Science Curriculum Overview

EYFS	- 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.		
Year 1	**Plants** Pupils should be taught to: identify and name a variety of common wild and garden plants, including deciduous and evergreen trees identify and describe the basic structure of a variety of common flowering plants, including trees. **White Rose Lesson Resources** **Start of Spring Term** **Planting A**	**Animals, including humans** Pupils should be taught to: □ identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals □ identify and name a variety of common animals that are carnivores, herbivores and omnivores describe and compare the structure of a variety of common animals (fish, amphibians,	**Everyday materials** Pupils should be taught to: □ distinguish between 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 □ describe the simple physical properties of a variety of everyday materials □ compare and group together a variety of	**Seasonal changes** Pupils should be taught to: □ observe changes across the four seasons □ observe and describe weather associated with the seasons and how day length varies. **White Rose Lesson Resources** **Autumn Term 1** **Step 1** Changes in Autumn **Step 2** Collect and record data **Spring Term 1**	

	Step 1 Plant – winter **End of Spring Term** **Planting B** **Step 1** Observe changes **Step 2** Plant – Spring **Summer Term** **Plants** **Step 1** Plant parts **Step 2** Tree parts **Step 3** Wild and garden plants **Step 4** Plants in my local area **Step 5** Deciduous trees **Step 6** Evergreen trees **Step 7** Trees in my local area **End of Summer Term** **Planting C** **Step 1** Observe changes Step 2 Plant - Summer **Growing and cooking** **Step 1** Where does my food come from? **Step 2** What have I planted and grown this year?	reptiles, birds and mammals, including pets) □ identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **White Rose Lesson Resources** **Humans** **Step 1** Identify and name parts of the human body **Step 2** Draw and label parts of the human body **Step 3** Sight **Step 4** Sound **Step 5** Taste **Step 6** Touch **Step 7** Smell **Animals** **Step 1** Mammals **Step 2** Birds **Step 3** Fish **Step 4** Amphibians **Step 5** Reptiles **Step 6** Compare and group animals **Step 7** Carnivores **Step 8** Herbivores **Step 9** Omnivores	everyday materials on the basis of their simple physical properties. **White Rose Lesson Resources** **Step 1** Explore materials - wood, plastic, glass and metal **Step 2** Explore materials - rock **Step 3** Objects and materials **Step 4** Melt and freeze **Step 5** Float or sink? **Step 6** Does it absorb water? **Step 7** Investigate materials	**Step 1** Changes in Winter **Step 2** Gather and record data **Spring Term 2** **Step 1** Changes in Spring **Step 2** Collect and record data **Summer Term 1** **Step 1** Changes in Summer **Step 2** Collect and record data **Caring for our planet (Sustainability)** **Step 1** Why is it important to care for our planet? **Step 2** How can we care for our planet?	

Year 2	**Living things and their habitats** Pupils should be taught to: □ explore and compare the differences between things that are living, dead, and things that have never been alive □ identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other □ identify and name a variety of plants and animals in their habitats, including micro habitats □ 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. **White Rose Lesson Resources** **Living things and their habitats** **Step 1** Habitats in my local area	**Plants** Pupils should be taught to: □ observe and describe how seeds and bulbs grow into mature plants □ find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **White Rose Lesson Resources** **Plants – Light and Dark (Start of Spring Term)** **Step 1** Explore plants **Step 2** Plant parts **Step 3** What do plants need to grow? **Step 4** Plan - light and dark **Step 5** Investigate - light and dark **Plants – Light and Dark (End of Spring Term)** **Step 1** Findings - light and dark **Plants (bulbs and seeds) (Summer term 2)** **Step 1** Bulb or seed? **Step 2** What do plants need to grow?	**Animals, including humans** Pupils should be taught to: □ notice that animals, including humans, have offspring which grow into adults □ find out about and describe the basic needs of animals, including humans, for survival (water, food and air) □ describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **White Rose Lesson Resources** **Animals' needs for survival** **Step 1** Mammals **Step 2** Birds **Step 3** Fish **Step 4** Amphibians **Step 5** Reptiles **Step 6** Humans **Humans** **Step 1** Exercise **Step 2** Food **Step 3** Hygiene **Step 4** Teeth	**Uses of everyday materials** Pupils should be taught to: □ identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses □ find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. **White Rose Lesson Resources** **Step 1** Explore materials **Step 2** Wood, paper and cardboard **Step 3** Brick and rock **Step 4** Glass and plastic **Step 5** Metal **Step 6** Fabrics **Step 7** Same object, different material **Step 8** Test materials - bend, squash, twist and stretch **Step 9** Plan - waterproof experiment **Step 10** Investigate - waterproof experiment	

	Step 2 Polar habitats **Step 3** Desert habitats **Step 4** Ocean habitats **Step 5** Woodland habitats **Step 6** Microhabitats **Step 7** Habitats and diet **Step 8** Food chains **Step 9** Living, dead or never alive?	**Step 3** Plan - bulbs and seeds **Step 4** Plant - bulbs and seeds **Bulbs and seeds (End of Summer Term)** **Step 1** Findings - bulbs and seeds	**Growing Up** **Step 1** Parent and offspring **Step 2** Life cycle of humans **Step 3** Life cycles of different mammals **Step 4** Life cycle of amphibians **Step 5** Life cycle of a butterfly **Step 6** Are there patterns between the life cycles of different animals? **Growing up 2** **Step 1** Butterfly diary	**Plastic (Sustainability)** **Step 1** How is plastic helpful and harmful? **Step 2** How can we reduce our plastic waste in school?	
Key Stage 1	**Working scientifically** **Statutory requirements** During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions.				
Year 3	**Plants** Pupils should be taught to: □ identify and describe the functions of different parts of flowering plants:	**Animals, including humans** Pupils should be taught to: □ identify that animals, including humans, need	**Rocks** Pupils should be taught to: □ compare and group together different kinds	**Light** Pupils should be taught to: □ recognise that they need light in order to	**Forces and magnets** Pupils should be taught to: □ compare how things move on different surfaces

	roots, stem/trunk, leaves and flowers □ explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant □ investigate the way in which water is transported within plants □ explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **White Rose Lesson Resources** **Plants A** **(Start of Summer Term)** **Step 1** Parts of a plant and their functions **Step 2** Plant dissection **Step 3** Plan - plant growth **Step 4** Plant - plant growth **Step 5** The stem and water transportation **Step 6** Looking at seeds **Plants B** **(End of Summer Term)** **Step 1** Findings - Plant growth	the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat □ identify that humans and some other animals have skeletons and muscles for support, protection and movement **White Rose Lesson Resources** **Skeletons** **Step 1** Identify and name bones in the human body **Step 2** Functions of the skeleton **Step 3** Identify and name bones in a range of animals **Step 4** Animals with and without a spine **Step 5** Are all skeletons the same? **Movement** **Step 1** Joints **Step 2** How we move **Nutrition and diet** **Step 1** Food groups **Step 2** Understand the five food groups **Step 3** Balanced diets **Step 4** Compare diets	of rocks on the basis of their appearance and simple physical properties □ describe in simple terms how fossils are formed when things that have lived are trapped within rock □ recognise that soils are made from rocks and organic matter **White Rose Lesson Resources** **Rocks** **Step 1** Identify rocks **Step 2** Group rocks **Step 3** Test rocks **Step 4** Local rock survey **Fossils** **Step 1** Explore fossils **Step 2** Fossil formation **Soils** **Step 1** Explore soil **Step 2** The importance of soil **Step 3** Plan - soil experiment **Step 4** Investigate - soil experiment **Step 5** Evaluate - soil experiment	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 the light from a light source is blocked by an opaque object □ find patterns in the way that the size of shadows change. **White Rose Lesson Resources** **Step 1** Light sources **Step 2** The Sun **Step 3** How we see **Step 4** Shadows **Step 5** Opaque, translucent or transparent? **Step 6** Plan - shadow experiment **Step 7** Investigate - shadow experiment **Step 8** Evaluate - shadow experiment	□ notice that some forces need contact between two objects, but magnetic forces can act at a distance □ observe how magnets attract or repel each other and attract some materials and not others □ compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials □ describe magnets as having two poles □ predict whether two magnets will attract or repel each other, depending on which poles are facing. **White Rose Lesson Resources** **Forces** **Step 1** Explore forces **Step 2** Friction **Step 3** Plan - friction experiment **Step 4** Investigate - friction experiment **Magnets** **Step 1** Magnets

	Biodiversity (Sustainability) **Step 1** What is biodiversity? **Step 2** How can we increase biodiversity in our local area?	**Step 5** Animal diets **Food Waste (Sustainability)** **Step** 1 What is food waste? **Step 2** How can we reduce our food waste?			**Step 2** Magnetic and non-magnetic materials **Step 3** Investigate metals **Step 4** North and South Poles - attract and repel
Year 4	**Living things and their habitats** Pupils should be taught to: □ 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. **White Rose Lesson Resources** **Group and classify living things** **Step 1** Group animals **Step 2** Vertebrates and invertebrates **Step 3** Classification keys (animals) **Step 4** Group plants	**Animals, Including Humans** Pupils should be taught to: □ 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 □ construct and interpret a variety of food chains, identifying producers, predators and prey. **White Rose Lesson Resources** **CYCLE A ONLY** **Food Chains** **Step 1** What is a food chain? **Step 2** Interpret food chains **Step 3** Draw food chains **Step 4** What would happen if?	**States of Matter** Pupils should be taught to: □ 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) □ identify the part played by evaporation and condensation in the water cycle and associate the rate of Classification keys (plants) evaporation with temperature. **White Rose Lesson Resources** **Step 1** Use small forces for greater effects	**Sound** Pupils should be taught to: □ 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 □ 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. **White Rose Lesson Resources** **Step 1** Vibrations **Step 2** The ear	**Electricity** Pupils should be taught to: □ 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 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

	Step 5 Classification keys (plants) **Habitats** **Step 1** Living things and their habitats **Step 2** Classification keys (animals) **Step 3** Classification keys (Plants) **Step 4** Human impact on habitats **Deforestation (Sustainability)** **Step 1** What is deforestation? **Step 2** What are the impacts in the UK and the rest of the world? **Data Collection A (Autumn Term)** **Step 1** Data collection A **Step 2** Analyse data **Data Collection B (Spring Term)** **Step 1** Data collection B **Step 2** Analyse data **Data Collection C (Summer Term)** **Step 1** Data collection B **Step 2** Analyse data **Step 3:** Draw conclusions	**CYCLE B ONLY** **The digestive system and Teeth** **Step 1** Teeth - carnivores, herbivores and omnivores **Step 2** Human teeth **Step 3** Layers of the teeth **Step 4** Plan - tooth decay experiment **Step 5** The digestive system **Step 6** The digestive system - model **Step 7** Findings - tooth decay experiment	**Step 2** Think differently - solids, liquids and gases **Step 3** Change states **Step 4** Use equipment **Step 5** Plan - melting experiment **Step 6** Investigate - melting experiment **Step 7** The water cycle **Step 8** Plan - evaporation experiment **Step 9** Investigate - evaporation experiment **Step 10** Evaluate - evaporation experiment	**Step 3** Investigate sounds **Step 4** Explore volume **Step 5** Explore pitch **Step 6** Plan - volume experiment **Step 7** Investigate - volume experiment **Step 8** Evaluate - volume experiment	and insulators, and associate metals with being good conductors. **White Rose Lesson Resources** **Step 1** Common appliances that use electricity **Step 2** Build and draw series circuits **Step 3** What has gone wrong? **Step 4** Conductors and insulators **Step 5** Conductivity within a circuit **Energy (Sustainability)** **Step 1** What is energy? **Step 2** How can we reduce our energy usage? **Data Collection C** **Step 1** Data collection C **Step 2** Analyse data **Step 3** Make conclusions

Lower Key Stage 2 (Y3 & 4)	**Working scientifically** **Statutory requirements** During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.				
Year 5	**Living things and their habitats** **Statutory requirements** Pupils should be taught to: □ describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird □ describe the life process of reproduction in some plants and animals. **White Rose Lesson Resources** **CYCLE A ONLY**	**Animals, including humans** **Statutory requirements** Pupils should be taught to: □ describe the changes as humans develop to old age. **White Rose Lesson Resources** **Step 1** The human life cycle **Step 2** Babies and children **Step 3** Adolescence and puberty	**Properties and changes of materials** **Statutory requirements** Pupils should be taught to: □ 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 □ know that some materials will dissolve in liquid to form a solution, and describe how	**Earth and space** **Statutory requirements** Pupils should be taught to: □ describe the movement of the Earth, and other planets, relative to the Sun in the solar system □ describe the movement of the Moon relative to the Earth □ describe the Sun, Earth and Moon as approximately spherical bodies □ use the idea of the Earth's rotation to	**Forces** **Statutory requirements** Pupils should be taught to: □ 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

	Life Cycles **Step 1** Life cycles of mammals **Step 2** Life cycles of amphibians (frogs) **Step 3** Life cycles of insects **Step 4** Life cycles of birds **CYCLE B ONLY** **Reproduction A** **Step 1** Sexual reproduction in mammals **Step 2** Reproductive parts in plants **Step 3** Pollination **Step 4** Asexual reproduction **Step 5** Plan - cloning plants **Step 6** Plant - cloning plants **Reproduction B** **Step 1** Findings - clone plants **Step 2** Interpret data	**Step 4** Adults and the elderly **Step 5** Gestation periods of mammals **Step 6** Gestation periods and lifespan	to recover a substance from a solution □ use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating □ give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic □ demonstrate that dissolving, mixing and changes of state are reversible changes □ explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. **White Rose Lesson Resources** **Properties of Materials** **Step 1** Test materials - magnetic, transparency and hardness	explain day and night and the apparent movement of the sun across the sky. **White Rose Lesson Resources** **Step 1** The Solar System **Step 2** The planets **Step 3** Modelling **Step 4** Motion of the Earth and planets **Step 5** The Solar System - ideas over time **Step 6** Planet Earth **Step 7** Night and day **Step 8** The Moon **Global Warming (Sustainability)** **Step 1** What is global warming? **Step 2** What are the impacts of global warming on living things?	levers, pulleys and gears, allow a smaller force to have a greater effect. **White Rose Lesson Resources** **Step 1** Friction **Step 2** Air resistance **Step 3** Plan - parachute experiment **Step 4** Investigate - parachute experiment **Step 5** Evaluate - parachute experiment **Step 6** Plan - water resistance **Step 7** Investigate - water resistance **Step 8** Explore gravity **Step 9** Use small forces for greater effects

			Step 2 Test materials – electric conductivity **Step 3** Plan - insulating heat experiment **Step 4** Investigate - insulating heat experiment **Step 5** Evaluate - insulating heat experiment **Step 6** Uses of everyday materials - plastic, wood and metal **Reversible and Irreversible Changes** **Step 1** Dissolving **Step 2** Separate materials - filtering and sieving **Step 3** Solutions and evaporating **Step 4** Reversible changes **Step 5** Irreversible changes – burning **Step 6** Irreversible changes – acid **Plastic Pollution (Sustainability)** **Step 1** What is plastic pollution? **Step 2** What are the impacts of plastic pollution on the planet?		

Year 6	**Living things and their habitats** Statutory requirements Pupils should be taught to: □ describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals □ give reasons for classifying plants and animals based on specific characteristics. **White Rose Lesson Resources** **Step 1** Conditions for life **Step 2** Group organisms **Step 3** Classify animals **Step 4** Classify plants **Step 5** Classify plants **Step 6** Classify microorganisms **Step 7** Carl Linnaeus	**Animals including humans** **Statutory requirements** Pupils should be taught to: □ 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. **White Rose Lesson Resources** **The circulatory system** **Step 1** The circulatory system **Step 2** Blood **Step 3** The heart **Step 4** Blood flow in the heart **Step 5** Oxygenated and deoxygenated blood **Diet, drugs and lifestyle** **Step 1** Diet **Step 2** Drugs **Step 3** Cigarettes	**Evolution and inheritance** **Statutory requirements** Pupils should be taught to: □ recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago □ recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents □ identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **White Rose Lesson Resources** **Variation** **Step 1** Variation **Step 2** Inheritance and characteristics **Adaptations** **Step 1** Animal adaptations **Step 2** Plant adaptations **Step 3** Evolution	**Light** **Statutory requirements** Pupils should be taught to: □ 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 shape as the objects that cast them. **White Rose Lesson Resources** **Step 1** How we see **Step 2** Light and straight lines **Step 3** Shadow formation **Step 4** Plan - shadow experiment **Step 5** Investigate - shadow experiment	**Electricity** **Statutory requirements** Pupils should be taught to: □ 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. **White Rose Lesson Resources** **Step 1** Construct and draw series circuits using symbols **Step 2** Complete and incomplete circuits **Step 3** Variations within circuits **Step 4** Plan - voltage experiment **Step 5** Investigate - voltage experiment **Step 6** Evaluate - voltage experiment

		Step 4 Plan - heart rate experiment **Step 5** Investigate - heart rate experiment **Step 6** Evaluate - heart rate experiment	**Step 4** Charles Darwin **Step 5** Natural selection **Step 6** Darwin's finches **Fossils** **Step 1** Fossil formation **Step 2** Explore fossils **Step 3** Mary Anning	**Step 6** Evaluate - shadow experiment **Step 7** Refraction **Step 8** Explore light **Light pollution (Sustainablity)** **Step 1** What is light pollution? **Step 2** How can we reduce light pollution?	**Renewable Energy (Sustainability)** **Step 1** What is renewable energy? **Step 2** Using renewable energy
	Year 6 also includes themed projects for Summer Term 2 (Y7 ready) – Project 1 – Melting Points, Project 2 – Thermal Conductivity The projects: • Provide an opportunity to revisit many of the skills and curriculum content covered throughout primary science. • Cover some of the key disciplinary knowledge that secondary school science teachers would expect children to be familiar with. • Revisit chemistry content, as chemistry topics are not included in the Year 6 National Curriculum.				
Upper Key Stage 2 (Y5 & 6)	**Working scientifically** **Statutory requirements** During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments.				