



Curriculum Science Rationale

Intent:	At Springfields First School, we encourage children to discover and develop excitement and curiosity about the world around them and aim to instill a passion for the sciences. Science teaching at Springfields First School enables children to acquire key skills such as making predictions, observations, conclusions and designing and developing experiments. As children progress through the school, they build their scientific knowledge and are nurtured to develop greater independence in planning and carrying out fair and comparative tests, to answer a range of engaging scientific questions. The science scheme ensures that children have a varied, progressive and well-mapped-out science curriculum that provides the opportunity for progression across the full breadth of the science national curriculum for EYFS, KS1 and KS2. We strive to develop inquisitive and enthusiastic scientists who experience excitement and curiosity about natural phenomena, which they carry with them throughout their lives.
Implementation:	At Springfields First School, science is taught through a two-year rolling cycle across each key phase; EYFS, Key Stage 1 and lower key stage 2. The curriculum has been planned to enable effective progression and the exploitation of cross curricular links, with a balance of Biology, Physics and Chemistry teaching over each key phase. At Springfields First School, science lessons begin with the sharing of which specific scientific discipline we will be focused on and clear links to previous learning made. An engaging scientific question, designed to elicit curiosity and discussion, is then shared with the class. Children are encouraged to talk and share their thinking and prior knowledge in response to this, then suggest how we might find an answer through testing or investigation. The acquisition of key scientific knowledge and vocabulary is an integral part of our science lessons, where it is explicitly taught through high quality teaching, research and experimentation. The progression of skills for working scientifically are developed through the key stages with gradual release of teacher modelling, and scientific enquiry skills are of great importance within lessons. Each lesson, children are challenged to think independently and complete tasks and investigations designed to grow their knowledge and progress their scientific skillset. Activities are effectively differentiated so that all children have an appropriate level of support and challenge. Learning is reviewed with the children at the end of each lesson, and they are encouraged to share ideas, results and conclusions with the class. As children move through the key phases, scientific knowledge and enquiry skills are developed with increasing depth and challenge. The sequence of lessons taught helps to embed scientific knowledge and skills, with each lesson building on previous learning, then growing across each key phase.
Impact:	In science, there is ongoing teacher assessment to ensure that the children are keeping up with the pace of the curriculum and achieving our goals. The school tracks achievement in science against the clear end points developed to ensure that children are working within the curriculum expectations for their year group. Science books and careful observations are key to capturing pupil work and ongoing assessment questions. Talking to pupils is key to the continual refinement and development of the science curriculum. Regular pupil voice conferences provide valuable feedback which is used to assess pupil's understanding and the success of units of work.



Curriculum Map

Science- EYFS

- Scientific skills, such as making predictions and using their personal experiences to inform their observations, are introduced to children in the Early Years through the EYFS Statutory Framework areas of learning, 'Physical Development' and 'Understanding the World'. This early learning feeds directly into the knowledge curriculum for years 1-4. Using the National Curriculum Science Programmes of Study as the starting point, our year-by-year curriculum has been carefully designed to build on prior learning, linking units of work across year groups but also across Key Stages. This allows children to make clear links within and across their learning, as well as revisit previous learning experiences.
- The children's learning in years 1-4 will build on the skills they have developed during their time in the early years: the ability to explore, observe, problem solve, predict, and make decisions about the world around them. The EYFS curriculum gives them opportunities to respond to the natural world and natural phenomena, to talk about what they can see, hear and feel, and to talk about differences and changes they observe, understanding what it means to respect and care for the natural environment and all living things.



Curriculum Map

Science- Whole School- Cycle A

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Super me	Super me	Winter Wonderland & Spring Sunshine	Winter Wonderland & Spring Sunshine	Splish! Splash! Slosh!	Splish! Splash! Slosh!
KS1 Yr1/2	Uses of everyday Materials (Y2 Oak Academy)	New life (Y2 Oak Academy)	Introduction to Food Chains (Y2 Oak Academy)	Living things and where they live (Y2 Oak Academy)	Healthy Me (Y2 Oak Academy)	Growing Plants (Y2 Oak Academy)
LKS2 Yr3/4	Rocks, Soils and Fossils (Y3 Oak Academy)	Simple Forces including Magnets (Y3 Oak Academy)	Introduction to the human skeleton and muscles (Y3 Oak Academy)	Teeth Digestion	Living things and their habitats	Introduction to States of Matter and Changing States (Year 4 Oak Academy)



Curriculum Map

Science- Whole School Cycle B

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	My Bear & Me	My Bear & Me	Are we nearly there yet?	Are we nearly there yet?	Animal Magic	Animal Magic
KS1 Yr1/2	Naming & grouping animals (Y1 Oak Academy)	Seasonal Change-autumn & winter (Y1 Oak Academy)	Seasonal Changes-spring & summer (Y1 Oak Academy)	Everyday materials (Y1 Oak Academy)	Human body parts (Y1 Oak Academy)	Identifying plants and their basic parts (Y1 Oak Academy)
LKS2 Yr3/4	Introduction to light & shadows (Y3 Oak Academy)	Introduction to light & shadows (Y3 Oak Academy)	Introduction to sound (Y4 Oak Academy)	Introduction to sound (Y4 Oak Academy)	Simple electrical circuits (Y4 Oak Academy)	What plants do and what they need (Y3 Oak Academy)



EYFS Curriculum Map

Overview- Pre- School

Cycle A

Super Me	Winter Wonderland & Spring Sunshine	Splish! Splash! Splosh!
• Explore classroom and outdoor space • Plant bulbs and care for the growing plants. • Tidy the garden using rakes, brooms, exploring and discussing the natural world around them using all their senses • Autumn Seasonal Changes	• Frosty/snowy walk. What is winter like? • Signs of winter, observing different types of weather – snow, ice, sleet, hail, slush, observing trees. Talk about what they see using a wide range of vocabulary • Exploring ice – How is ice made? Why does ice melt? Making ice. • Using jets of warm water and salt to melt ice • Exploring polar animals, how do they keep warm? Talk about the different countries in the world and the differences they have experienced or see in photos – E.g. compare polar regions with desert • Making bird cake and feeders, identifying different types of birds using binoculars • Plant seeds and care for them, understand the key features of the life cycle of a plant • Observing changes in bulbs planted, flowering plants • Growing grass, making grass heads • Exploring woodland animals and woodland habitat • Spring Seasonal Changes	• Use magnets and discuss the terms magnetic and non magnetic – exploration of forces and properties of objects • Floating and sinking experiments – moving water in different ways from one container to another – hands on exploration, properties of objects • Explore how water travels along ramps, channels, in water trays, raindrops on window etc.- exploration and experimentation practically • Exploring puddles and shadows – why do shadows move? Use torches to make shadows. • Summer Seasonal Changes



EYFS Curriculum Map Overview- Pre- School Cycle B

My Bear & Me

- Explore classroom and outdoor space, plant bulbs Teddy Bears Picnic activity morning
- Operating simple equipment – microwave, kettle and telephone in role play, computers, interactive white board, ipads, dark tent and equipment
- Environmental walk through mud, swishy grass etc
- Autumn Seasonal Changes

Are we nearly there yet?

- Look outside for trails/tracks made by people, animals or vehicles.
- Explore floating and sinking, different boats.
- Spring Seasonal Changes

Animal Magic

- Show care and concern for living things, learn about looking after animals, observing changes in EY garden, growing plants from seeds – eg sunflowers, beans etc
- Explore lifecycles – chicks, frogs, farm animals, trees, plants
- Animals and their babies – name and match
- Explore our 5 senses through practical activities
- Learn about different types of animals – Humans, Pre-Historic, Jungle, Domestic Pets, Farm, Sea Creatures and Minibeasts
- Possible visit from vet/Animal Man/visit to Amerton Farm
- Summer Seasonal Changes



EYFS Curriculum Map

Overview- Reception

Cycle A

Super Me	Winter Wonderland & Spring Sunshine	Splish! Splash! Splosh!
• How we change as we grow • Keeping ourselves healthy – germs, brushing teeth, bathing etc • Super senses • Autumn Seasonal Changes	• Nocturnal Animals Making sense of different environments and habitats • Listen to children describing and commenting on things they have seen whilst outside, including plants and animals. • After close observation, draw pictures of the natural world, including animals and plants • Trip to our local park (to link with seasons); discuss what we will see on our journey to the park and how we will get there. . • Can children make comments on the weather, culture, clothing, housing. • Change in living things – Changes in the leaves, weather, seasons, • Explore the world around us and see how it changes as we move from winter to Summer. Provide opportunities for children to note and record the weather. • Draw children’s attention to the immediate environment, introducing and modelling new vocabulary where appropriate. • Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them during hands-on experiences. • Look for children incorporating their understanding of the seasons and weather in their play. • Animals in cold climates and animals that hibernate, animal groups • Sorting animals into hot and cold places and groups • Freezing and melting • Look at the local environment and comparing to a cold place; how does the environment change over 4 seasons • Mini beast hunt • Life cycles – frogs	• Building Bricks Rainbow stem activity • Flowers in coloured water activity – recording results • Shadows investigation and play in the dark tent • Floating and sinking – talks about why things happen and how they work • Create a boat model that will float • Observing and growing beans, cress, tomatoes, potatoes etc • Milk, food colouring, dish soap experiment. • How are rainbows formed?



EYFS Curriculum Map Overview- Reception Cycle B

My Bear & Me

- What are toys/teddies made of?
- Autumn – changing seasons – what do we see?
- Lights and shadows – link to Can't you sleep Little Bear

Are we nearly there yet?

- First woman in space – Mae Jemison
- Looking at how things move, forces — push and pull – ramps science experiment
- Spring Seasonal Changes

Animal Magic

- Ourselves – our bodies; senses, body parts, bones
- Growing our cress/vegetables/beans
- Butterfly life cycle observations
- 5 senses – food tasting
- My baby – picture cards of parent and baby animals to match up
- Looking after pets
- Mini beast hunts
- Owl Baby bags
- Animals in different habitats – sea, desert, polar regions etc
- Learn how animals adapt to environments.
- Small world play – ocean, habitats comparison, dinosaurs
- What do we get from animals?
- Summer Seasonal Changes



Curriculum Map Overview- KS1 Year 1 & 2- Cycle A

Use of everyday materials (Y2)	New Life (Y2)	Introduction to food chains (Y2)	Living things and where they live (Y2)	Healthy me (Y2)	Growing plants (Y2)
- I can explain why different objects are made from different materials depending on their use. - I can compare how suitable materials are for different uses based on their properties. - I can explain where different materials come from and how some materials are less harmful to planet Earth. - I can investigate which materials are absorbent and explain how suitable they are for different uses. - I can investigate which materials are stretchy and explain how suitable they are for different uses. - I can plan and carry out a test to try to change the shape of different materials in different ways. - I can find out how the shapes of solid objects made from some materials can be changed.	- I can match animal offspring to their parent. - I can group and order different stages of an animal's growth. - I can make observations and describe how an animal grows and changes in its life cycle. - I can record the life cycle of an animal. - I can describe what animals need to stay alive.	- I can describe how animals get the food they need to stay alive - I can order different plants and animals in a simple food chain. - I can create food chains and talk about different roles played by plants and animals. - I can compare the food chains that I have created with other food chains.	- I can compare and group things into living and non-living. - I can describe movement as something that all living things do. - I can compare and group things that are alive, dead and never alive. - I can explain why different animals live in different habitats. - I can explain why different plants live in different habitats. - I can identify and name plants and animals found in microhabitats. - I can find ways to encourage plants and animals to live safely in microhabitats.	- I can describe why it is important for humans to wash their hands. - I can describe why it is important for humans to look after their teeth. - I can describe why it is important for humans to exercise. - I can describe why it is important for humans to eat different types of food. - I can describe why it is important for humans to eat the right amounts of different types of food. - I can describe how nutritionists carry out tests and make observations to help us make healthy choices. - I can present information to help humans live a healthy life.	- You can explain that most plants produce seeds, which grow into new plants. - You can explain that some plants grow from bulbs. - You can set up an investigation to find out what happens to plants when they do not get what they need. - You can observe and record different stages of plant growth. - You can find out and describe what happens when plants do not have water. - You can find out and describe what happens when plants do not have warmth. - You can find out and describe what happens when plants do not have light.



Curriculum Map Overview- KS1 Year 1 & 2- Cycle B

Naming and grouping animals (Y1)	Seasonal Changes- Autumn & Winter (Y1)	Seasonal Changes- Spring & Summer (Y1)	Everyday Materials (Y1)	Human Body Parts (Y1)	Identifying plants & their basic parts (Y1)
- I can name and group animals that can be kept as pets. - I can name and group together common animals that are mammals. - I can name and group common animals that are birds and reptiles. - I can name and group common animals that are fish and amphibians. - I can describe and compare the structure of common animals. - I can name and group animals that are carnivores, herbivores and omnivores.	- I can describe changes in autumn. - I can describe weather in autumn. - I can describe changes in winter. - I can describe the weather in winter. - I can observe what happens to day length in winter.	- I can describe changes in spring. - I can describe weather in spring. - I can describe changes in summer. - I can describe the weather in summer. - I can observe what happens to day length in summer.	- I can name different objects and the materials they are made from. - I can name and group different materials that can be recycled. - I can describe simple properties of everyday materials. - I can plan and do an investigation to find out about waterproof materials. - I can find out about how famous scientists investigate waterproof materials. - I can plan and do an investigation to find out about transparent and opaque materials. - I can name transparent and opaque materials and talk about how they are useful.	- I can explain that humans are animals that belong to the group called mammals. - I can name different parts on the outside of the human body and talk about what jobs they do. - I can name different parts on the inside of the human body and talk about what jobs they do. - I can explain which parts of the human body we use for our five senses. - I can use my sense of sight, smell and sound to identify things. - I can use my sense of taste and touch to identify things.	- I can identify plants near my school or home. - I can name different parts of trees. - I can identify and name different trees. - I can compare deciduous and evergreen trees and name some examples of each. - I can name the different parts of flowering plants. - I can identify and name some common flowering plants. - I can identify and name different wildflowers that grow from seeds.



Curriculum Map

Science - Thinking Scientifically

KS1

Year group	Questioning	Investigating	Drawing Conclusions	Identifying and Classifying	Recording and Presenting
1	Ask some simple questions using everyday language and begin to use some simple scientific words. Begin to recognise that questions can be answered in different ways such as: observing changes over time, grouping and classifying and simple tests. With support, use observations and ideas to suggest answers to questions.	Begin to perform simple tests Begin to use practical resources to gather evidence to answer questions. With support, carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.	Suggest answers to questions Describe what happened and whether they were surprised at the findings or not. Begin to orally answer questions based upon their findings and their experiences of the world	Use their observations to identify & classify. Make careful observations to identify features and notice changes. Sort and group living things or materials using similarities and differences. Use simple charts to identify unknown animals and plants. Begin to identify and describe how they group items.	With support, record and present simple findings and ideas To begin to draw diagrams and label To draw pictures (or take photographs) over a period of time To present grouping in a simple format To begin to complete simple tally tables, block graphs and pictograms To present findings orally.
2	Ask simple questions using everyday language and year 2 scientific language. Recognise that questions can be answered in different ways such as: observing changes over time, grouping and classifying, simple tests, researching using secondary sources and noticing patterns. Use observations and ideas to suggest answers to questions.	Perform simple tests Use practical resources to gather evidence to answer questions. Carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.	Suggest answers to questions and begin to look for patterns Use observations from their investigations to answer questions based upon their findings and their experiences of the world With support, begin to look for changes, patterns, similarities and differences in their findings	Use given criteria to identify and classify. Sort and classify things according to given criteria. Classify items using simple prepared tables and sorting rings. Describe the characteristics they used to identify a living thing.	Record and present simple findings and ideas To draw diagrams, using observations, and label parts, including over a period of time To present grouping in a given format To complete simple tally tables, block graphs and pictograms with a simple scale To present findings orally, with simple scientific language, and visually.



Curriculum Map Overview- KS1

Year 3 & 4- Cycle A

Rocks & Soils (Y3)	Simple Forces including Magnets (Y3)	Introduction to the human skeleton & muscles (Y3)	Teeth & Digestion	Living things & their habitats	Introduction to States of Matter and Changing States (Y4)
- I can explain that rock occurs naturally and can be used for different purposes. - I can compare, group and identify different rocks by observing their appearance. - I can compare and group different rocks by investigating their hardness. - I can compare and group different rocks by testing their permeability. - I can list some everyday uses of rocks and explain how the physical properties of rocks make them suitable for different jobs. - I can describe how natural forces can change rocks over time. - I can describe in simple terms how fossils are formed. - I can describe a range of different ways in which fossils can be formed. - I can explain what soil is and what soils are made from. - I can explain the role of geologists and why their work is important.	- I can plan an investigation to compare how things move on different surfaces. - I can carry out tests and compare how things move on different surfaces. - I can observe that some forces need contact between two objects and give examples from real life. - I can observe and measure magnetic forces acting at a distance. - I can identify and name different types of magnets and their parts. - I can compare and group together everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. - I can predict whether two magnets will attract or repel each other, depending on which poles are facing. - I can explore different materials to investigate if magnetic force can be blocked.	- I can explain how the skeleton supports the human body. - I can describe how our bones provide protection, with some examples. - I can plan and carry out an investigation to find out if bones grow as we get older. - I can use my results to look for patterns in data, and write a conclusion about bone length. - I can compare and group vertebrate animals based on their skeleton. - I can compare and group invertebrate animals, based on the structure of their bodies. - I can explain why humans have muscles	- I can identify and name different types of teeth in humans - I can explain the simple functions of the different types of human teeth. - I can identify which teeth are used to eat different types of food.	- To be able to identify a variety of habitats and explore why organisms live in different habitats. - To explore the layers of vegetation in a rainforest - To be able to identify a variety of rainforest plants. - To be able to identify a variety of animals from the Amazon rainforest. - To be able to classify rainforest animals according to various criteria. - To know what extinction is and how this affects biodiversity	- I can describe simple properties of solids, liquids and gases. - I can compare and group materials according to whether they are in solid, liquid or gas state. - I can observe that some materials change state from solid to liquid when they are heated. - I can observe that some materials change state from liquid to solid when they are cooled. - I can measure and record temperature in different ways. - I can plan how to find the temperatures at which some common materials melt. - I can investigate the melting temperatures of common materials and evaluate my investigation. - I can research and compare the melting temperatures of common materials. - I can observe water change from the liquid state to the gas state. - I can observe water change from gas state to liquid state when it is cooled. - I can identify the part played by evaporation and condensation in the water cycle. - I can plan how to investigate how temperature affects the rate of evaporation. - I can investigate how temperature affects the rate of evaporation.



Curriculum Map Overview- KS1 Year 3 & 4- Cycle B

Introduction to light and shadows (Y3)	Introduction to sound (Y4)	Simple electrical circuits (Y4)	What plants do and what they need (Y3)
• I can explain that light is necessary for us to see things. • I can identify and name natural and human-made light sources. • I can plan how to investigate sun protection. • I can carry out and review an investigation about sun protection. • I can compare different materials based on how transparent they are. • I can explain how shadows are formed. • I can make a plan to investigate how the size of shadows can change. • I can measure and record information about shadow size. • I can explain results about shadow size. • I can plan how to compare different materials based on how reflective they are. • I can carry out and review an investigation to compare different materials based on how reflective they are.	• I can identify that sounds are made when something vibrates. • I can recognise that vibrations from sounds travel through a medium to the ear. • I can explain how sounds can travel through a solid medium to our ears. • I can compare the volume of different sounds and identify loud and quiet sounds. • I can investigate which materials are good sound insulators and describe how these are used in everyday life. • I can make a plan to investigate how the volume of a sound depends on the distance from the sound source. • I can carry out and evaluate a fair test about the volume of sounds. • I can identify high and low pitched sounds. • I can find patterns between the pitch of a sound and the length of the vibrating object. • I can explain how the pitch of sounds can be changed on a variety of musical instruments.	• I can identify, name and group common appliances that run on electricity. • I can identify and name basic components in a simple electrical circuit. • I can build a simple series electrical circuit. • I can solve problems and improve simple circuits. • I can explain how a switch is used to open and close a circuit. • I can sort materials into electrical conductors and insulators. • I can identify objects made from a range of metals and test for electrical conductivity. • I can describe different careers associated with electricity.	• I can ask relevant questions about what plants need and plan a comparative test to answer them. • I can set up a comparative test investigation to find out what plants need. • I can describe why plants have leaves. • I can describe why plants have roots. • I can observe and describe what happens to a plant that has had its roots removed. • I can investigate the way in which water is transported in plants. • I can record observations about what plants need using labelled diagrams. • I can gather data from a colour survey of flowering plants and present my findings. • I can describe the functions of flowers on flowering plants and identify some parts of a flower. • I can explain how flowers are pollinated. • I can explain how seeds are formed and dispersed. • I can present the life cycle of a flowering plant. • I can form conclusions about what plants need, based on my observations. • I can compare how the requirements of plants can vary from plant to



Curriculum Map

Science - Thinking Scientifically

KS2

Year group	Questioning	Investigating	Drawing Conclusions	Identifying and Classifying	Recording and Presenting
3	Begin to ask some relevant questions using scientific language. Begin to make some decisions about which type of enquiry will be the best way of answering questions including: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources.	Begin to set up simple practical enquiries, comparative and fair tests Begin to select practical resources to gather evidence to answer questions generated by themselves or given to them. With support, they follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.	Draw simple conclusions and raise further questions Begin to use straightforward scientific evidence to answer questions or to support their findings using age-appropriate scientific language. With support, begin to look for changes, patterns, similarities and differences in their results in order to draw simple conclusions using age-appropriate scientific language. With support, begin to identify new questions arising from the results and make new predictions.	Identify and classify in different ways. Record classifications using Venn diagrams, Carroll diagrams, tables etc. Compare, classify and group items using Scientific criteria (e.g. magnetic, not magnetic). Independently, classify and group in different ways.	With support, record and present results and ideas To produce detailed labelled diagrams using observations, including over a period of time To begin to present results by creating or completing Venn and Carroll diagrams, tally, columned tables and simple bar charts, using scales To present results orally, visually or in written form with support, using simple scientific language
4	Ask a range of relevant questions using scientific language. Make some decisions about which type of enquiry will be the best way of answering questions including: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources.	Set up simple practical enquiries, comparative and fair tests Select from a range of practical resources to gather evidence to answer questions generated by themselves or given to them. They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.	Use results to draw simple conclusions, suggest improvements and raise further questions Use straightforward scientific evidence to answer questions or to support their findings using age-appropriate scientific language. See patterns in results; begin to say what has been found out, linking cause and effect to develop simple conclusions. using age-appropriate scientific language. With support, begin to identify new questions arising from the results, make new predictions and suggest ways of improving what they have already done.	With support, use similarities and differences in order to group and identify. Begin to identify similarities/ differences/ changes when talking about scientific processes. Use and begin to create simple keys.	Record and present results and ideas To produce detailed labelled diagrams using observations, including over a period of time To present results by creating or completing Venn and Carroll diagrams, simple keys, tally, columned tables and simple bar charts, using scales To present results orally, visually or in written form, using key vocabulary and scientific language