Year	Autumn	Spring	Summer
EYFS	**My body and Seasons**	**Life Cycles and Forces**	**Materials and The World**
ELG Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Describe their immediate environment using knowledge from observations, discussion, texts and maps. Show an understanding towards the importance of healthy choices.	**Nursery** Name different types of food and begin to understand things that are healthy. Join in with familiar rhymes about body parts. Explore, through school grounds and observations, the natural word. **Reception** Understand the terms 'same' and 'different.' Show awareness of healthy lifestyle choices and the impact on our bodies. Name and discuss body parts and begin to position them correctly. Children will explore the natural world around them and discuss seasonal changes throughout the year.	**Nursery** Explore, through school grounds and observations, changes and new life. Plant seeds and plants with care and interest. Through stories, begin to develop an understanding of the life cycle of animals e.g. The Very Hungry Caterpillar. Identify and name different weather types. Begin to name different creatures that they find and see. Explore and use scientific equipment during their play. **Reception** Children will make observations about plants discussing similarities and differences.	**Nursery** Name familiar animals from different locations e.g. the farm, zoo, under the sea. Begin to identify animal patterns and use words to describe them. Through stories, begin to name different settings e.g. woods, beach. **Reception** Children will talk about features of the environment they are in and learn about the different environments. Children will make observations about animals discussing similarities and differences. Begin to identify different habitats and which animals belong to them. Show care and concern for living things.

	Discuss key words such as hibernation, migration and show some understanding.	Explore and discuss signs of new life and growth. Explore, observe and identify UK minibeasts. Explore the life cycles of animals and plants and begin to identify different stages of growth using key vocabulary. Begin to show awareness of the purposes of different objects. E.g. torches, magnifying glasses, magnets. Observe seasonal weather changes and explore ice. (Melting and Freezing).	Compare and contrast the country we live and places around the world. Children will know some important processes in the natural world, including states of matter. <u>Traditional Tales</u> Build a boat for the gingerbread man (Floating and Sinking) Which material to save the Three Little Pigs? (Materials)
Year	**Autumn1**	**Spring 1**	**Summer 1**
1	**Animals and Humans** Unit 1 – **Light and Seeing**, **Sound and Hearing** (links to senses)	**Magnets and Forces** Unit 1	**Everyday Materials** Unit 1
Working Scientifically: Ask simple questions Observe closely using simple equipment Perform simple tests Identify and classify	**Biology** • Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	**Physics** ● Observe and describe different ways of moving ● Identify similarities and differences between movement of different objects ● Make suggestions about how objects can be made to move	**Chemistry** • Correctly identify and name an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.

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<td rowspan="4">Use observations and ideas to suggest answers to questions.

Gather and record data to help in answering questions.</td>
<td rowspan="4">• Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets).

• Identify name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

• Notice that animals, including humans, have offspring which grow into adults.</td>
<td>● Explore contact forces (push and pull)
● Explore how objects sink or float
● Know that it is not only ourselves that make things move and ask questions about what is causing movement
Outdoor learning opportunities</td>
<td>• Describe the simple physical properties (see vocabulary appendix for examples) of a variety of everyday materials.
• Compare a variety of everyday materials on the basis of their simple physical properties.
• Group together a variety of everyday materials on the basis of their simple physical properties.
Outdoor learning opportunities</td>
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<tr>
<td>Spring 2</td>
<td>Summer 2</td>
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<tr>
<td>Plants Unit 1</td>
<td>Seasonal Changes Unit 1
Earth and Space Unit 1</td>
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<td>Biology

• Flowering plants have a root, stem, leaves and a flower
• Trees can be deciduous which means the leaves are lost yearly-usually in the autumn
• Trees can be evergreen which means there are always leaves on the tree (leaves are continually replenished throughout the year</td>
<td>Physics

• Name the 4 seasons and say when in the year they occur
• Observe and describe weather associated with the seasons
• Observe changes across the 4 seasons
• Can describe other features that change throughout the year that are caused by the change in weather e.g. numbers of mini beasts found</td>
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		• Trees and plants have roots, stems and leaves but plants have a softer stem • Trees are made of roots, trunk, branches and leaves • Grasses and ferns consist entirely of leaves • In Autumn, the leaves on deciduous trees change colour, fruits and nuts fall to the ground. Farmers can harvest the crops • In Spring, birds sing, trees produce leaves and flowers blossom and the landscape change	outside, seed and plant growth, leaves on trees, clothes worn by people, hibernation and migration • Explain how day light (from the sun rising to sun setting) length varies across the year (longer in summer, shorter in winter) *Outdoor learning opportunities*
Year	**Autumn**	**Spring 1**	**Summer**
2	**Animals and Human**s Unit 2 - **Evolution and Inheritance**	**Living Things and Their Habitats** Unit 1	**Uses of Everyday Materials** Unit 2 - **Electricity** Unit 1

St. Joseph's Catholic Academy – Science Progression of Knowledge & Year Group End Points

Working Scientifically:	**Biology**	**Biology**	**Physics**
Ask simple questions Observe closely using simple equipment Perform simple tests. Identify and classify Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions.	• Identify that animals, including humans need the right types and amounts of nutrition that they cannot make their own food and they get nutrition from what they eat. • Construct and interpret a variety of food chains, identify producers, predators and prey. • Identify that humans and some animals have skeletons and muscles for support, protection and movement. • Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions.	• Identify the differences between things that are living, dead, and things that have never been alive, using some of the 7 life processes (movement, respiration, sensitivity, growth, reproduction, excretion, nutrition). • Identify that most living things live in habitats to which they are suited. • Explain in simple terms how an animal or plant is suited to its habitat. • Name a variety of plants and animals in their habitats, including micro-habitats. • Explain that different conditions in a habitat and micro habitat can affect the number and type of plants/animals that live there.	● Observe and describe different ways of moving ● Identify similarities and differences between movement of different objects ● Make suggestions about how objects can be made to move ● Explore contact forces (push and pull) ● Explore how objects sink or float ● Know that it is not only ourselves that make things move and ask questions about what is causing movement *Outdoor learning opportunities* **Physics** • Identify common appliances that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series

		• Describe how plants and animals depend on each other for food and shelter. • 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. • Construct a simple food chain that includes humans (e.g. grass, cow, human) with arrows pointing in the correct direction. *Outdoor learning opportunities*	circuit based on whether or not the lamp is part of a complete circuit with a battery. • Recognise that a switch opens and closes a circuit. • Recognise some common conductors and insulators and recognise that some metals are good conductors of electricity.
		Spring 2 **Plants** Unit 2 **Biology** • Plants can grow from seed or bulbs • Seeds and bulbs germinate and grow into seedlings • Seedlings grow into mature plants • Plants need light, water, space, suitable temperature in order to grow	

		• Some plants grow best in full sun • Some plants grow best in the shade • Some plants need lots of water • Some plants don't need much water • Some plants grow quicker than others. *Outdoor learning opportunities*	
Year	**Autumn**	**Spring 1**	**Summer**
3	**Animals and Humans** Unit 3	**Forces and Magnets** Unit 2	**Materials Rocks** Unit 3 - **Evolution and Inheritance**
Working Scientifically: Ask relevant questions Set up simple, practical enquires and comparative fair tests. Make accurate measures of length in cm and mm Gather and present data Record findings using scientific language	**Biology** • Identify that animals, including humans need the right types and amounts of nutrition that they cannot make their own food and they get nutrition from what they eat. • Construct and interpret a variety of food chains, identify producers, predators and prey. • Identify that humans and some animals have skeletons and muscles for support, protection and movement.	**Physics** • Compare how things move • Notice that some forces need contact between two objects but magnetic forces can act at a distance. • Observe how magnets attract and repel each other and attract some materials but not others. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and	**Chemistry** • Know that all things are made up of particles. • Know that particles are arranged differently in solids, liquids and gases. • Name properties of solids, liquids and gases. • Compare and group materials together according to if they are solids, liquids and gases, giving reasons to justify their choices. • Observe that some materials change state when heated or

including drawings and labelled diagrams. Use results to draw simple conclusions	• Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions.	identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract of repel each other depending on which poles are facing. *Outdoor learning opportunities*	cooled, and are able to give everyday examples of melting and freezing. • Understand that melting and freezing are a state change between solids and liquids. • Measure or research the temperature at which melting and freezing occurs for some materials. • Know that water freezes at 0°c and boils at 100°c. • Understand that condensation is a state change from a gas to a liquid. • Understand that evaporation is a state change from liquid to gas. • Understand that boiling and evaporation are the same state change from liquid to gas but at different temperatures. • Know that the speed of evaporation depends on a number of variables including the temperature. • Describe the water cycle.

			• Identify the parts played by evaporation and condensation in the water cycle. *Outdoor learning opportunities*
		Spring 2	**Summer 2**
		Plants Unit 3	**Light and Seeing** Unit 1
		Biology • Plants contain roots to absorb water and nutrients from the soil • Plant roots also anchor the plant to provide support • Plants contain a stem/ trunk which is responsible for transporting water and nutrients around the plant. • Plants contain flowers which contain the stamen, carpel, petal, ovule, sepal and stem • Plants need light, water, space, suitable temperature in order to grow • The level of nutrients required depends on the type of plant • Insects like bees and wasps transfer the pollen from the male part of a flower to the female part of other flowers	**Physics** • Recognise that they need light in order to see things and that dark is the absence of light • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when light from a light source is blocked by and opaque object. • Find patterns in the way that shadows change. *Outdoor learning opportunities*

		• Seeds can also be dispersed by wind, animal fur, animals eating them (and excreting them), in water and if the seed pod explodes • The roots absorb water from the soil, the stem transports it to the leaves, water evaporates from the leaves which causes more water to be absorbed from the soil *Outdoor learning opportunities*	
Year	**Autumn**	**Spring 1**	**Summer 1**
4	**Animals and Humans** Unit 4	**Living Things and Their Habitats** Unit 2	**Electricity** Unit 2
Working Scientifically: Ask relevant questions Set up simple, practical enquires and comparative fair tests. Make accurate measures of length in cm and mm Gather and present data	**Biology** • Identify that animals, including humans need the right types and amounts of nutrition that they cannot make their own food and they get nutrition from what they eat. • Construct and interpret a variety of food chains, identify producers, predators and prey. • Identify that humans and some animals have skeletons and muscles for support, protection and movement.	**Biology** • Know the 7 life processes of living organisms. • Use the 7 life processes to determine if an organism is living. • Describe similarities and differences between examples of plants and animals. • Know the features of mammals, amphibians, fish, birds, reptiles (vertebrates) and invertebrates.	**Physics** • identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on

Record findings using scientific language including drawings and labelled diagrams. Use results to draw simple conclusions	• Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions.	• Group living things in a variety of ways using key characteristics. • Know and explore the work of Carl Linnaeus. • Use classification keys to help group and identify a variety of living things in their local and wider environment. • Use classification keys to name a variety of living things. • Recognise that environments can change, and this can sometimes pose dangers to living things. • Understand that human actions can impact on the environment and suggest some solutions to the issues.	whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors
		Spring 2	**Summer 2**
		Materials States of Matter Unit 4	**Sound and Hearing** Unit 1
		Chemistry • Know that all things are made up of particles. • Know that particles are arranged differently in solids, liquids and gases. • Name properties of solids, liquids and gases. • Compare and group materials together according to if they are solids,	**Physics** • Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it

		liquids and gases, giving reasons to justify their choices. • Observe that some materials change state when heated or cooled, and are able to give everyday examples of melting and freezing. • Understand that melting and freezing are a state change between solids and liquids. • Measure or research the temperature at which melting and freezing occurs for some materials. • Know that water freezes at 0oc and boils at 100oc. • Understand that condensation is a state change from a gas to a liquid. • Understand that evaporation is a state change from liquid to gas. • Understand that boiling and evaporation are the same state change from liquid to gas but at different temperatures. • Know that the speed of evaporation depends on a number of variables including the temperature. • Describe the water cycle. • Identify the parts played by evaporation and condensation in the water cycle. *Outdoor learning opportunities*	• Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases

Year	Autumn 1	Spring	Summer
5	**Animals and Humans** Unit 5	**Living Things** Unit 3	**Materials Properties and Changes** Unit 5
Working Scientifically Plan enquiries, including recognising and controlling variables where necessary. Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. Take measurements, using a range of scientific equipment, with increasing accuracy and precision. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. Report findings from enquiries, including oral and written	**Biology** • Know that living things can be grouped according to different criteria. • Know that a cell is made up of nucleus, cytoplasm and membrane. • Know that living things can be multicellular or unicellular (bacteria). • Explain in simple terms how the Linnaeus system is used to classify living things. • Explain why we need to group living things. • Explain possible difficulties with classification (penguins and whales). • Know that classification keys are used to group living things based on recognisable characteristics. • Construct a classification key. • Explain what microorganisms are and can name some. • Give examples of some situations where microorganisms can be helpful.	**Biology** • Know that reproduction is when an animal or plant produces on or more individuals similar to itself. • Explain that sexual reproduction requires both male and female DNA (sex cells) and will produce offspring that are similar, but not identical to the parents. • Explain that asexual reproduction will produce offspring that is identical to the parent and only requires on parent e.g., bulbs, tubers and runners. • Explain the life cycle of a mammal, amphibian, insect and a bird. • Explain the process of metamorphosis using frogs and butterflies as examples. • Describe the differences in the life cycles of a mammal, amphibian, insect and a bird. • Use prior knowledge of parts of a flower to explain the stages involved in the reproduction process (pollination, fertilisation and germination).	**Chemistry** • 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. • Discuss the suitability of everyday materials for different purposes based on their properties, giving reasons, based on evidence from comparative and fair tests. • Know the difference between reversible and irreversible changes. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes results 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. • Understand some materials will dissolve in liquid to form a solution.

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<td rowspan="4">explanations of results, explanations involving causal relationships, and conclusions.

Present findings in written form, displays and other presentations.

Use test results to make predictions to set up further comparative and fair tests.

Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</td>
<td>• Give examples of some situations where microorganisms can be harmful.</td>
<td>• Know that living things can be grouped according to different criteria.
• Know that a cell is made up of nucleus, cytoplasm and membrane.
• Know that living things can be multicellular or unicellular (bacteria).</td>
<td>• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving, and evaporating.
• Describe how to recover a substance from a solution.
Outdoor learning opportunities.</td>
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<tr>
<td>Autumn 2</td>
<td>Spring 2</td>
<td>Summer 2</td>
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<tr>
<td>Sound and Hearing Unit 2</td>
<td>Magnets, Forces and Materials Unit 3</td>
<td>Earth and Space Unit 2</td>
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<td>Biology
• Recall the different structures of the ear and the function of each part
• Explain how sound waves can be modelled
• Describe what happens to a sound wave over time
• Calculate the speed of sound in different substances
• Explain what an auditory range is
• Give examples of animals that have large auditory ranges
• Describe how sound can be useful in everyday life.</td>
<td>Physics
• Know the work of Isaac Newton and know that force is measured in Newtons by a Newton Meter
• 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
• Identify the effects of water resistance
• Identify the effects of friction acting between moving surfaces</td>
<td>Physics
• Name the planets of Our Solar System and understand Our place in Our universe, describe the Sun, Earth, Moon and other planets as approximately spherical bodies
• Describe the movement of the Earth around the sun in the solar system (a full orbit is 365 days, the Earth spins on its axis every 24 hours)
• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the day
• Describe the movement of the moon relative to the Earth (lunar</td>
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		• Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater affect *Outdoor learning opportunities*	cycles take 28 days, the lunar cycle and eclipses) ● Describe the movement of the other planets relative to the sun in the solar system (fixed orbits) ● Describe what meteors are, and name other objects in space ● Explain how 'The Space Race' has expanded our scientific knowledge and discuss space travel
Year	**Autumn**	**Spring 1**	**Summer**
6	**Animals Including Humans** Unit 6	**Light and Seeing** Unit 2	**Electricity** Unit 3
Working Scientifically Plan enquiries, including recognising and controlling variables where necessary. Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. Take measurements, using a range of scientific equipment, with increasing accuracy and precision.	**Biology** • 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	**Physics** • Recognise that light appears to travel in straight lines • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same	**Physics** • 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

Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions. Present findings in written form, displays and other presentations. Use test results to make predictions to set up further comparative and fair tests. Use simple models to describe scientific ideas, identifying scientific evidence that has		shape as the objects that cast them *Outdoor learning opportunities*	
		Spring 2	**Summer 2**
		Living Things Unit 4	**Evolution and Inheritance** Unit 1
		Biology • Know that reproduction is when an animal or plant produces on or more individuals similar to itself. • Explain that sexual reproduction requires both male and female DNA (sex cells) and will produce offspring that are similar, but not identical to the parents. • Explain that asexual reproduction will produce offspring that is identical to the parent and only requires on parent e.g., bulbs, tubers and runners.	**Biology** • State what is meant by the term evolution • State the evolution occurs over a long period of time • Recall how fossils are formed • Identify why species show variation • Explain how animals and plants are adapted to their environment • Explain what a habitat is • Identify work done by Charles Darwin, Alfred Wallace, Mary Anning and John Edmonstone.

been used to support or refute ideas or arguments.		• Explain the life cycle of a mammal, amphibian, insect and a bird. • Explain the process of metamorphosis using frogs and butterflies as examples. • Describe the differences in the life cycles of a mammal, amphibian, insect and a bird. • Use prior knowledge of parts of a flower to explain the stages involved in the reproduction process (pollination, fertilisation and germination).	• State the environment humans evolved in • Explain how geographical location has resulted in evolution of a spectrum of skin colour