • Testing to see which travel the furthest and why
Longitudinal study	Seasonal walks and outdoor exploration					

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<p>Year 1</p>	<p>Animals including humans Learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes.</p> <p>Skills Focus – Observing over Time Investigate how they have changed over time using photos; take measurements of body parts over time and compare, e.g. handprints, leg length.</p>	<p>Every day materials Explore, name, discuss and raise and answer questions about everyday materials and their properties, such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent; explore and experiment with a wide variety of materials, including for example: brick, paper, fabrics, elastic, foil.</p> <p>Skills Focus – Fair testing Perform simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'</p>	<p>Skill Focus – research from secondary sources</p> <p>Link to longitudinal study using books to find out about the weather in different locations and seasons in the UK.</p>	<p>Animals including Humans Use the local environment throughout the year to explore and answer questions about animals in their habitat; understand how to take care of animals; become familiar with the common names of some fish, amphibians, reptiles, birds and mammals, including those that are kept as pets.</p> <p>Skill Focus - Identifying and Classifying Compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; group animals according to what they eat; and using their senses to compare different textures, sounds and smells.</p>	<p>Plants Use the local environment throughout the year to explore and answer questions about plants growing in their habitat; observe the growth of flowers and vegetables that they have planted; become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem).</p> <p>Skills Focus – pattern seeking Observe closely, using magnifying glasses; compare and contrast familiar plants; describe how they were able to identify and group them; draw diagrams showing the parts of different plants including trees.</p>	<p>Revisit Animals including Humans Explore and answer questions about creatures found in rockpools. Describe and compare them; identify and group.</p> <p>Skills Focus – Recording Pictorially record data and verbally explain reasoning or write a simple sentence.</p>
<p>Longitudinal study</p>	<p>Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies. Working scientifically to ask questions</p>					

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<p>Year 2</p>	<p>Animals including humans Learn about the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans; introduce processes of reproduction and growth in animals.</p> <p>Skills Focus – Research from secondary sources Ask questions about what things animals need for survival and what humans need to stay healthy; suggest ways to find answers to their questions.</p>	<p>Skills Focus – recording Make tables and charts about the weather; and make displays of what happens in the world around them, including day length, as the seasons change. <i>Record pictorially and create simple sentences for explanations; describe observations using scientific vocabulary and record them, using simple tables when appropriate.</i></p>	<p>Uses of everyday materials Identify and discuss the uses of different everyday materials; become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass); think about the properties of materials that make them suitable or unsuitable for particular purposes; be encouraged to think about unusual and creative uses for everyday materials.</p>	<p>Skills Focus – Identifying and Classifying Observe closely, identify and classify the uses of different materials, and record their observations. <i>With help use equipment when identifying objects, animals and materials; use simple ideas on how to group different materials.</i></p>	<p>Science Skill – Pattern Seeking Compare the uses of everyday materials in and around the school with materials found in other places. <i>With guidance children to notice patterns and relationships; begin to look for patterns in their measurements and observations, and describe them both orally in writing.</i></p>	<p>Living things and their habitats Learn that all living things have certain characteristics that are essential for keeping them alive and healthy; become familiar with the life processes that are common to all living things; understand the terms 'habitat' and 'micro-habitat'; identify and study a variety of plants and animals within their habitat and observe how living things depend on each other; compare animals in familiar habitats with animals found in less familiar habitats. Investigate Lifecycles and revisit grouping animals from Y1.</p> <p>Skills Focus – Observing over Time <i>Observe change over time e.g. seed to plant, egg to chick. Children to sequence events using photographs or words up to 4 photographs.</i></p>	<p>Plants Use the local environment throughout the year to observe how different plants grow; learn about the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants.</p> <p>Skills Focus – Fair Testing Set up a comparative test to show that plants need light and water to stay healthy.</p>
<p>Longitudinal study</p>	<p>Observe and describe weather associated with the seasons - gathering and recording data using simple equipment (simple weather station outside of classroom- measuring rainfall, wind and temperature) Working scientifically to ask questions, carry out observations and measurements</p>						

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<p>Year 3</p>	<p>Animals including Humans Continue to learn about the importance of nutrition; introduce to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.</p> <p>Skills Focus - recording their observations in a variety of ways, including labelling diagrams and bar charts. Communicate in a scientific way what they have found out.</p>	<p>Rocks <i>Fossils</i> - Describe how fossils are formed</p> <p><i>Soils</i> – explore how soils are made from rocks and organic matter (link to enquiry and first farming methods).</p> <p>Skills Focus – Researching from Secondary Sources To select an appropriate book from a wide range and find out more information on how fossils are formed; given appropriate websites to find out further information (QR codes).</p>	<p>Forces & Magnets Observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary; explore the behaviour and everyday uses of different magnets; compare how different things move and group them; raise questions and carry out tests to find out how far things move on different surfaces; exploring the strengths of different magnets and finding a fair way to compare them.</p> <p>Skills Focus – Fair Testing: With support, set up simple practical enquiries; recognise the variables to change and measure and those to be kept the same.</p>	<p>Rocks Rocks - compare and group together different kinds of rocks based on their appearance and simple physical properties.</p> <p>Skills Focus - Identifying and Classifying Use complex ideas and observations to group objects and materials. (example this rock has crystals, this rock has sand); With support use a flow diagram to show different ways of classifying objects; Verbally explain justifications on classifications.</p>	<p>Light Explore what happens when light reflects off a mirror or other reflective surfaces; think about why it is important to protect eyes; look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.</p> <p>Skills Focus – Pattern Seeking Look for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes; With support, decide what data to collect to identify patterns and relationships as well as making decisions about the most appropriate equipment to use to collect data.</p>	<p>Plants Investigate the relationship between structure and function: the idea that every part has a job to do; explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.</p> <p>Skills Focus – Observing over time Observe the life cycle of a plant including pollination. Children to sequence events using photographs or words up to 8 photographs. Revisit: Pattern Seeking Structure of fruits and seed dispersal Fair Testing Factors effecting plant growth</p>
<p>Longitudinal study</p>	<p>Weather Data – Measure weather using data loggers recording data in graphs and charts; compare the weather in different countries with England.</p>					

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<p>Year 4</p>	<p>States of Matter Explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container); observe water as a solid, a liquid and a gas and note changes when heated or cooled; identify evaporation and condensation in the water cycle.</p> <p>Skills Focus – Identifying and Classifying compare and group materials together, according to whether they are solids, liquids or gases 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).</p>	<p>Electricity Construct simple series circuits using different components; draw the circuit using pictorial representations; begin to recognise component symbols; recognise that a switch opens and closes a circuit and associate this with whether a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors.</p> <p>Skills Focus – Fair Testing Set up simple practical enquiries, comparative and fair tests; distinguish between independent and dependent variables and those that they will keep the same (conductor or not conductor; materials to act as a switch).</p>	<p>Sound Explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; find out how the pitch and volume of sounds can be changed in a variety of ways.</p> <p>Skills Focus – Pattern Seeking Find patterns in the sounds that are made by different objects; decide what they should measure and observe, as well as make decisions about the most appropriate equipment to use to collect data.</p>	<p>Animals including Humans Learn about the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions.</p> <p>Skills Focus – Observing over Time Compare the teeth of carnivores and herbivores, and suggest reasons for differences; investigate what damages teeth and how to look after them through observing over time.</p> <p>Summer 2 Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Forces (Y5 NC) Explore the effects of levers on movement through catapults (DT Link). Recognise that levers allow a smaller force to have a greater effect through investigating catapults. Begin to use the terms air resistance, friction and gravity when explaining what they observe.</p> <p>Skills Focus – Recording Record observations, comparisons and measurements using tables and bar charts (bar charts); begin to plot points to form simple graphs; communicate their conclusions with appropriate scientific language.</p>	<p>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.</p> <p>Skills Focus – Researching Use search engines and select books to find out about animals found in rivers. Revisit: Observing over time & Fair Testing Explore examples of human impact (both positive and negative) on environments: <i>How does pollution affect habitats?</i></p>
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<p>Year 5</p>	<p>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.</p> <p>Skills Focus – Fair Testing Explore falling paper cones or cup-cake cases, and design and make a variety of parachutes; carry out fair tests to determine which designs are the most effective; explore resistance in water by making and testing boats of different shapes.</p>	<p>Animals including humans Draw a timeline to indicate stages in the growth and development of humans; learn about the changes experienced in puberty.</p> <p>Skills Focus – Researching from Secondary Sources Research the gestation periods of other animals and compare them with humans; find out and record the length and mass of a baby as it grows. <i>Choose what secondary sources to use to find out additional information; select an appropriate book from a wide range and find out more information on a particular topic; be introduced to journals and how these can be effective in finding out information.</i></p>	<p>Properties and changes of materials Explore and compare the properties of a broad range of materials, relating these to what they learnt about magnetism (Y3) and electricity (Y4); explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognise that melting and dissolving are different processes; explore changes that are difficult to reverse, e.g. burning, rusting, vinegar with bicarb; find out about how chemists create new materials.</p> <p>Skills Focus – identifying and classifying Choose scientific equipment to carry out identification tests; classify materials using prior scientific knowledge; present classifications using flow charts and write detailed explanations.</p>	<p>Light (Y6 NC) Build on the work on light in year 3, explore the way that light behaves, including light sources, reflection and shadows; talk about what happens and make predictions; understand how we see things.</p> <p>Skills Focus – Pattern Seeking Investigate the relationship between light sources, objects and shadows by using shadow puppets; look at a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters. <i>Identify variables that cannot be controlled and suggest potential impact these might have on the data collected.</i></p>	<p>Living things and their Habitats Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird; study and raise questions about the local environment; find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.</p> <p>Skills Focus – Observing over Time Observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world; try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs.</p>	<p>Earth and Space Understand 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 (Pluto was reclassified as a 'dwarf planet' in 2006); understand that a moon is a celestial body that orbits a planet.</p> <p>Skills Focus – Recording Plan a shadow investigation; observe, measure, record and identify patterns for changing shadows throughout a day; present scientific evidence in the form of a working 'shadow clock' model. <i>Record observations and measurements systematically and, where appropriate, present data as line graphs; use appropriate scientific language and conventions to communicate quantitative and qualitative data.</i></p>
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Year 6	<p>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.</p> <p>Revise Materials - compare materials in order to make a switch in a circuit.</p> <p>Skills Focus: Fair Testing - systematically identify the effect of changing one component at a time in a circuit; Pattern Seeking – identify variables that cannot be controlled; Recording - select and use appropriate methods for communicating qualitative data, e.g. diagrams of circuits that have been tested or may be useful;</p>	<p>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.</p> <p>Skills Focus – Researching using secondary sources explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health. <i>Choose what secondary sources to use to find out additional information; use journals as a source of research; select an appropriate book and appropriate websites to locate information.</i></p>	<p>Revise Light Explore the way that light behaves, including light sources, reflection and shadows; talk about what happens and make predictions.</p> <p>Skills Focus – Fair Testing/pattern seeking/recording</p>	<p>Living things and their habitats Build on their learning about grouping living things in year 4 by looking at the classification system in more detail; introduced the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided; through direct observations where possible, classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals); discuss reasons why living things are placed in one group and not another.</p> <p>Skills Focus – Identifying and Classifying Use classification systems and keys to identify some animals and plants in the immediate environment Researching - unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.</p>
	<p>Revise Forces Design and make products that use gears and/or springs and explore their effects.</p> <p>Skills Focus – Researching: find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p>	<p>Evolution and inheritance Building on learning in Year 3 to find out more about how living things on earth have changed over time; idea that characteristics are passed from parents to their offspring; appreciate that variation in offspring over time can make animals more or less able to survive in particular environments; find out about the work of palaeontologists such as Mary Anning and about Charles Darwin's ideas on evolution.</p> <p>Skills Focus – Observing over Time Through secondary sources observe how animals have changed over time; explain in detail how this has had an effect on life today.</p>		
	<p>Revise Materials Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible.</p> <p>Skills Focus – Recording: Report and present findings from enquiries, including conclusions, in oral and written forms.</p>			