Science
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
Early Years	**N/A**		
Year 1	**Autumn 1**	**Topic: Plants** Rationale… Children must be able to access a wide range of plants in the school grounds. Specific plants will be identified to be studied throughout the year. This follows on from children exploring the outdoor environment in Reception and gives children the vocabulary needed to discuss specific parts of the plant. This unit will provide an opportunity to observe changes in plants around our school grounds in Spring and to complete some different enquiry types.	EYFS Looking at plants growing from seeds. Seasonal changes Y1 The children were introduced to the key knowledge and skills in Autumn 1.
	Autumn 2	**Topic: Animals including humans (human focus)** Rationale… Children will use the vocabulary associated with body parts ahead of linking some of these with a particular sense. This will prepare them for learning about life cycles of humans in Year 2, and the specific names of bones and the role of the human skeleton in Year 3.	In EYFS, children explore human bodies when discussing growing up and moving on, hygiene and handwashing. They think about the way their body moves and name their body parts during PE lessons.
	Spring 1	Consolidation time allocated to revisit previous learning.	
	Spring 2	**Topic: Animals including humans (animal focus)** Children are able to name a greater number of common animals, and can classify them into vertebrate groups. They draw comparisons between them and use these to classify. The children are encouraged to justify their choices using increasingly detailed explanations, incorporating sophisticated key vocabulary	EYFS Children have explored familiar animals and their habitats, and during spring discussed new animal life.
	Summer 1	**Topic: Everyday materials** This unit reinforces the understanding that different objects can be made of different materials. They also begin to use specific vocabulary to describe the properties of these materials, enabling children to compare and group materials according to their properties.	EYFS Children have explored a variety of materials throughout the environment during continuous provision. They began to use the correct name to describe the material objects were made of.
	Summer 2	**Topic: Seasonal changes**	EYFS The children experienced seasonal changes

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		This unit reinforces their early years experiences of seasonal change. It is supported by Y1 geography topics, with a focus on weather throughout the year. Children learn about why we have four seasons on Earth, and classify features of each.	during their "Muddy Monday" forest schools sessions. The children were encouraged to discuss their observations. Throughout Year 1, the children have taken part in walks around the school grounds in all seasons and observed changes in autumn, winter and spring so far. In geography lessons, children have discussed weather changes and patterns.
Year 2	**Autumn 1**	**Topic: Living things and their habitats** Rationale… There will be a range of microhabitats in the nature garden and around the school grounds at this time.	Using many of the plants and animals identified in Year 1, children now consider the habitats of these living things. They also consider food chains of the carnivores, herbivores and omnivores discussed in Year 1.
	Autumn 2	**Topic: Plants** Rationale… In Y1 they looked at common plants , such as oak tree, beech tree, daisies, dandelions, buttercups, nettles and clover, and have learned the parts of plants - roots, stem, leaves, flower, trunk, bark They have begun to classify plants using charts and should be able to name deciduous and evergreen trees. They have observed changes in plants over time And have researched common wild and garden plants.	Children should observe plants, both inside and outside, throughout the whole year. Specific seeds and bulbs should be planted in a variety of places (indoors, outside,) to allow children to observe over time.
	Spring 1	**Topic: Everyday Materials** Rationale… Completing this topic will build on the learning from Y1 and will ensure that they children are exposed to the scientific language needed to discuss and compare materials for different uses. This will be essential learning for the DT topics in Y2 where they must decide on the best materials to create a puppet and a moving vehicle, evaluating the merits of each different material for each job.	In Y1 the children will have explored different everyday materials and their used. They will have thought about why materials are used for certain purposes and what makes them suitable for that job. They will have used vocabulary such as bendy, soft, waterproof, smooth and hard to describe materials.

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	Spring 2	**Topic: Plants (revisited)** Rationale… Revisiting plants in the spring term will allow the children to observe the changes that have occurred within our school grounds. They will have the opportunity to witness first-hand how some plants change according to the seasons and how others don't.	In Y1 they looked at common plants, such as oak tree, beech tree, daisies, dandelions, buttercups, nettles and clover, and have learned the parts of plants - roots, stem, leaves, flower, trunk, bark They have begun to classify plants using charts and should be able to name deciduous and evergreen trees. They have observed changes in plants over time And have researched common wild and garden plants. In autumn term the children will have learned about what a plant needs to grow and be healthy and will have observed the plants growing around our school grounds.
	Summer 1	**Topic: Animals including humans** Rationale… This unit builds on their work about life processes earlier in Y2. Children are now aware that there are 7 life processes (MRS GREN) that all living things do. This unit moves on to learn about life cycles of those living things and what they need in order to survive. Completing this unit now will enable the children to make links to previous knowledge.	Children have learned about life processes earlier in the year and have learned about the parts of the body in Y1, focussing on their senses and what they do.
	Summer 2	Consolidation time allocated to revisit previous learning.	
Year 3	**Autumn 1**	**Topic: Plants** This unit explores the parts of a plant (introduced in Year 1) in greater detail. Children also explore what plants need to grow and thrive, as well as understanding more about the life cycle introduced in Year 2 by learning about and investigating pollination, fertilisation and seed dispersal.	<u>Y1</u> Children identified common plants and their main parts. They learned the difference between deciduous and evergreen trees. <u>Y2</u> Children explored the life cycle of a plant and observed the different stages including germination, growth, flowering and seed production.

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	Autumn 2	**Topic: Animals inc. Humans (Food groups & Skeleton)** Rationale… Learning about food groups and the nutrients we need to remain fit and healthy is age appropriate for Y3 as they are beginning to take more of an interest in what they are eating and making more choices for themselves.	In Y2, the children have learned about the Eatwell Plate and how we need to eat a balanced diet to stay healthy.
	Spring 1	**Topic: Light** This unit builds upon the work completed in "animals including humans" unit in Year 1. The children know that the eyes are responsible for their sense of sight. The children will now learn that they need light to see, and how to protect their eyes from the sun. They will observe how shadows are created when light is blocked by an object.	<u>Y1</u> Children have identified that their sense of sight is linked to their eyes.
	Spring 2	**Topic: Rocks** Rationale… Students learn about materials found on Earth's surface—rocks, minerals and soil. By closely examining sample rocks, students discover similarities and differences and explore these, using simple tests and tools. Students learn that each kind of rock has a set of characteristics and that these characteristics can be used in classifying and identifying rocks. In studies of soil, students discover that the component materials include rock fragments and remains of living things, and that different soils have different compositions	In Y 1 and 2 the children have explored properties of materials including stones and rocks. They have used appropriate scientific vocabulary to describe the rocks.
	Summer 1	Consolidation time allocated to revisit previous learning.	
	Summer 2	**Topic: Forces and magnets** This unit introduces terminology linked to forces specifically for the first time. It reinforces the understanding that different objects can be made of different materials ad that some of these materials are magnetic (introduced in Year 2 materials unit). They also begin to use specific vocabulary to describe the structure of a magnet and the effect the poles have on each other and on other materials.	<u>Y2</u> In their materials unit, the children used the term "magnetic" to describe materials that are attracted to a magnet.

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Year 4	**Autumn 1**	**Topic: Living things and their habitats (Animal/plant groups Keys** Rationale… Competing this unit during this term ensures that the local environment can be used to explore the use of classification keys and potential dangers to living things.	In Year 2, children explored and classified things that were living, had never been alive or dead. They grouped animals into birds, reptiles, mammals, amphibians, insects and fish. Additionally, they are able to build on their work in Year 1 and 3 where they were able to group materials.
	Autumn 2	**Topic: Animals inc. Humans (Digestion, organs, teeth)** Rationale… This unit builds on the work from Year 3 about nutrition. The children will now learn how the nutrients from food are absorbed into the body and how digestion works. They will learn about types of teeth and the jobs they are designed to do.	In Year 3, the children have looked at healthy eating and nutrients needed to keep the body healthy. They have also studied the skeleton its function.
	Spring 1	**Topic: Sound** Rationale… Children will learn that sound is created when something vibrates and sends waves of energy (vibration) into our ears. The vibrations travel through the air or another medium (solid, liquid or gas) to the ear. The stronger the vibrations, the louder the sound. Sounds are fainter the further you get from the sound source.	The children learned about solids liquids and gases and will build on that knowledge by investigating how sound travels through each medium.
	Spring 2	Consolidation time allocated to revisit previous learning.	
	Summer 1	**Topic: Electricity** Rationale… This unit of electricity continues their learning about materials and their properties. The children will investigate the conductivity of different materials and which are insulators. Competing this unit will also make children aware of the dangers associated with electricity and how to keep themselves safe as they begin to enjoy more independence due to their age and maturity.	In years 1 and 2 the children have investigated different materials and what they are used for. In year 3 they have learned about forces and magnets where they investigated which materials were magnetic.

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	Summer 2	**Topic: States of matter (Solids, liquids and gases)** Rationale… This unit builds on the learning about materials and their properties from years 2 and 3. Completing the unit here we will hopefully experience rain and sunshine for the children to witness first hand the process of evaporation.	This unit of work builds on comparing and grouping materials, rocks and soils in Year 2 and 3.
Year 5	**Autumn 1**	**Topic: Properties and changes of materials** Rationale… This unit builds on previous learning about everyday materials in Year 1 and 2, as well as their awareness of which materials are/are not magnetic.	<u>Year 1 – Everyday materials</u> The children have used vocabulary linked to everyday materials and properties of materials. They explained what materials objects are made from and compared everyday materials. The children grouped everyday materials using their properties. <u>Year 2 – Uses of everyday materials</u> The children have used vocabulary linked to everyday materials, properties of materials and how the shape of materials can be changed. They compared how suitable some everyday materials are for different uses and explored how the shape of materials can be changed. <u>Year 3 – Forces and magnets</u> The children learned the terms magnetic, non-magnetic, North pole, South pole, repel and attract. They observed how magnets attract or repel one another, and which materials they attract. The children observed and grouped materials based on whether they are attracted to magnets.
	Autumn 2	Consolidation time allocated to revisit previous learning.	
	Spring 1	**Topic: Living things and their habitats**	In Year 2, the children explored and

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		Rationale… This unit covers one the animal focus of the "Living things and their habitats" unit. This is due to the quantity of vocabulary, knowledge and skills to be covered in this unit. This will be followed up in Spring 2, when the children will learn about the gestation period of different animals. Children will deepen understanding of pollination and fertilisation discussed in Year 3, and explores the reproduction process for flowering and non-flowering plants classified in Year 4.	compare the differences between things that are living, dead, and things that have never been alive. They identified 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. The children identified and named a variety of plants and animals in their habitats, including microhabitats. They described how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identified and named different sources of food. In Year 3, children explored the functions of parts of a plant, including pollination and fertilisation. They also observed seed dispersal. In Year 4, the children recognised that living things can be grouped in a variety of ways. They explored and used classification keys to help group, identify and name a variety of living things in their local and wider environment. Children learned to identify flowering and non-flowering plants. They created keys to identify and classify. They also recognised that environments can change and that this can sometimes pose dangers to living things.
	Spring 2	**Topic: Animals including humans** Children have previously learned about the skeleton, digestive system and some physical differences between humans and other animals. This unit build upon this by	<u>Y1</u> Children sorted animals according to the five vertebrate groups (fish, amphibians,

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		introducing a more detailed life cycle of humans from conception to old age, and comparing this to other animals. Animals are compared to other animals by considering the difference between their gestation periods and life expectancy.	reptiles, mammals and birds), and learned about herbivores, carnivores and omnivores. They also explored the five senses in humans. <u>Y2</u> Life cycles of different common animals were explored, and children learned about the basic needs for survival. They also investigated the importance of hygiene and exercise. <u>Y3</u> In Y3, children learned about the role of the skeleton and muscles. They used key vocabulary to label the parts of a skeleton. After learning about the different parts of a balanced diet, they created balanced meals. Animal diets were compared. They grouped animals by comparing their skeletons. <u>Y4</u> Children have learned about the roles of the main organs of the digestive system, and have created food chains. They compared the teeth of herbivores and carnivores.
	Summer 1	**Topic: Forces** Children will learn more about specific forces, including gravity, air resistance, water resistance and friction. They will also explore how levers, pulleys and gears can use a smaller force to create a greater effect. This has a multitude of real life applications that the children may need in everyday life or the workplace.	<u>Y3</u> This children were introduced terminology linked to forces specifically for the first time. They were taught that different objects can be made of different materials and that some of these materials are magnetic. They also began to use specific vocabulary to describe the structure of a magnet and the effect the poles have on each other and on

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			other materials.
	Summer 2	**Topic: Earth and space** Children will use their learning about gravity to understand the structure of the solar system. They will learn about the movement of the Earth around the sun, and the movement of the moon around the Earth. They will use this to explain day and night.	<u>Y3</u> This children were introduced terminology linked to forces specifically for the first time. They were taught that different objects can be made of different materials and that some of these materials are magnetic. They also began to use specific vocabulary to describe the structure of a magnet and the effect the poles have on each other and on other materials. <u>Y5</u> Children learned more about specific forces, including gravity, air resistance, water resistance and friction.
Year 6	**Autumn 1**	**Topic: Light** Rationale… This unit is taught in Autumn to ensure natural light, as well as unnatural light, is available when considering shadows.	In Y3 children have covered '**How we see**' where they learned that they need light in order to see things and that dark is the absence of light. They also covered '**How light is reflected on different surfaces**'
	Autumn 2	**Topic: Animals including humans** Rationale… Teaching about the body and the circulatory system. Looking at the impact diet, drugs and exercise have on the body. This builds on the prior learning from Y3 and Y4.	In Y3 they have learned about the human skeleton and in Y4, human digestion and organs of the body were taught.
	Spring 1	**Topic: Evolution and inheritance** Rationale… This unit builds on the learning form Y3 about fossils and about offspring in years 2 and 5. Children already understand that offspring share characteristics with their parents, which is a good foundation for this unit to build on.	Children use their knowledge of fossils from Year 3; how environments can change in Year 4; and their understanding of offspring from Year 2 and Year 5.

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	Spring 2	**Topic: Electricity** Rationale… This unit builds on the knowledge from Year 4 and extends the children's thinking further about electricity. They will draw their circuits using the correct symbols and investigate ways to increase/decrease the brightness of a bulb/loudness of a buzzer/ speed of a motor in a circuit.	In Y4 the children have learned about which appliances run on electricity and how to stay safe around electricity. They have made simple circuits using wires, bulbs, switches, buzzers and motors. They have investigated which materials conduct and insulate electricity by testing them in a circuit.
	Summer 1	**Consolidation time allocated to revisit previous learning.**	
	Summer 2	**Topic: Living things and their habitats** Rationale… Classification keys builds on learning from Y2 and Y4. Children will learn about micro-organisms and investigate how mould grows.	In Y2 the children were introduced to classification of herbivores, carnivores and omnivores. They also learned about the different classifications of living things – reptiles, mammals, amphibians, birds, insects and fish. They have also used simple classification keys to identify types of trees by their leaves. In Y4 they have looked at classification keys in more depth and created their own keys.