**Woolsery Primary School Non-Negotiables**

*Scientific skills and knowledge should be taught when linked to*

*projects where possible to ensure real world*

*application.*

**Science**

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|  | AUTUMN 1 | AUTUMN 2 | SPRING 1 | SPRING 2 | SUMMER 1 | SUMMER 2 |
| **Year 6** | **Y6 Animals inc humans.**Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function describe the ways in which nutrients and water are transported within animals, including humans. | **Y6 Electricity**Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram. | **Y6 Light**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. | (Revision) | **Y6 Evolution and inheritance**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 | **Y6 Living things and their habitats**

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| 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.  |

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| **Working Scientifically – Statutory Requirements for Y5/6**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.  |
| **Year 5** | **Y5 Properties and changes of materials** 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 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.  | (Sound) | **Y5 Earth and Space**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 explain day and night and the apparent movement of the sun across the sky.  | **Y5 Forces** Identify the effects of air resistance, water resistance and friction, that act between moving surfaces  Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object  | **Y5 Animals including humans** Describe the changes as humans develop to old age.  | **Y5 Living things and their habitats**

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| 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.  |

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| **Year 4** | **Y4 Living things and their habitats**(classification)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.  | **Y4 Animals including humans**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.  | **Y4 States of matter** 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 evaporation with temperature.  | **Y4 Sound** 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.  | **Y4 Electricity** 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 and insulators, and associate metals with being good conductors.  |  |
| **Working Scientifically – Statutory Requirements Y3/4**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 3** | **Y3 Animals including humans** identify that animals, including humans, need 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.  | **Y3 Magnetism** compare how things move on different surfaces  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.  | **Y3 Rocks, fossils and soils.** compare and group together different kinds 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.  | **Y3 Light and****shadows**  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 the light from a light source is blocked by a solid object  find patterns in the way that the size of shadows change.  | **Y3 Plants** identify and describe the functions of different parts of flowering plants: 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.  |  |
| **Year 2** | **Living things and their habitats** 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.  | **Everyday materials****-and their uses****Shaping materials** 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.  | **Animals and humans.** **Exercise, nutrition, reproduction** 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.  | - | **Plants****Seeds, bulbs, and plants** 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.  | - |
| **Working Scientifically – Statutory Requirements Y1/2**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 1** | **Animals**Identify and name some common animals. Know their structure.Know main human body parts. 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, 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.  | **Everyday materials** 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 everyday materials on the basis of their simple physical properties.   | **Plants**Including common flowers and trees and their basic structure 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.  | **Seasonal changes** observe changes across the four seasons  observe and describe weather associated with the seasons and how day length varies.  |  |  |
| **Reception** From understanding of the world ELG | Children to know about similarities and differences in relation to places, objects, materials and living things. They can talk about the features of their own immediate environment and how environments might vary from one another. They will make observations of animals and plants and explain why some things occur, and talk about changes. |
| **Preschool**From understanding of the world ELG | Children will enjoy playing with small-world models such as a farm, a garage, or a train track. They will notice detailed features of objects in their environment. They will be able to comment and ask questions about aspects of their familiar world such the place where they live or the natural world. They can talk about some the things they have observed such as plants, animals, natural and found objects. They can talk about why things happen and how things work. Children will develop an understanding of growth, decay and changes over time. They will learn how to show care and concern for living things and the environment. |

\*The content above must be taught. However, there is some flexibility between Y1/2, Y3/4 and Y5/6 topics and when they are taught. If changes are made please notify the subject leader. Further useful information can be found in the non statutory guidance in the National Curriculum document.